



May 2012



June 2012



October 2012



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Two Moose Creek

(Anchor River Tributary)

Permit and Habitat Violations

2012-present

Two Moose Creek AWC Code 244-10-10010-2021

Coho salmon spawning
King salmon spawning and rearing
Dolly Varden rearing
Steelhead rearing

We have documented turbidity from gravel pit discharges into Two Moose Creek, approximately 1/4 mile upstream from the confluence with the Anchor River, since May 2012. The inflow channel on the left (see photos) originates from a gravel pit, whose owner has a discharge permit from ADEC stipulating that the discharge cannot introduce muddy water into Two Moose Creek. Between June 2012 and July 2013, Cook Inletkeeper has documented 13 violations of this permit during 15 site visits through water quality monitoring. Additional ground photos and aerial photos clearly show the origins of this discharge and the chronic nature of this illegal discharge.

Over the last 18 months, Cook Inletkeeper has contacted the following agencies and provided them with information, data, ground and aerial photos: AK Department of Fish & Game, AK Department of Environmental Conservation, AK Department of Law, U.S. Environmental Protection Agency and the Kenai Peninsula Borough.

To date, turbidity continues to degrade water quality and fish habitat in this anadromous salmon stream and none of these entities has stepped up to stop the discharge. Included in this packet is a timeline of Inletkeeper's efforts to get agency attention to stop the discharge, aerial photos showing the source of the discharge from before it began to the present, and models of Chinook and coho salmon habitat in the Anchor River watershed. These maps are included to show how Two Moose Creek stands out as potentially prime salmon habitat based on its physical characteristics. In a time of decreased King returns, we cannot afford to willfully ignore degradation of valuable habitat.

Timeline of Events at Two Moose Creek, a listed King Salmon tributary to the Anchor River - April 2012 to present (December 2013)

4/30/2012: CEMP Volunteer notes in the site comments: ""Site destroyed! Okay, just messy. It looks like loggers have cleared a wide path off the highway. What a mess. Water very high and fast." Top picture to the right is from this site visit.

5/14/2012: The same CEMP Volunteer in his next visit wrote, "It looks like the culvert was blocked by the trees that were cut last month and caused a major flood. Mud over 12" deep around site. The bank around the culvert is caved in. Even the parking spot looks like it was flooded." Bottom picture on the right is from this subsequent site visit.



5/18/2012: Inletkeeper staff contacts ADOT regarding the highway cutting job and culvert issues. Photos are attached. ADOT responds on 5/22, "Working on it."

5/20/2012: KWF and KPB River Center staff went down to Two Moose. ADOT response on 5/22 cc'd both of them as well as Inletkeeper staff.



6/11/2012: Phone call to EPA. Photos of the site and discharge sent to EPA staff following phone conversation

6/13/2012: Phone call to KPB River Center. They said ADF&G had gone down to check it out, he agreed it looked like a release from an impoundment dam, and wasn't sure if anyone had contacted the owners. He had talked with ADOT. ADEC has primacy and they were sending someone down next week. He didn't think USFWS was interested in pursuing anything. EPA staff was planning to go down today to check it out. Sent the site photos from 6/11 to KPB River Center.

Phone call to ADEC Enforcement. They had sent someone down last week, but they went to the wrong location and didn't see anything. Sending someone down again tomorrow. If it went to enforcement, he wouldn't be able to provide any updates. ADEC asked for pictures and turbidity data. Sent him photos (same as 6/11 and 6/13 to EPA and KPB).

Message from DOL indicating they are engaged in the situation and requesting any aerial photos we have.

6/14/2012: Cook Inletkeeper has aerial photos taken of the site

6/15 – 6/18/2012: Cook Inletkeeper sends aerial photos to EPA and to the Assistant Attorney General in the Office of Special Prosecutions at the AK Dept. of Law. ADEC enforcement staff conducted a site visit on 6/15.

6/25/2012: Began monitoring turbidity weekly at the inflow and above the inflow. Inletkeeper data shows the gravel pit **discharge 14 NTUs over background**. (see photo to right)



6/26/2012: Sent additional site photos and turbidity data to EPA. Permitted discharge can be no more than 5 NTUs over background.

6/27/2012: Sent photos and turbidity data to enforcement and water quality staff at ADEC.

7/2/2012: Email from ADEC to Bob indicating they are traveling on 7/3 to Anchor Point with to do additional investigations.

Inletkeeper data shows the gravel pit **discharge 9 NTUs over background**.

7/9/2012: Cook Inletkeeper talks with Larry Hartig at DEC regarding this issue.

Inletkeeper data shows the gravel pit **discharge 7 NTUs over background**.



7/16/2012: Inletkeeper sends photos and information to ADF&G Lands and Refuge program staff. They respond asking if ADF&G Habitat is involved as it would be a Fish & Game Title 16 violation. See photo on right as demonstrating the level of sedimentation along the riparian zone.

Inletkeeper data shows the gravel pit **discharge 11 NTUs over background**.

7/17/2012: Inletkeeper checks with ADF&G Habitat to see if there is any plan for enforcement from them. They ask if there are continued problems, and say they'll go down and take another look at it. They indicate that ADF&G is working with EPA and DEC and will connect with them to understand the status of the situation..

7/21/2012: Inletkeeper talks with ADEC enforcement staff, who indicated they were going to issue a Notice of Violation, but was unsure if the DOL would pursue.

7/23/2012: Inletkeeper data shows the gravel pit discharge **6 NTUs over background**.

7/24/2012: ADEC calls to say they are still pursuing enforcement and the case is confidential.

7/30/2012: Inletkeeper data shows the gravel pit discharge **42 NTUs over background**.

8/6/2012: Inletkeeper data shows the gravel pit discharge 5 NTUs over background (this is the permitted level).

9/13/2012: ADF&G office in Homer receives a citizen complaint regarding turbidity at Two Moose Creek.

9/18/2012: Inletkeeper staff emails ADEC enforcement & water quality, EPA, KWF, KPB River Center, and ADF&G habitat regarding ongoing turbidity issues at Two Moose Creek.

Inletkeeper staff also emails ADOT with photos of failing erosion control efforts at the Two Moose/Sterling Hwy culvert.

Inletkeeper data shows the gravel pit **discharge 115 NTUs over background**. (see photo to the right)



9/19/2012: Inletkeeper contacts Randy Bates at ADF&G on the issue as ongoing turbidity monitoring shows continued (and increasing) discharge through the summer and fall. Included on that email are Cora Campbell, Mike Navarre, Paul Seaton, Kimberly Ogle, Phil North and Larry Hartig.

9/20/2012: Bates responds via email, indicating that he understands the upstream gravel pit is the source of the turbidity and that ADF&G is working with DEC on the issue.

9/26/2012: Inletkeeper data shows the gravel pit **discharge 120 NTUs over background**.

9/28/2012: Inletkeeper sends ADEC enforcement staff turbidity data indicating that the inflow continues to violate state water quality standards. ADEC responds that the case is still confidential and in enforcement, and that they met with a DOL attorney that morning to identify next steps. Inletkeeper responds including DEC water quality staff, and encourages DEC to add Two Moose as a priority waterbody in the FY14 ACWA to continue turbidity monitoring.

10/1/2012: ADF&G staff accompanies Inletkeeper on a site visit to Two Moose Creek. Inletkeeper data shows the gravel pit **discharge 116 NTUs over background**.

10/2/2012: ADF&G forwards photos and summary of information to ADF&G Land & Waters restoration staff to discuss riparian stabilization. ADEC water quality staff requests more information to nominate Two Moose Creek into the ACWA database.

10/10/2012: Inletkeeper data shows the gravel pit **discharge 45 NTUs over background**.

10/11/2012: Cook Inletkeeper sends information on Two Moose Creek to ADEC for nomination into the ACWA database.

6/4/2013: A site visit shows continued discharge at Two Moose Creek. Inletkeeper talks with ADEC enforcement, whose staff was still working on the case and would be traveling down to do a site visit with ADF&G habitat. Inletkeeper emails ADF&G habitat staff with updated photos.

6/7/2013: Inletkeeper staff talks with ADF&G habitat staff heading to Anchor Point to conduct a site visit with ADEC Enforcement. They weren't sure about the discharge, but going to look at riparian zone stabilization possibilities.

6/12/2013: Inletkeeper staff sends an email to ADEC enforcement after another Inletkeeper site visit that indicates ongoing discharge. (**discharge 59 NTUs over background**, see photo to the right)

6/14/2013: Inletkeeper talks to ADEC enforcement staff and Mel Knapp, head of enforcement division, who continued to indicate nothing could be said since it's in active enforcement.



10/18/2013: Kirk Wagner, long-time fisherman on the Anchor, comes down for fishing and has to move to the North Fork of the river due to high turbidity on the South Fork. He becomes alarmed when within 2-3 hours the South Fork clears up, indicating a discharge event versus natural conditions. (see more on this below, from 12/4 conversation with Kirk)

10/21/2013: ADF&G staff collects two water samples collected from just above (2.55 NTU) and just below the inflow (6.17 NTU) at Two Moose. There have been continued attempts to understand what progress is being made with the situation, with no response from ADEC enforcement.

10/25/2013: Inletkeeper staff goes back to the site after the summer. Discharge visibly is continuing with turbidity levels well above background (see photo to the right).

10/27/2013: Inletkeeper CEMP volunteer takes turbidity sample at Two Moose Creek, just above the highway culvert. **Turbidity is 28.6 NTUs – the second highest turbidity level recorded by Inletkeeper at Two Moose Creek since sampling began in 2002**. The highest turbidity level at this site was recorded in March 2013 (54.2 NTUs).



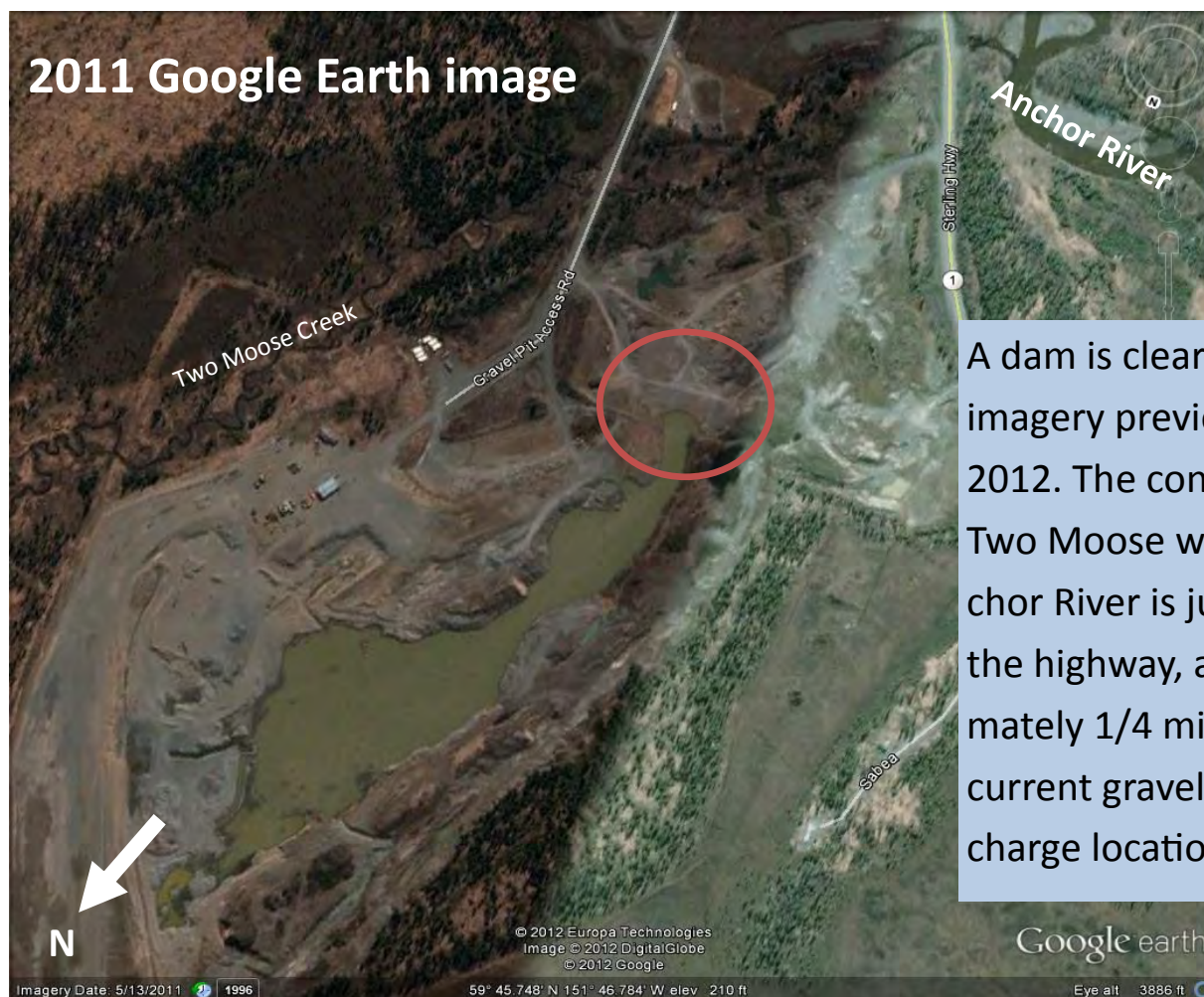
12/4/2013: Inletkeeper receives a call from Kirk Wagner, a concerned citizen/fisherman from Anchorage. He has fished on the Anchor for years. In October (see 10/18/2013 above) he was fishing at the North/South Forks confluence, and found the South Fork to be super murky. He didn't think much of it, as he knows that at times the water can be turbid on the Anchor. He fished in the North Fork, but the South Fork cleared up over the next few hours. More consistent with a discharge than with high water (which it wasn't at that time). A friend of his saw the same thing further up river on the South Fork, and had earlier followed the murky water to Two Moose Creek, and upstream to the gravel pit inflow. Kirk works for a construction company in Anchorage, and does a lot of work at JBER. He knows about SWPPPs and compliance enforcement, and with that in mind he called ADEC. They told him they couldn't do anything about it unless someone was caught in the act. He called ADF&G and they said they knew of it, and that he should call Cook Inletkeeper. Kirk also emailed the Anchor Point Chamber of Commerce on November 16 to let them know this was a big concern, and that fishing on the Anchor is a big draw for people to the area. He intends to continue working towards some solution for this issue, and he is extremely concerned about it. Frustrated that with construction work they are held strictly to their permits, and he can't figure out why DEC doesn't seem to care about illegal discharges into a river system like the Anchor.

12/6/2013: Jim Stubbs from the Anchorage Fish & Game Advisory Committee calls Inletkeeper. Several years ago he was fishing on the Anchor and experienced a similar discharge event that Kirk described. He followed it upriver to Two Moose Creek and the gravel pit. In that case there was subsequent enforcement from illegal dewatering of the gravel pit at the same location.

2010 Aerial Photo



2011 Google Earth image



A dam is clearly evident in imagery previous to May 2012. The confluence of Two Moose with the Anchor River is just beyond the highway, approximately 1/4 mile from the current gravel pit discharge location.

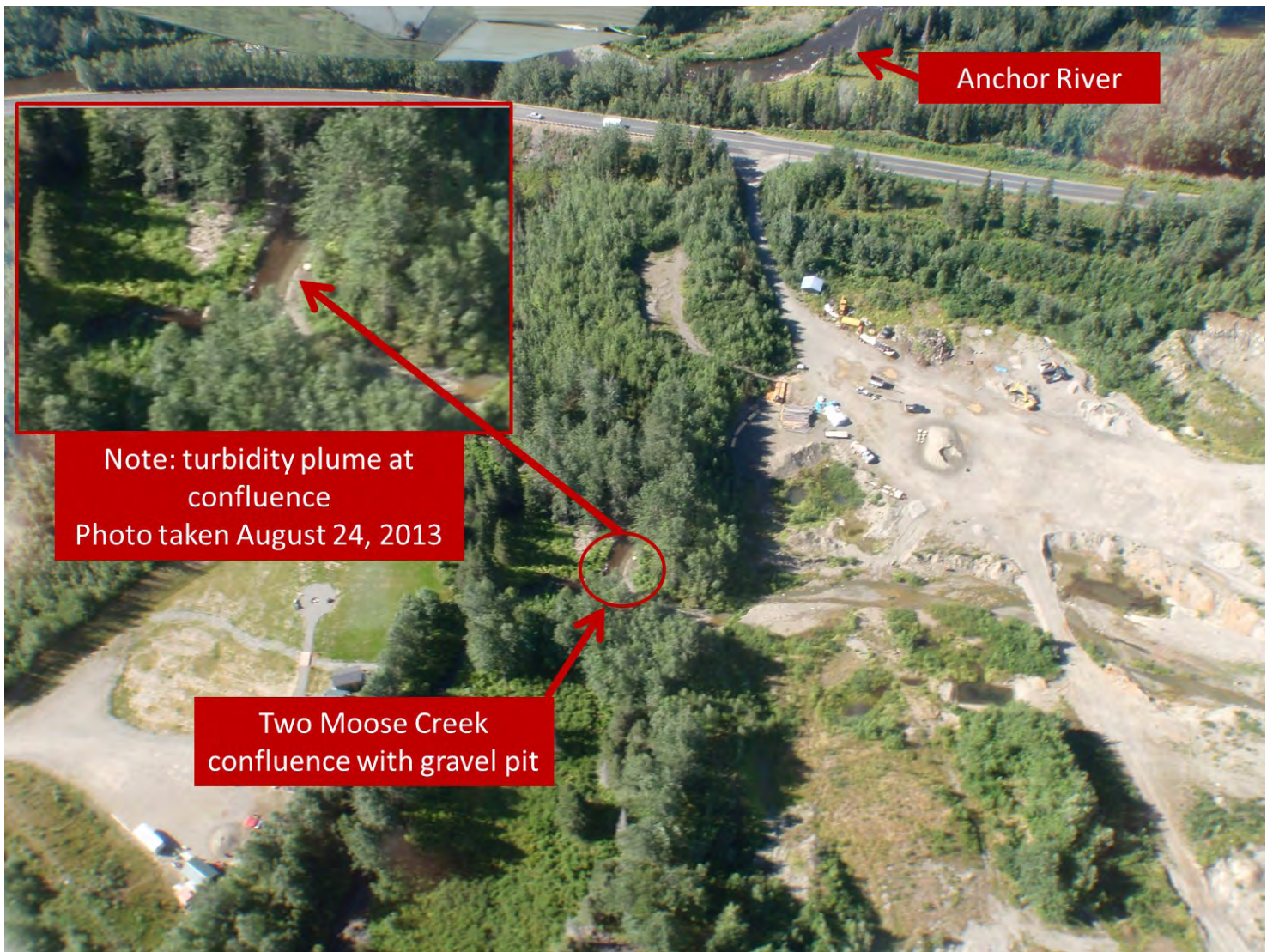


Sometime in May 2012, this dam broke resulting in continuous discharge from this Gravel Pit into Two Moose Creek and the Anchor River.

May 2013 Aerial Photos



These aerial photos from May 2013 show the continued discharge from the gravel pit into Two Moose Creek.



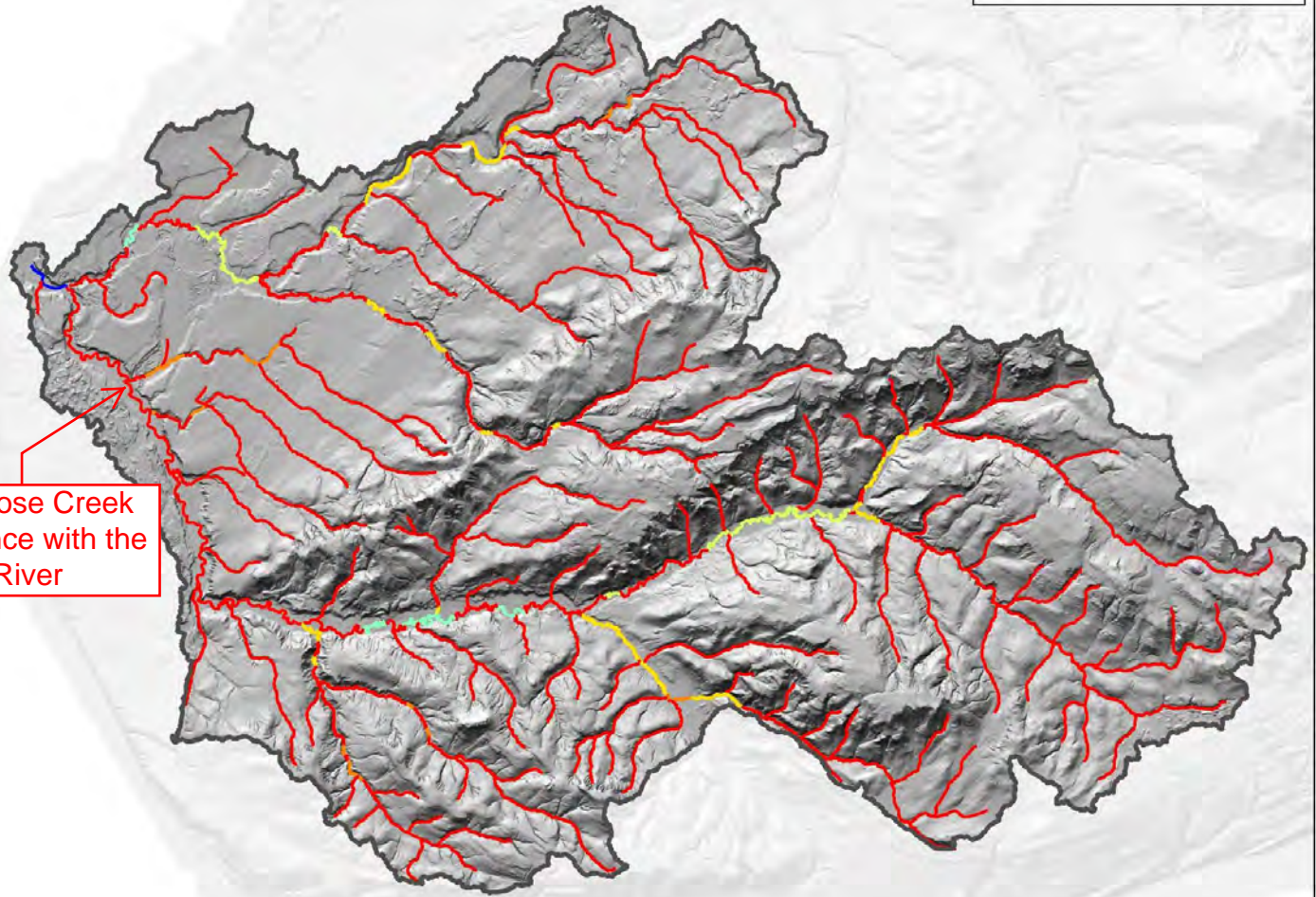
Note: turbidity plume at
confluence
Photo taken August 24, 2013

Two Moose Creek
confluence with gravel pit

This annotated aerial
from August 2013 shows
the continued discharge
from the gravel pit into
Two Moose Creek.

Stillwater Sciences used RIPPLE, a physically-based population model, to assess factors controlling Chinook and coho salmon population size in the Anchor River. For each freshwater stage, the model estimates reach-specific carrying capacities using predicted physical variables such as channel morphology and substrate size, in conjunction with field measured maximum densities of each life stage for different slope and drainage area combinations and habitat types. RIPPLE then uses these reach-specific carrying capacities in a multistage stock-production model to predict distribution and abundance of each life stage.

Map Location

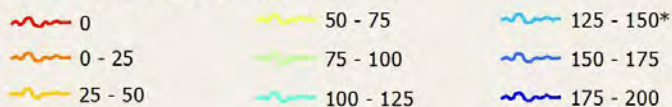


Two Moose Creek
confluence with the
Anchor River

ANCHOR RIVER, AK - CHINOOK SALMON

Spawner Carrying Capacity

Spawner Carrying Capacity (fish/100 m)

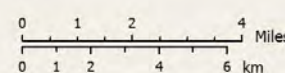


*no data values in this range

Data sources:

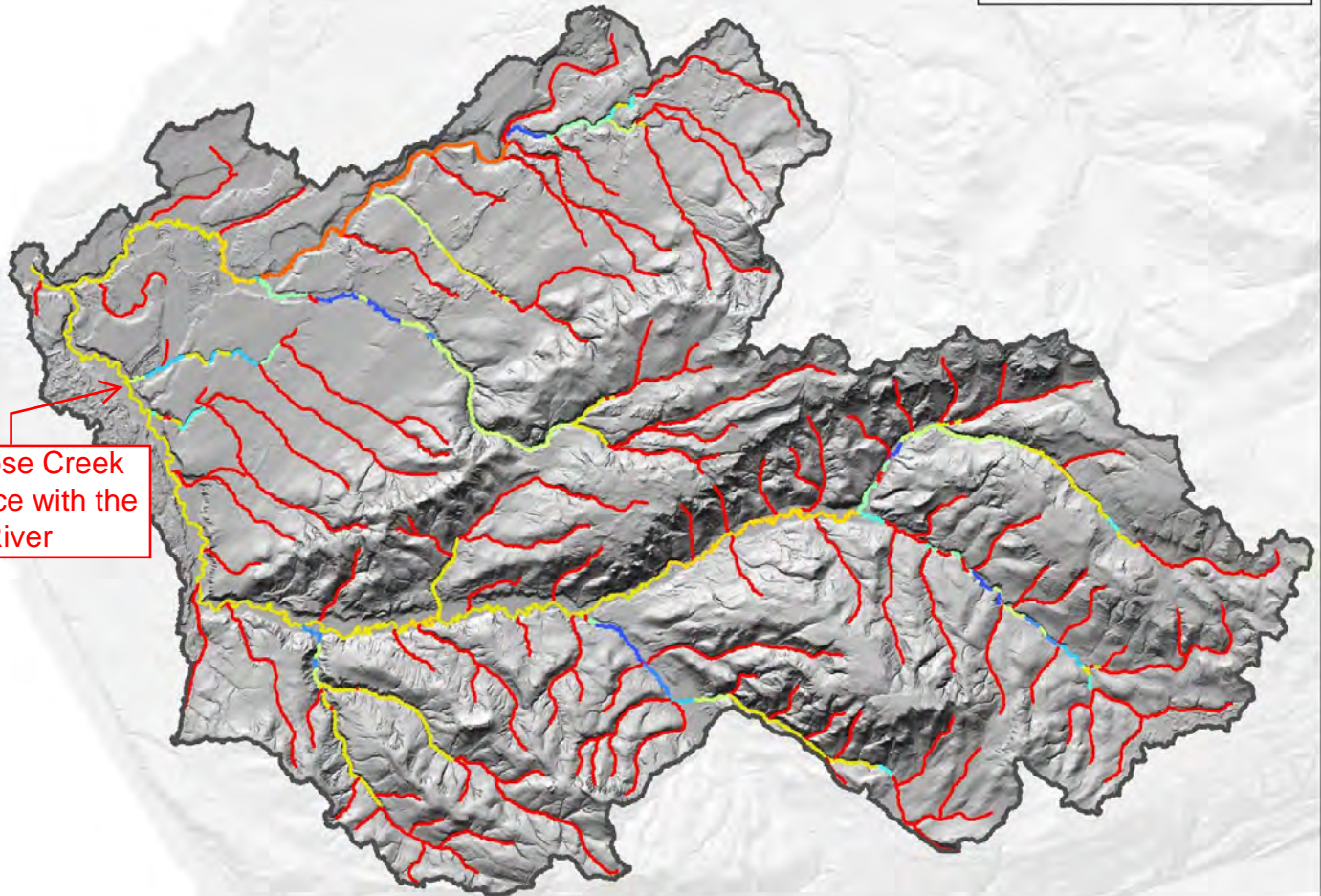
LIDAR: Aero-metric, 2009

Inset hillshade tint: Natural Earth 2010



Stillwater Sciences
www.stillwatersci.com

Map Location



Two Moose Creek
confluence with the
Anchor River

ANCHOR RIVER, AK - CHINOOK SALMON

Summer 0+ Carrying Capacity

Summer 0+ Carrying Capacity (fish/100 m)

0	200 - 300
0 - 50	300 - 400
50 - 100*	400 - 500
100 - 200	500 - 600

600 - 700

700 - 800

800 - 900

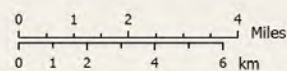
900 - 1,000

*no data values in this range

Data sources:

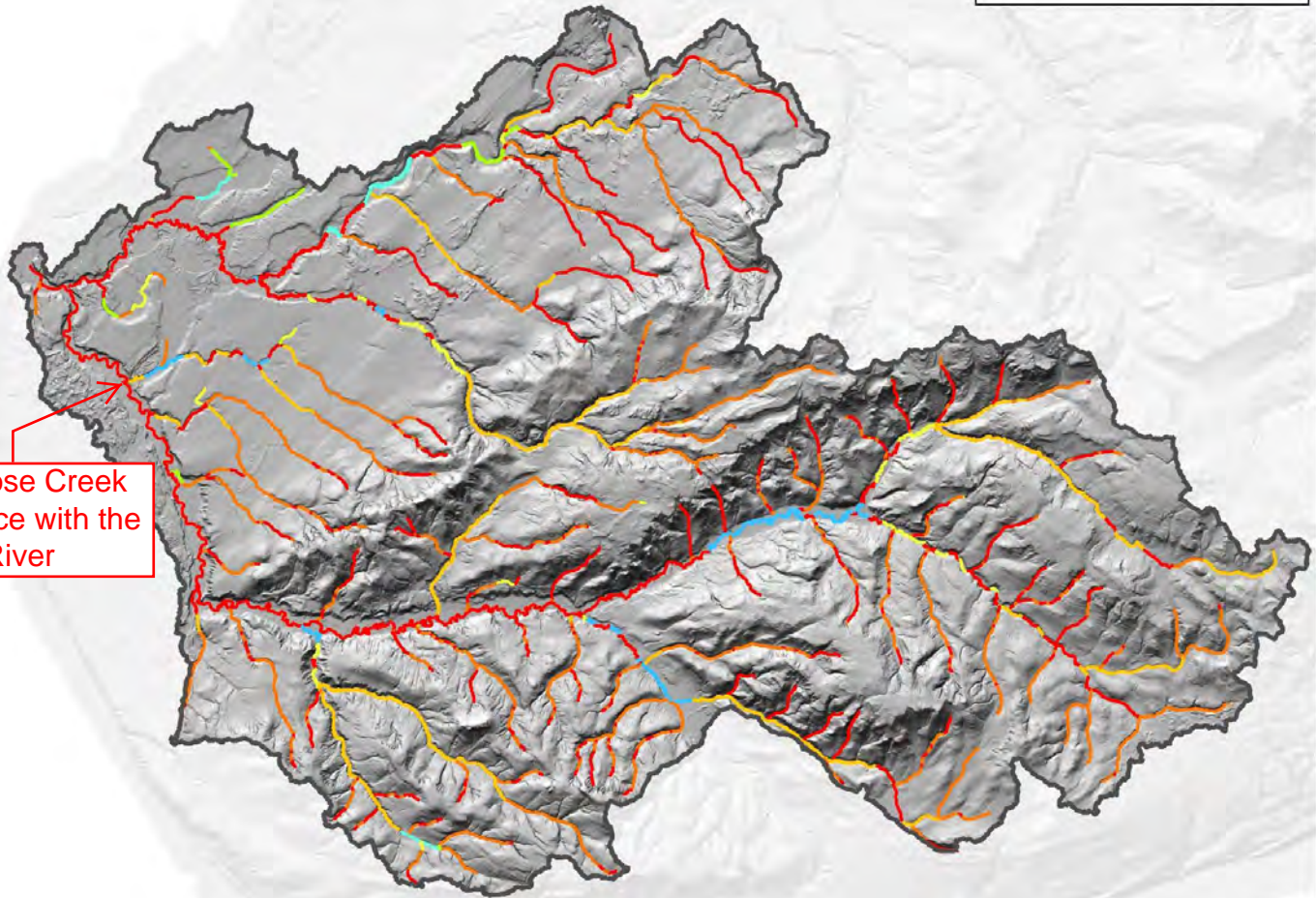
LIDAR: Aero-metric, 2009

Inset hillshade tint: Natural Earth 2010



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Map Location

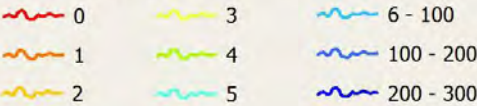


Two Moose Creek
confluence with the
Anchor River

ANCHOR RIVER, AK - COHO SALMON

Spawner Carrying Capacity

Spawner Carrying Capacity (fish/100 m)



Data sources:
LiDAR: Aero-metric, 2009
Inset hillshade tint: Natural Earth 2010

