Water Transaction Program
Monitoring and Evaluation Report – 2005

Introduction

In 2005, the Idaho Department of Water Resources (IDWR) completed 9 water transactions in the Upper Salmon River basin (Beaver Creek, Big Hat Creek, Eighteenmile Creek, Fourth of July Creek, Kenney Creek, Lemhi River at Baker, Lemhi River Early Season, Lemhi River Late Season, and Pole Creek). The Eighteenmile Creek, Lemhi at Baker, and Pole Creek projects represent leases new to the Water Transactions Program. These projects increased flows and provided valuable fish habitat and passage on more than 239 river miles in the Upper Salmon Basin.

Beaver Creek – Stanley Basin

The Beaver Creek project is IDWR's first long-term lease. D.O.T., LLP leased 8.77 cfs, formerly irrigating 241 acres, for a period of 10 years. The water is leased from May 1st through October 15th. When the water is available, this connects approximately 0.8 miles of lower Beaver Creek to the Salmon River, providing fish access to the upper reaches of Beaver Creek.

Site visits to Beaver Creek on July 11, September 8, and October 6 confirmed that D.O.T., LLP was complying with the terms of the lease. Landsat images also show that the leased water was not being used to irrigate land (Appendix A). A gage in Beaver Creek monitored flow in the river during the irrigation season (Figure 1). The leased water provided a reconnect to Beaver Creek through late July. After July, the flow in Beaver Creek dropped below levels that would provide reconnection. Since this is a 10 year lease, IDWR is working with the landowners and the Upper Salmon Basin Watershed Project, to address dewatering issues related to channel morphology and stream bank stability in this reach. This may include a stock fence, bioremediation of the stream bank, and/or removal of all grazing cattle from the property.

Habitat assessment was conducted on July 11, 2005 in a 500-meter reach below the leased diversions. Riffle habitat made up 65% of the stream, glide-runs were 20%, and scour pools made up 10% of the habitat. Grasses and small brush, with some larger shrubs and conifers, dominate stream bank vegetation. The vegetation in the monitored reach has been highly degraded by cattle activity. Exclusion mechanisms should allow re-vegetation and stabilization of the stream bank over time. This could ultimately narrow the stream bank and improve passage potential.

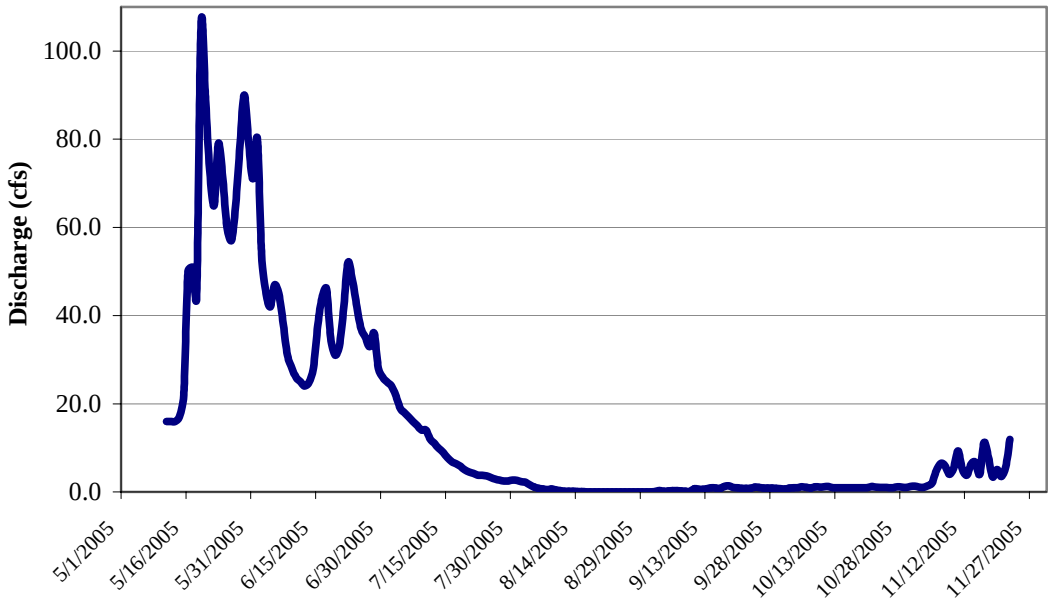


Figure 1. Beaver Creek Flow at Highway 93, 2005.

Physical Habitat Simulation (PHABSIM) results from a study on Beaver Creek (Maret et al. 2005) were used to develop habitat availability with and without the 8.77 cfs of leased water. Figures 2-4 represent the percentage of usable area for each species of concern. Juvenile habitat is not included due to limitations of the PHABSIM model.

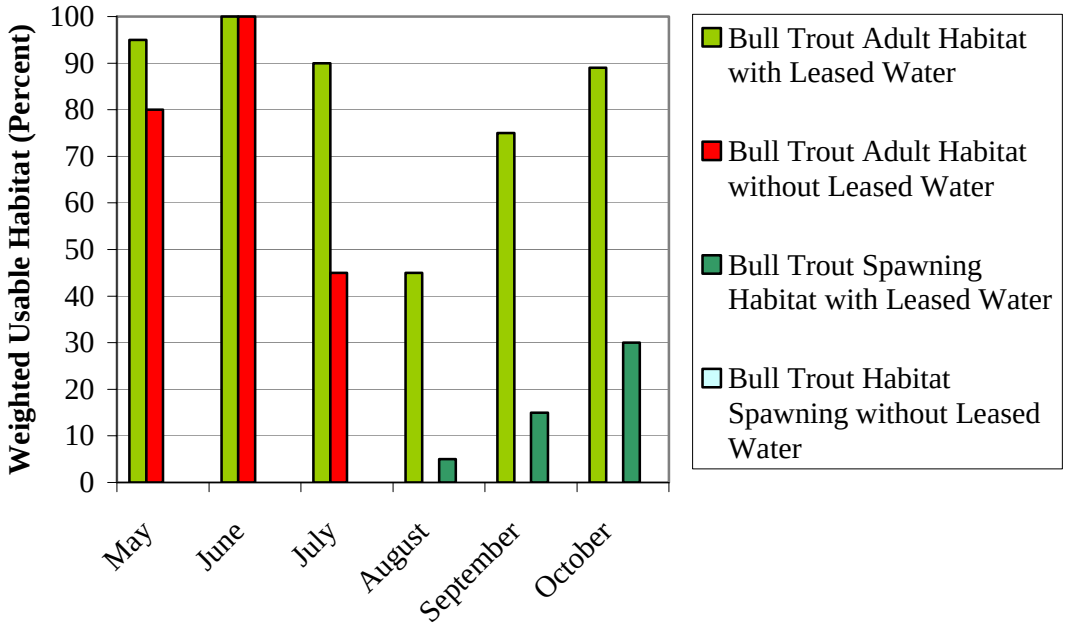


Figure 2. Percent usable habitat for adult and spawning bull trout at mean monthly flows including and excluding the leased 8.77 cfs.

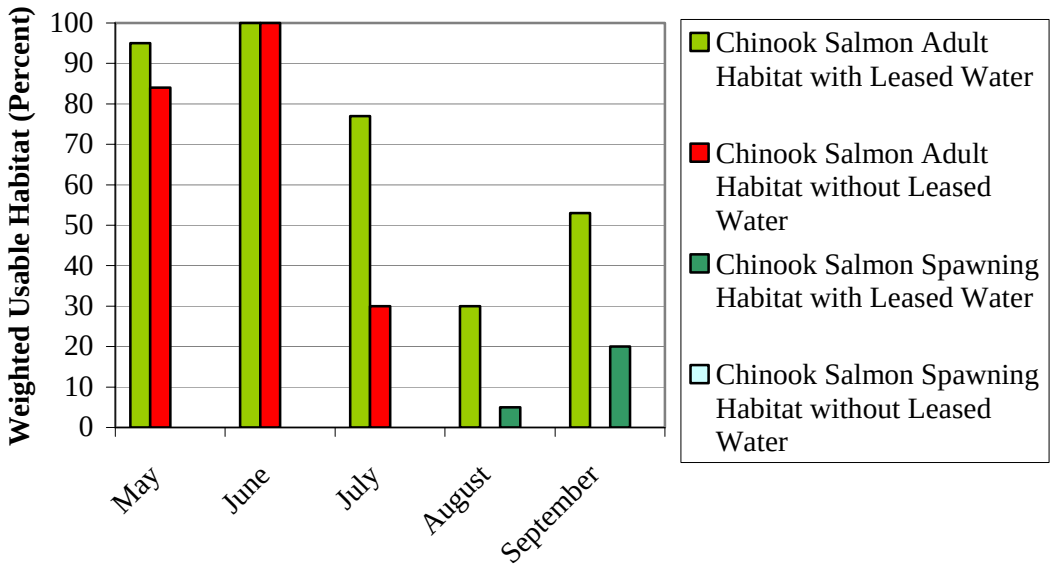


Figure 3. Percent usable habitat for adult and spawning Chinook salmon at mean monthly flows including and excluding the leased 8.77 cfs.

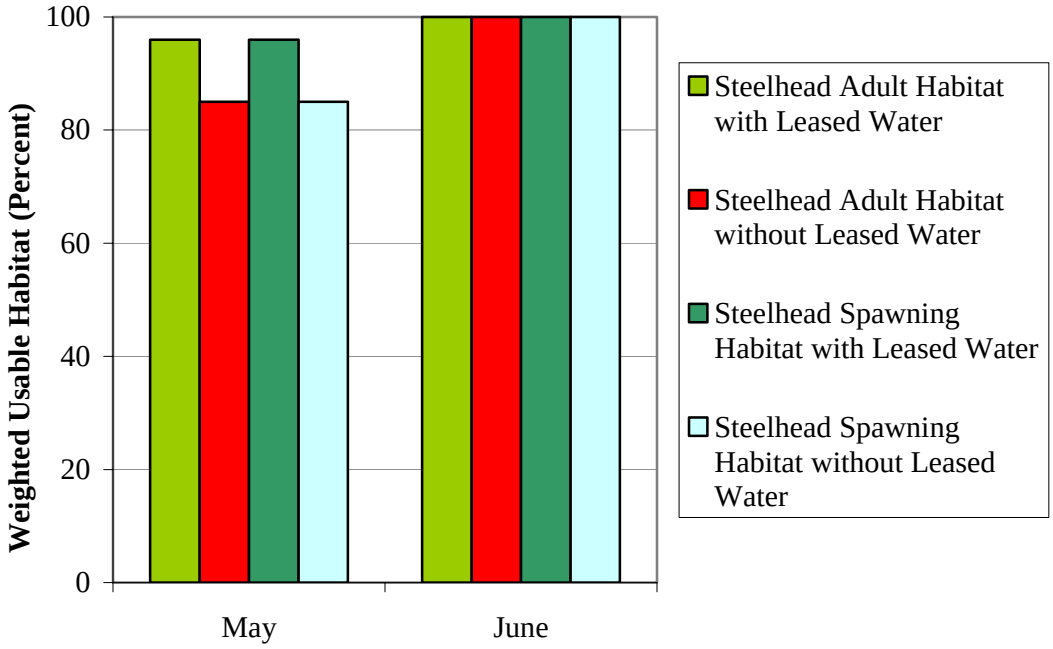


Figure 4. Percent usable habitat for adult and spawning steelhead at mean monthly flows including and excluding the leased 8.77 cfs.

Fourth of July Creek – Stanley Basin

2005 is the second and final year of a two-year lease with Bill Vanderbilt for 2.9 cfs, formerly irrigating 43.1 acres. The water was leased from May 1 to Oct. 31. Approximately 2.0 miles of lower Fourth of July Creek was reconnected to the Salmon River. This provided fish access to the upper reaches.

Site visits to Fourth of July Creek on July 13 and July 27 confirmed that Vanderbilt was complying with the terms of the lease. Landsat images also show that the leased water was not being used to irrigate land (Appendix A). A gage in Fourth of July Creek monitored flow in the river during the irrigation season (Figure 5). The leased water provided a reconnect to the Salmon River throughout most of the irrigation season. Flows between July 20 and September 19 fell below levels required for adult Chinook passage.

Habitat assessment was conducted on July 27, 2005 in a 200-meter reach below the leased diversions. Riffle habitat made up 47% of the stream, glide-runs were 23%, and scour pools made up 30% of the habitat. Large mature shrubs dominate stream bank vegetation. The vegetation in the monitored reach is very thick and provides shade and bank stability.

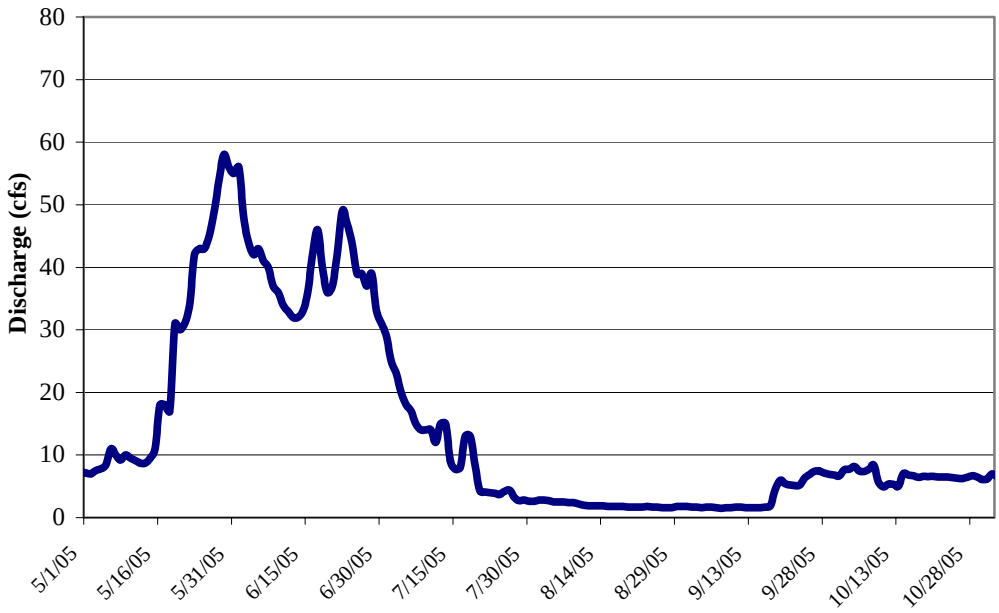


Figure 5. Fourth of July Creek Flow at Highway 93, 2005.

Physical Habitat Simulation (PHABSIM) results from a study on Fourth of July Creek (Maret et al. 2004) were used to develop habitat availability with and without the 2.9 cfs of leased water. Figures 6-8 represent the percentage of usable area for each species of concern. Juvenile habitat is not included due to limitations of the PHABSIM model.

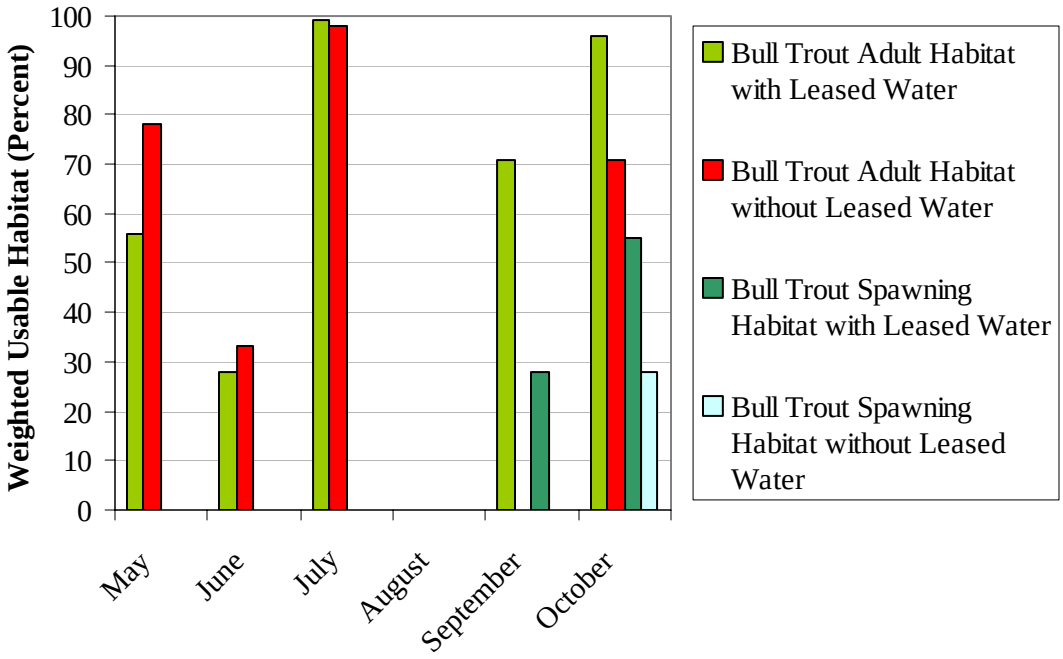


Figure 6. Percent weighted usable habitat for adult and spawning bull trout at mean monthly flows including and excluding the leased 2.9 cfs.

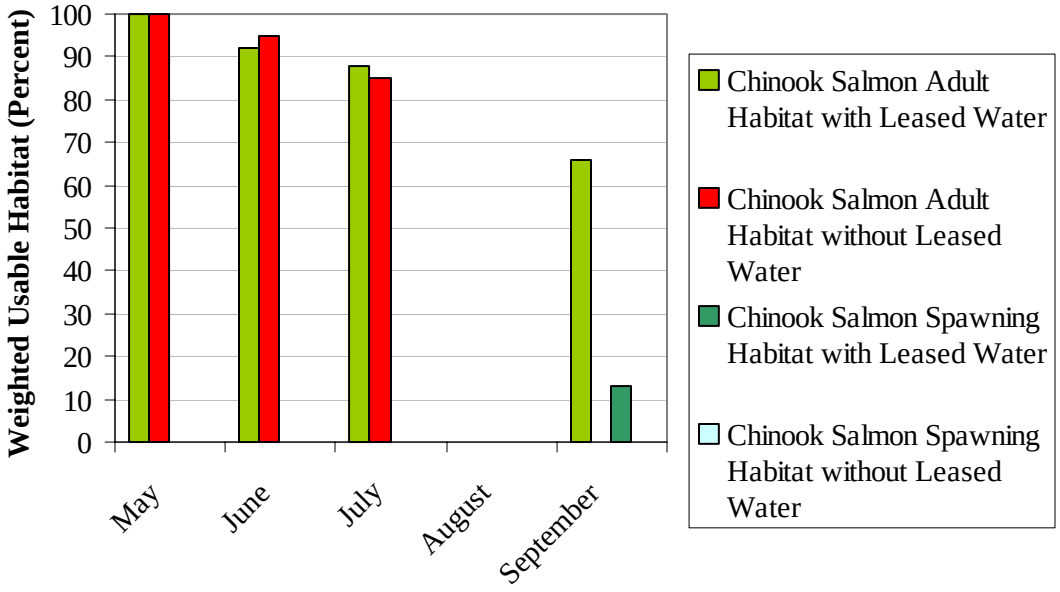


Figure 7. Percent weighted usable habitat for adult and spawning Chinook salmon at mean monthly flows including and excluding the leased 2.9 cfs.

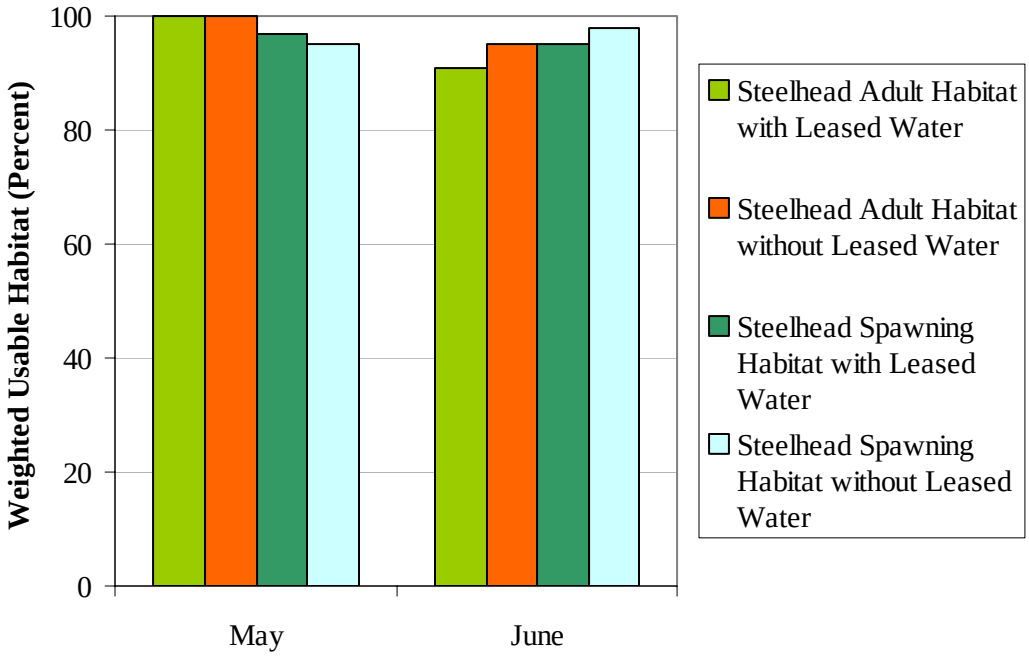


Figure 8. Percent weighted usable habitat for adult and spawning steelhead at mean monthly flows including and excluding the leased 2.9 cfs.

Idaho Department of Fish and Game has been conducting bull trout redd counts in Fourth of July Creek since 2003 (Murphy 2005). They show a marked increase in the total number of redds every year since 2003. In 2003, there were 16 redds, in 2004 there were 33, and in 2005 there were 41 redds observed (Figure 9). This is most likely due to a combination of factors, one of which being the increased flow and connectivity to the Salmon River from IDWR's lease. Other factors include improved diversion structures, fish screens and related IDFG activities.

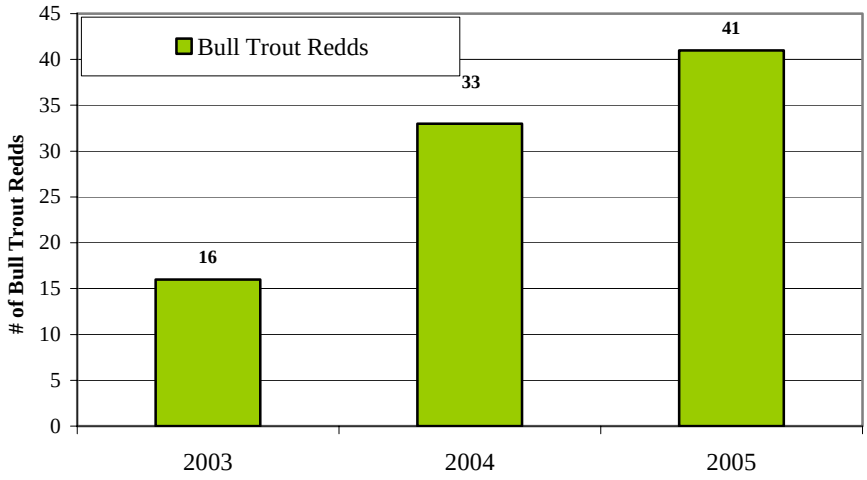


Figure 9. Annual counts of fluvial bull trout redds in Fourth of July Creek (SNRA) from 2003-2005 (Curet/Murphy).

Pole Creek – Stanley Basin

The Pole Creek project is not a traditional lease that dries up irrigated fields. Salmon Falls Sheep Company holds several water rights from Pole Creek. One of these is a hydropower right for 7 cfs that is used to generate power to operate pivots. This diversion, along with irrigation water rights has the ability to drop flows low enough to impede fish migration, raise temperatures, and reduce available fish habitat. In order prevent the reduction of flow below 5 cfs., IDWR and Salmon Falls Sheep Company initiated an agreement not to divert. In exchange for leaving at least 5 cfs of the hydropower right in Pole Creek during the irrigation season, the landowner was paid the operating cost of a generator to run his pivots. In 2006, IDWR hopes to develop a long-term agreement not to divert that will supply the landowner with a generator and the funds for fuel.

Site visits to Pole Creek on July 13, July 25, and August 26 confirmed that the landowner was complying with the terms of the agreement. A gage in Pole Creek monitored flow in the river during the irrigation season (Figure 10). The leased water provided a connection to the Salmon River throughout the entire irrigation season. The simple idea to keep a consistent 5 cfs of water in the stream proved difficult to administer. Flows between July 21 and October 9 fell below 5 cfs, the lowest flow at 3.21 on August 2. With a well-developed rating curve from the newly installed gage, future efforts to maintain 5 cfs in the channel should be easier.

Habitat assessment was conducted on July 27, 2005 in a 245-meter reach below the leased diversions. Riffle habitat made up 18% of the stream, glide-runs were 32%, and scour and lateral pools made up 50% of the habitat. Small shrubs and grasses dominate stream bank vegetation. There were signs of cattle grazing and old beaver activity, which may be contributing to the lack of dense, mature shrubs.

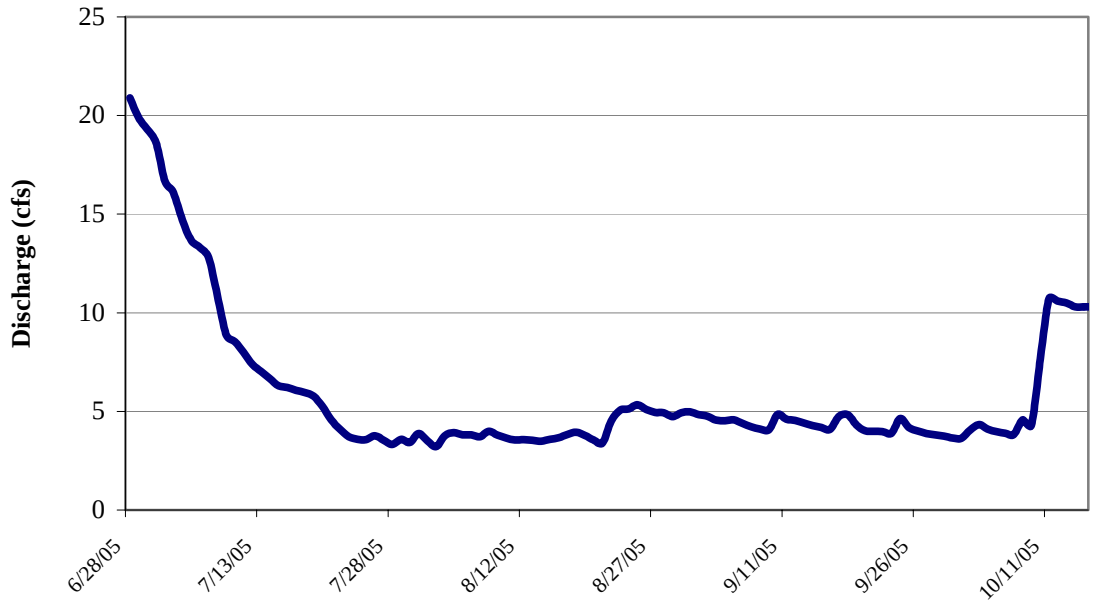


Figure 10. Pole Creek Flow at Highway 93, 2005.

Physical Habitat Simulation (PHABSIM) results from a study on Pole Creek (Maret et al. 2005) were used to develop habitat availability with leased water. Since IDWR was not leasing a particular amount of water, it was not possible to compare the habitat without the leased water. But it is likely that flows without the leased water would have greatly reduced habitat availability in late July through early October. Figures 11-13 represent the percentage of usable area for each species of concern. Juvenile habitat is not included due to limitations of the PHABSIM model.

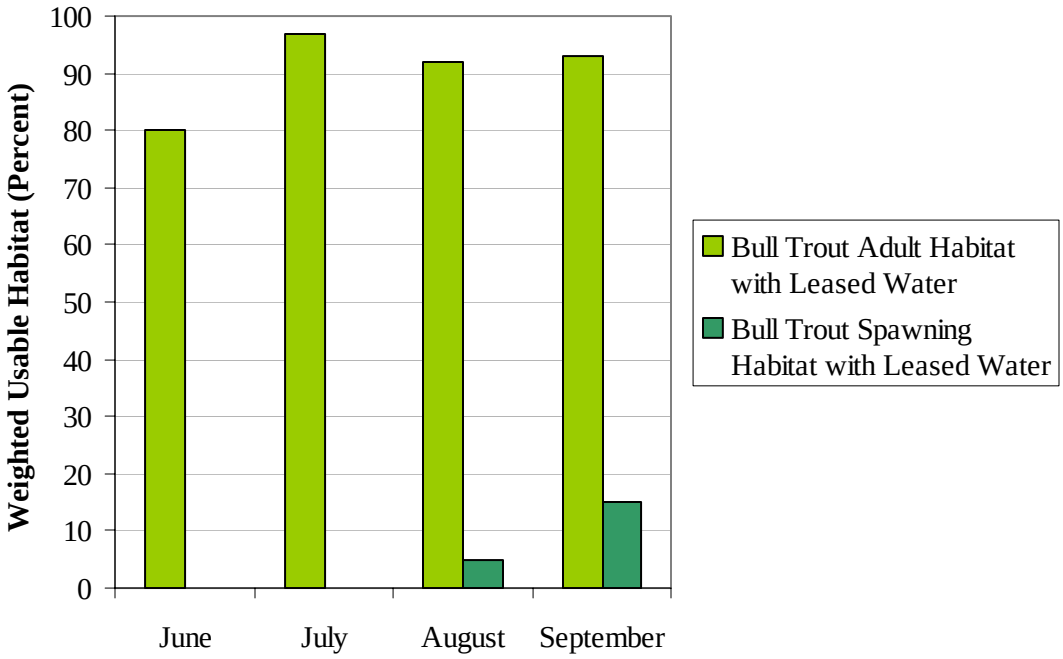


Figure 11. Percent weighted usable habitat for adult and spawning bull trout at mean monthly flows including the leased water.

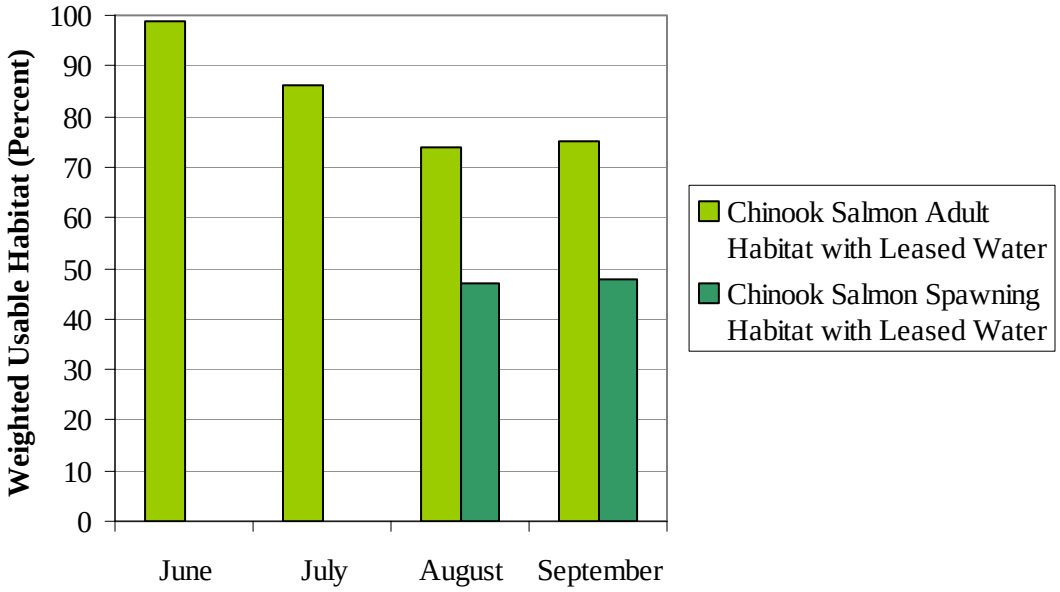


Figure 12. Percent weighted usable habitat for adult and spawning Chinook salmon at mean monthly flows including the leased water.

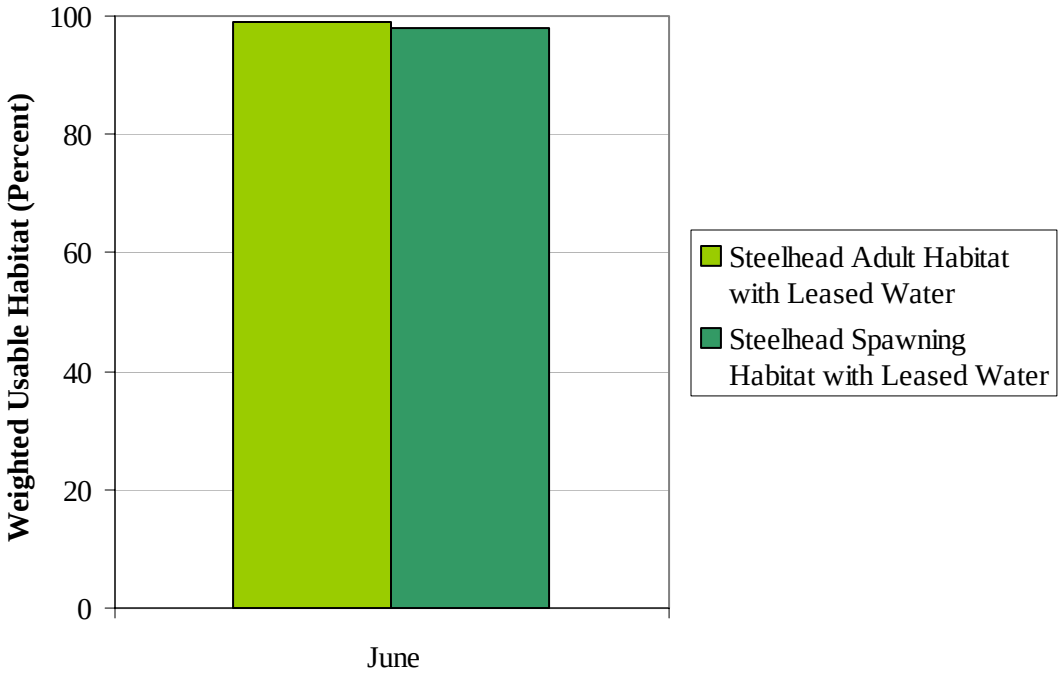


Figure 13. Percent weighted usable habitat for adult and spawning steelhead at mean monthly flows including the leased water.

Big Hat Creek – Mainstem Salmon River basin (Valley Creek-Pahsimeroi River)

This is the second year IDWR has leased 0.5 cfs, formerly irrigating 35 acres, from landowners on Big Hat Creek. The first year the lease was with Fred Crabtree. This year the lease was with new landowners, Erik Storlie and Tamara Kaiser. The water was leased from April 1 to Oct. 31. Approximately 3.4 miles of lower Big Hat Creek was reconnected to Hat Creek. This provided fish access to the upper reaches of Big Hat Creek.

Site visits to Big Hat Creek on August 11 and August 24 confirmed that the landowners were complying with the terms of the lease. Landsat images also show that the leased water was not being used to irrigate land (Appendix A). A gage in Big Hat Creek monitored flow in the river during the irrigation season (Figure 14). The leased water provided a reconnect to Hat Creek throughout the entire irrigation season. If the leased water had been diverted, the stream would have been dewatered from late July through October.

Habitat assessment was conducted on August 24, 2005 in a 51-meter reach below the leased diversions. Riffle habitat made up 71% of the stream, glide-runs were 7%, and scour and dam pools made up the remaining 23% of the habitat. Mature shrubs dominate stream bank vegetation. The vegetation in the monitored reach is very thick and provides shade and bank stability. There has been no PHABSIM modeling of Big Hat Creek. The lease is on an Upper Salmon Basin Model Watershed Project (USBMWP) Screening and Habitat Improvement Prioritization for the Upper Salmon System (SHIPUSS) high priority stream for flow enhancement within an ESU.

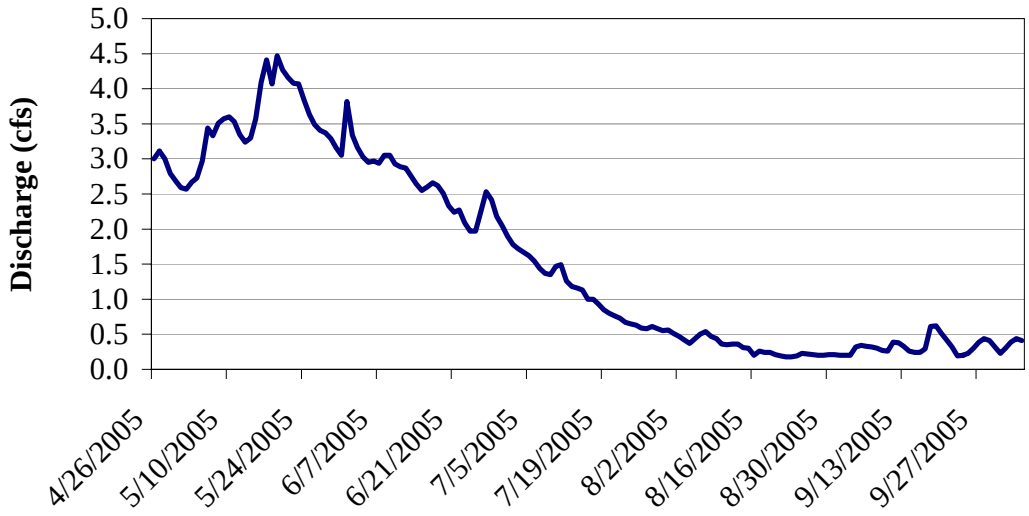


Figure 14. Big Hat Creek Flow 2005.

Kenney Creek – Lemhi River Basin

This is the second year IDWR has leased 3.7 cfs, formerly irrigating 158 acres, from the Kenney Creek Ranch. The water was leased from July 1 to Oct. 31 (partial season lease). Approximately 1.1 miles of lower Kenney Creek was reconnected to the Lemhi River. This provided fish access to the upper reaches of Kenney Creek, as well as additional flow (consumptive use component) delivered through the Lemhi River to the Wild and Scenic River claims at North Fork.

A site visit to Kenney Creek on August 10 confirmed that the landowner was complying with the terms of the lease. Landsat images also show that the leased water was not being used to irrigate land (Appendix A). A gage in Kenney Creek monitored flow in the river during the irrigation season (Figure 15). The leased water provided a reconnect to the Lemhi River throughout most of the irrigation season.

Habitat assessment was conducted on August 10, 2005 in a 200-meter reach below the leased diversions. Riffle habitat made up 47% of the stream, glide-runs were 31%, and scour and plunge pools made up the remaining 22% of the habitat. Mature shrubs dominate stream bank vegetation. The vegetation in the monitored reach is very thick and provides shade and bank stability. There has been no PHABSIM modeling of Kenney Creek. The lease is on an Upper Salmon Basin Model Watershed Project (USBMWP) Screening and Habitat Improvement Prioritization for the Upper Salmon System (SHIPUSS) high priority stream for flow enhancement within an ESU. Jude Trapani, BLM Fisheries Biologist, reported that a snorkel crew observed approximately 50 Chinook salmon smolts while surveying lower Kenney Creek in 2004. The presence of Chinook salmon smolt was again verified in 2005.

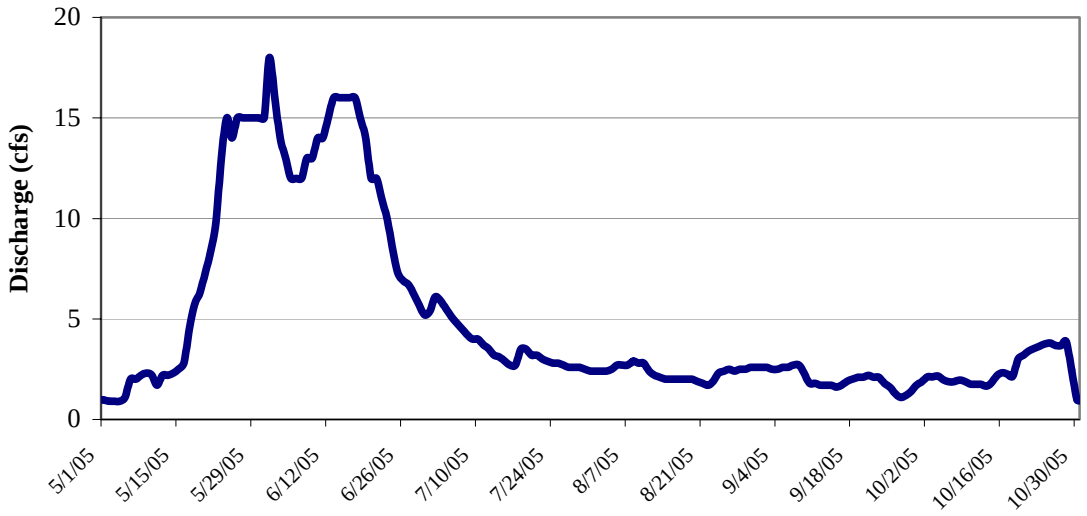


Figure 15. Kenney Creek Flow 2005.

Lemhi River at Baker – Lemhi River Basin

IDWR leased 3.4 cfs, formerly irrigating 112 acres, from Robert Bonuccelli. The water was leased from March 15 to November 11. This water aids in providing connectivity in the Lower Lemhi, as well as additional flow (consumptive use component) delivered through the Lemhi River to the Wild and Scenic River claims at North Fork. The National Marine Fisheries Service requires a minimum flow at the L6 diversion throughout the irrigation season (March 15 to November

A site visit to the Lemhi River on August 10 confirmed that the landowner was complying with the terms of the lease. Landsat images also show that the leased water was not being used to irrigate land (Appendix A).

Lemhi River Early and Late Season - Lemhi River Basin

Early Season - Through agreements not to divert water at the L6 diversion with 7 landowners, in cooperation with Water District 74, water was acquired, as needed, to maintain up to 35 cfs from May 15 through June 30. Water was acquired for 33 days. The transaction is 25% of the Lemhi Conservation Agreement (agreement not to divert among multiple water users) to maintain 35 cfs in the Lemhi River for 80% of the days and 25 cfs for 20% of the days commencing on March 15 and continuing through June 30 for 2005. The water provides passage flows necessary for in-migrating adult spring Chinook salmon and steelhead, and for out migrating salmon and steelhead smolts.

Late Season – IDWR leased 24.5 cfs from 13 landowners holding 20 water rights for 923 acres through the Water District 74 Rental Pool. The water was leased from July 1 through November 15.
The transaction is 25% of the Lemhi Conservation Agreement (agreement not to divert among multiple water users) to maintain 35 cfs in the Lemhi River for 80% of the days and 25 cfs for 20% of the days commencing on March 15 and continuing through June 30 for 2005. The 24.55 cfs provides passage flows for Chinook salmon and steelhead smolts.

Rick Sager, the WD 74 Watermaster, administers both of these projects. He adjusted the flows at L6 to meet the Lemhi Conservation Agreement Flows. NMFS also monitored the real-time flow at USGS Lemhi River gage at L5, to ensure compliance with the Agreement. The USGS should issue final gage data for the USGS Lemhi River gage at L5 in February 2006.

Eighteenmile Creek – Upper Lemhi River Basin

This is the first year IDWR has leased 0.5 cfs, formerly irrigating 26 acres, from the Ellsworth Angus Ranch. The water was leased from March 15 to November 15. This lease eliminates the use of a ditch that crosses Hawley Creek, thus reconnecting Hawley Creek with Eighteen Mile Creek, and the Lemhi River, when sufficient flows are present. IDWR is working towards a long-term lease with the Ellsworth Ranch to ensure that any flow coming down Hawley Creek will provide a reconnect for Chinook salmon, rainbow trout, and bull trout.

A site visits to Eighteenmile Creek on August 9 confirmed that the landowner was complying with the terms of the lease. Landsat images also show that the leased water was not being used to irrigate land (Appendix A). Eighteenmile Creek had water flowing past the confluence with Hawley Creek for almost the entire irrigation season, creating an instream flow to at least the confluence with Canyon Creek downstream of Leadore for the first summer in decades (Trapani 2005). The flow was measured at 0.8 cfs on August 9, 2005. Fisheries biologists with the Bureau of Land Management performed a fish survey in Eighteenmile Creek on November 5, 2006 to determine whether or not Chinook salmon, rainbow trout, or bull trout had moved up into the tributary after the reconnect. They found Eastern brook trout and sculpin, mostly in the area four miles upstream from Leadore (Trapani 2005). Hopes are that with continued reconnection with the Lemhi River, the threatened and endangered fish species will re-colonize Eighteenmile and Hawley Creeks.

References

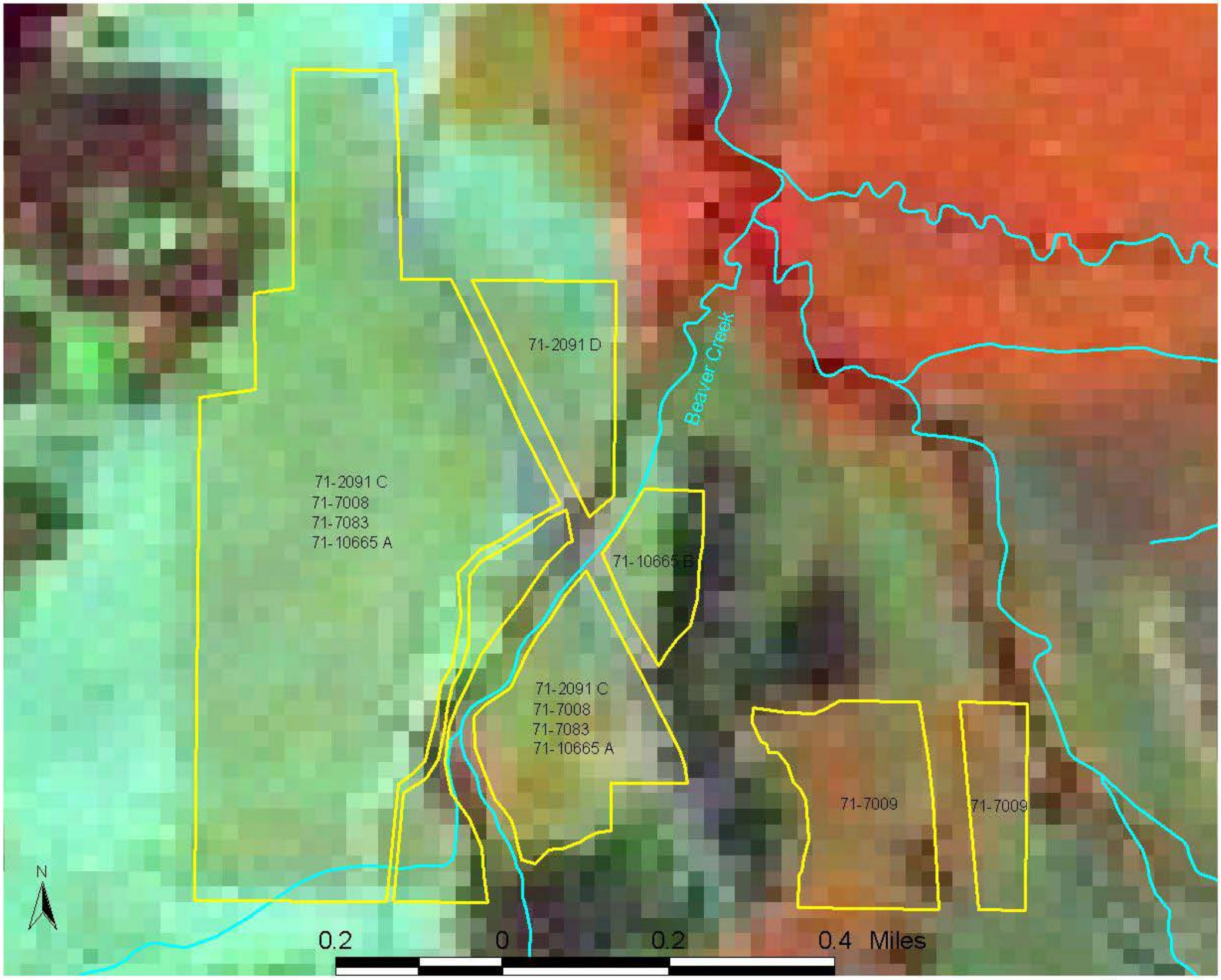
Maret, T.R., Hortness, J.E., and Ott, D.S. 2005. Instream flow characterization of Upper Salmon River Basin streams, central Idaho, 2004. USGS. Scientific Investigation Report 2005-5212.

Maret, T.R., Hortness, J.E., and Ott, D.S. 2003. Instream flow characterization of Upper Salmon River Basin streams, central Idaho, 2003. USGS. Scientific Investigation Report 2004-5173.

Murphy, P. 2005. Fisheries Biologist. Idaho Fish and Game Screen Shop. Personal communication.

Trapani, J. 2005. Fisheries Biologist. Bureau of Land Management. Personal communication.

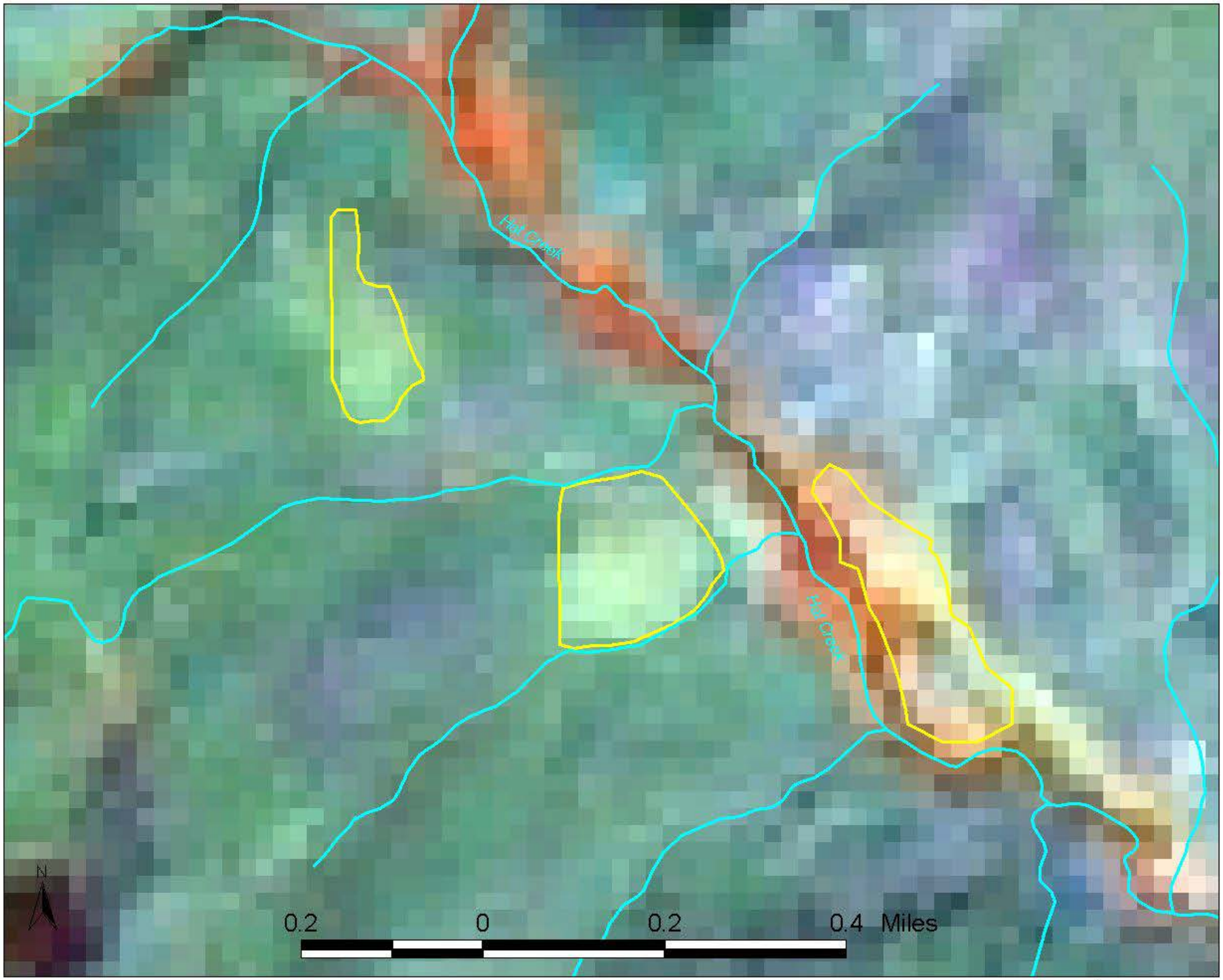
Appendix A
Landsat Images



Beaver Creek - Justus
Landsat July 3, 2005

Justus Place of Use
Streams

Prepared by: Morgan Case
November 21, 2005

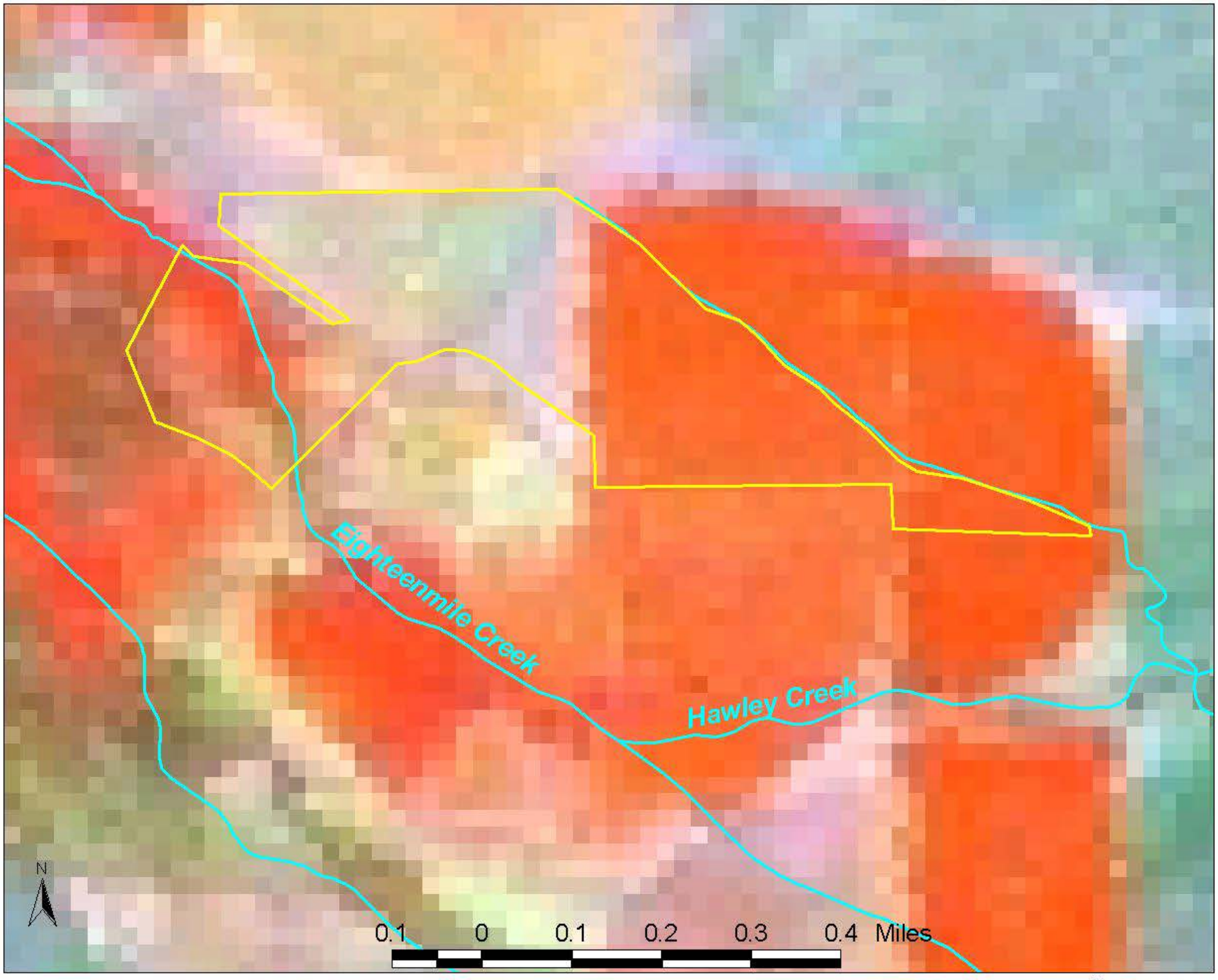


Big Hat Creek - Storely
Landsat August 20, 2005

Storely Place of Use
Streams

IDWR

Prepared by: Morgan Case
November 21, 2005

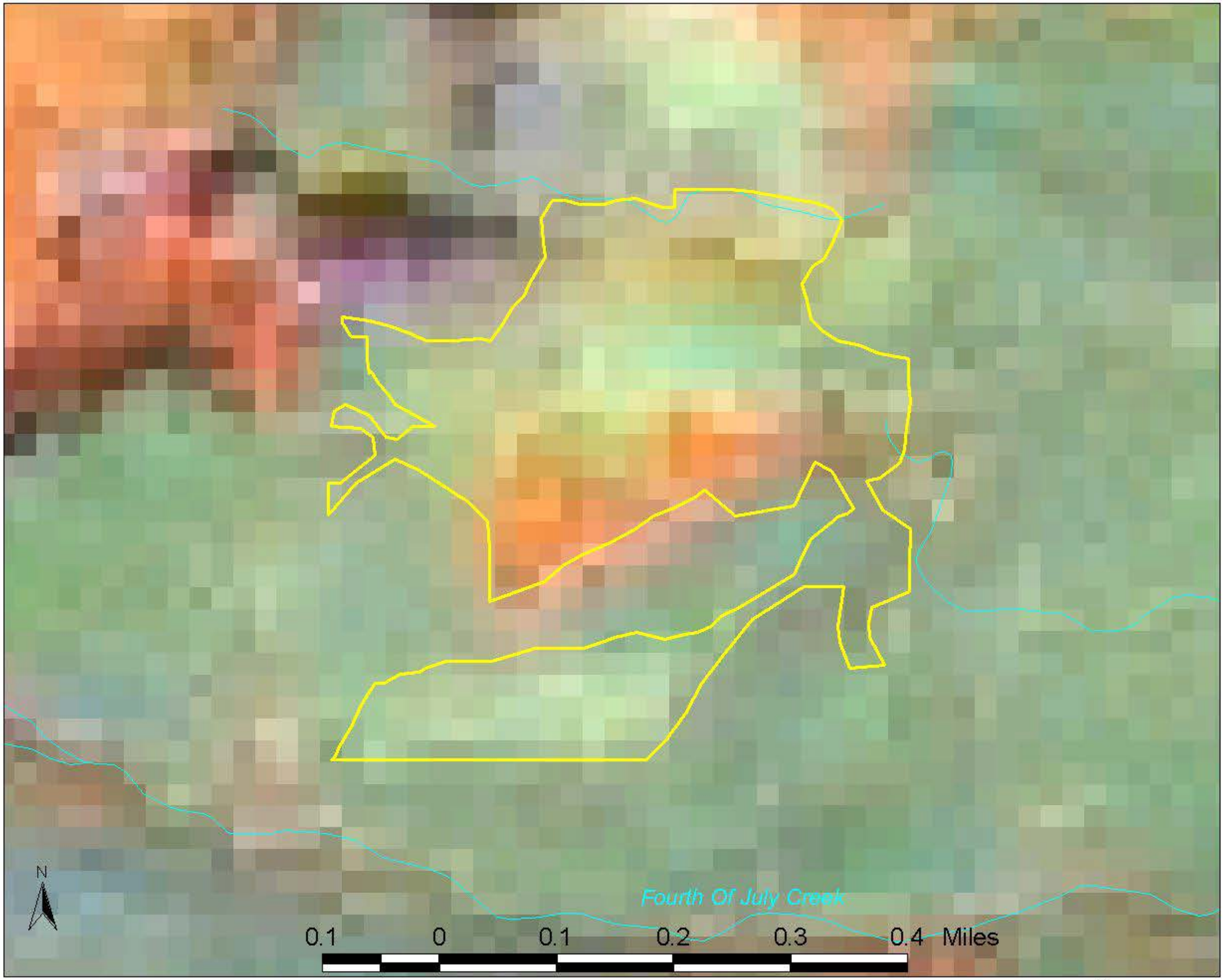


Eighteenmile Creek - Ellsworth
Landsat August 20, 2005

Ellsworth Place of Use
Streams

IDWR

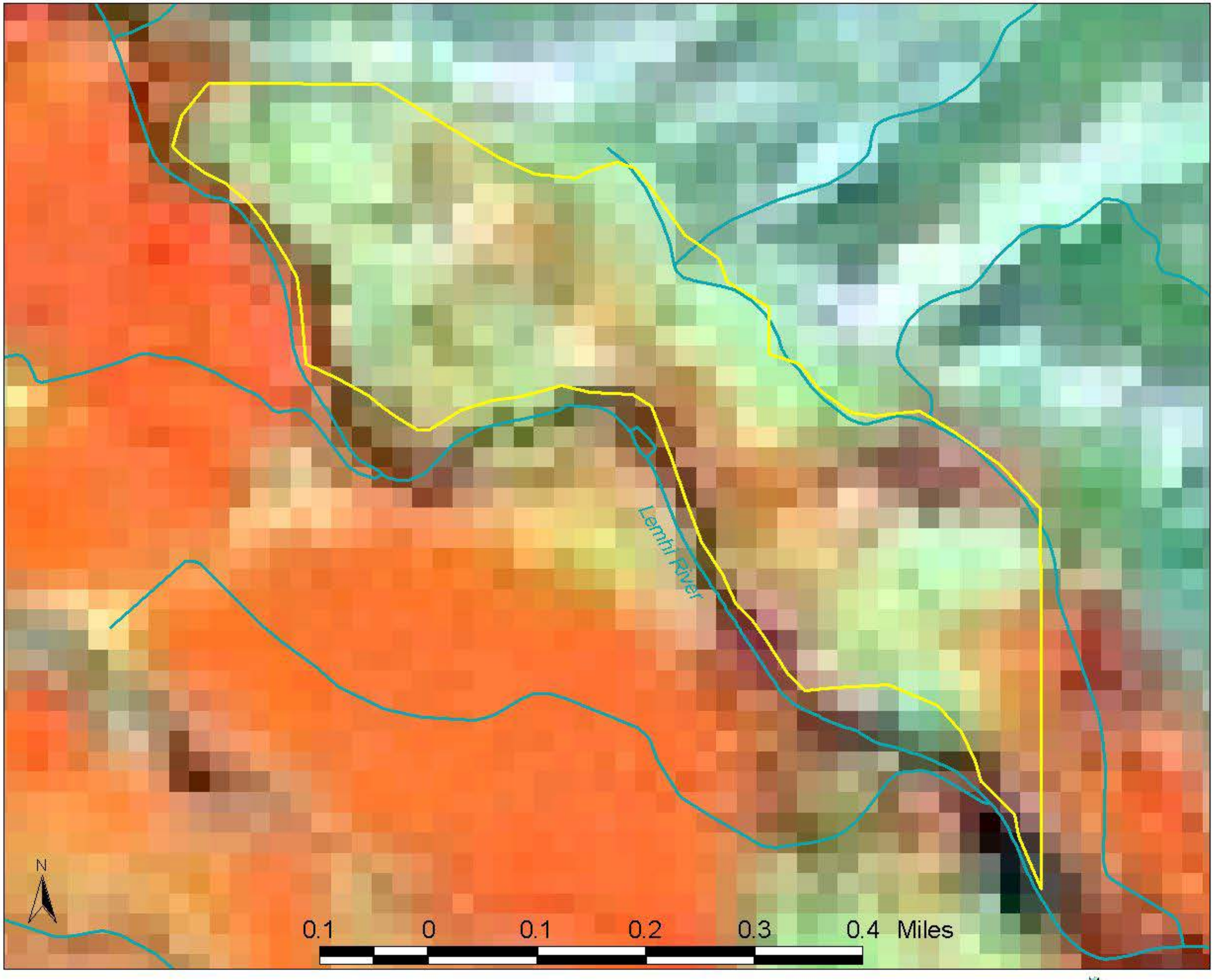
Prepared by: Morgan Case
November 21, 2005



Fourth of July Creek - Vanderbilt
Landsat August 20, 2005

Vanderbilt Place of Use
Streams

Prepared by: Morgan Case
November 21, 2005



Lemhi River - Bonuccelli
Landsat August 4, 2005

Bonuccelli Place of Use
Streams

Prepared by: Morgan Case
January 10, 2006