

**Coeur d'Alene Lake Tributaries Temperature TMDL**

**Agricultural Addendum Plan**

**HUC 17010303**



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**In Cooperation with Kootenai-Shoshone Soil and Water Conservation District**

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(Cover Photo: 4<sup>th</sup> of July Creek; October 16, 2013)

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# **Coeur d'Alene Lake Tributaries Temperature TMDL Agricultural Addendum Plan**

## **Introduction**

After review of the 2012 EPA approved Coeur d'Alene Lake Tributaries Temperature TMDL Addendum, this researcher could not find actual temperature load allocations or reductions for agriculture, or any of the Designated Management Agencies (DMAs). Some guidance to DMA's was found under the heading Implementation Strategies. DEQ stated that DMAs, WAGs, local organizations, and other public participants are expected to implement TMDL's and do the following:

- Develop BMP's to achieve load allocations.
- Give reasonable assurance that management actions will meet load allocations through both quantitative and qualitative analysis of management measures.
- Adhere to measurable milestones for progress.
- Develop a timeline for implementation, including cost and funding.
- Develop a monitoring plan to determine if BMP's are being implemented, if individual BMP's are effective, and if load allocations are being met.

The addendum's guidance continues with "The responsible DMA will recommend specific control actions then submit the implementation plan to DEQ. DEQ will act as a repository for the implementation plan and conduct 5-year reviews of progress toward TMDL goals". Under the heading Responsible Parties, the Idaho Soil and Water Conservation Commission is listed as the DMA for grazing and agricultural activities (IDEQ 2012).

The mission of the Idaho Soil and Water Conservation Commission (ISWCC) is to facilitate coordinated non-regulatory, voluntary, and locally-led conservation by federal, state, and local government including Idaho's conservation districts and other partners to conserve, sustain, improve, and enhance soil, water, air, plant and animal resources (ISWCC, 2013). The ISWCC works with the Kootenai-Shoshone Soil and Water Conservation District (KSSWCD), the Idaho Association of Soil Conservation Districts (IASCD), and the Natural Resources Conservation Service (NRCS) in a conservation partnership to reach common goals and successfully deliver conservation programs in Kootenai County. The KSSWCD's 5-year plan identifies water quality as one of their top priorities for Kootenai County.

The purpose of this agricultural plan is to document observed agricultural uses and make recommendations that would improve the physical, chemical, and biological functions of the tributaries to Coeur d'Alene Lake. This plan addresses temperature concerns from agricultural land use adjacent to the following TMDL waterbodies: Blue Lake Creek, Carlin Creek, Cougar Creek, Fernan Creek, 4th of July Creek and tributaries, Latour Creek, Mica Creek, Rose Creek,

Killarney Lake tributaries, and Wolf Lodge Creek and tributaries. No active agricultural use was observed in Beauty Creek and Cedar Creek.

## **Background for Coeur d'Alene Lake Sub-basin**

The following is an attempt to summarize all TMDL documents for the Coeur d'Alene Lake Sub-basin since 1999.

- **Coeur d'Alene Lake and River SBA (Sub-basin Assessment) and Proposed TMDLs (December 1999)**

Water Bodies and Pollutants for Which TMDLs Were Developed: Cougar, Kidd, Latour (Baldy and Larch), and Wolf Lodge (Cedar and Marie) Creeks- Sediment; Mica Creek- Sediment and Bacteria.

EPA approved this document in July 2000.

TMDL Implementation plan was completed in 2002 which included an agricultural plan.

- **Black Lake Watershed Assessment and TMDL (March, 2011)**

Water Bodies and Pollutants for Which TMDLs Were Developed: Black Lake- Total Phosphorus.

EPA approved this document in August 2011.

Black Lake Watershed TMDL Agricultural Implementation Plan was completed in March 2014.

- **Coeur d'Alene Lake Tributaries Temperature TMDL Addendum (February 2012)**

This Addendum identifies the following watersheds as having temperature-related impairment: Beauty Creek, Blue Lake Creek, Carlin Creek, Cedar Creek, Cougar Creek, Fernan Creek, Fourth of July Creek, Latour Creek, Marie Creek, Mica Creek, Rose Creek, Killarney Lake tributaries, Wolf Lodge Creek.

EPA approved this document in November 2012.

This TMDL agricultural plan addresses the above sub-watersheds for temperature.

- **Coeur d'Alene Lake and River SBA and TMDL: Fernan Lake Addendum (October 2013)**

Water Bodies and Pollutants for Which TMDLs Were Developed: Fernan Lake-Total Phosphorus.

EPA approved this document in November 2013.

Agricultural impacts to Fernan Lake are insignificant, and thus no agricultural plan will be written.

## **Accomplishments**

The conservation partnership has been active in soil and water conservation activities and public education efforts in Kootenai County since the formation of the Kootenai-Shoshone Soil

and Water Conservation District in 1941. The partnership has developed individual conservation plans for local agricultural producers and has pursued funding sources to assist in implementing BMPs. The partnership has restored riparian areas, stabilized stream banks, improved forest health and water quality, and improved livestock management. The partnership also coordinates with other agencies and individuals in educational activities for youth, and makes educational materials available to the public.

Funding sources utilized by the conservation partnership in Kootenai County have included programs such as Environmental Quality Incentives Program (EQIP); Wildlife Habitat Incentive Program (WHIP); Conservation Reserve Program (CRP); Conservation Technical Assistance (CTA); Clean Water Act Section 319 Program; and Coeur d’Alene Lake Management Plan. Accomplishments on agricultural land in the Coeur d’Alene Lake Sub-basin occurring in the last 4 years (2011 – 2015) are summarized in Table 1 (Hoxie, A. 2015):

**Table 1. Completed Agricultural BMPs in the Coeur d’Alene Lake Sub-basin**

BMP	Amount	Units	Project/Program	Sub-watershed
Forest Stand Improvement / Woody Residue Treatment	91	Acres	EQIP (2013-2014)	Latour Creek
Tree/ Shrub Establishment	26	Acres	EQIP (2014)	Latour Creek
Tree/ Shrub Pruning	53	Acres	EQIP (2013-2014)	Latour Creek
Streambank Protection (Rock and Vegetation)	475	Feet	WHIP (2014)	Killarney Lake
Riparian Forest Buffer	0.6	Acres	WHIP (2015)	Killarney Lake
Cover Crop	1	Acres	EQIP (2014)	Killarney Lake
Integrated Pest Mgt.	5	Acres	EQIP (2014)	Killarney Lake
Seasonal High Tunnel	2170	Sq Ft	EQIP (2014)	Killarney Lake
Streambank Protection (Rock and Vegetation)	400	Feet	EQIP (2011)	4th of July Creek
Forest Stand Improvement / Woody Residue Treatment	51	Acres	EQIP (2013)	Wolf Lodge Creek

**Table 1. Continued**

BMP	Amount	Units	Project/Program	Sub-watershed
Streambank Protection (Rock and Vegetation)	370	Feet	WHIP (2013)	Fernan Creek
Streambank Protection (Rock and Vegetation)	480	Feet	EQIP (2014)	Fernan Creek
Tree/ Shrub Site Prep.	16	Acres	EQIP (2012-2013)	Fernan Lake
Tree/ Shrub Establishment	8	Acres	EQIP (2012-2013)	Fernan Lake
Conservation Cover	26	Acres	CRP (2013-2023)	Fernan Lake
Fuel Break	2.5	Acres	EQIP (2014-2015)	Cougar Creek
Tree/ Shrub Establishment	60	Acres	EQIP (2012)	Mica Creek
Riparian Fence	737	Feet	EQIP (2013-2014)	Mica Creek
Streambank Protection (Rock and Vegetation)	873	Feet	EQIP (2012-2014)	Mica Creek
Nutrient Mgt.	101	Acres	CTA (2014)	Mica Creek
Streambank Protection (Rock and Vegetation)	454	Feet	EQIP (2013)	CdA River
Streambank Protection (Rock and Vegetation)	1325	Feet	WHIP (2014)	CdA River
Streambank Protection (Rock and Vegetation)	300	Feet	EQIP (2011)	CdA River
Streambank Protection (Rock and Vegetation)	4000	Feet	KSSWCD/319/Avista (2012-2013)	CdA River
Streambank Protection (Rock barbs, Toe Rock, Vegetation on 3 sites)	550	Feet	KSSWCD/319/LMP (2014-2015)	Wolf Lodge Creek
Streambank Protection (Rock and Vegetation)	1000	Feet	KSSWCD/319 (2010-2013)	Mica Creek

**Table 1. Continued**

BMP	Amount	Units	Project/Program	Sub-watershed
Streambank Protection (Rock and Vegetation)	250	Feet	KSSWCD/319 (2014)	Mica Creek

### **Agricultural Water Quality Inventory and Evaluation**

This watershed assessment discusses the potential for agricultural temperature impacts to Blue Lake Creek, Carlin Creek, Cougar Creek, Fernan Creek, 4th of July Creek and tributaries, Latour Creek, Mica Creek, Rose Creek, Killarney Lake tributaries, and Wolf Lodge Creek and tributaries.

In order to assess agricultural impacts to surface water on TMDL listed streams, the first step is to inventory private agricultural land use that exists within the Coeur d’Alene Lake Sub-basin tributaries. This researcher felt it was important to attempt to inventory the entire sub-watersheds for agricultural use as a service to KSSWCD and DEQ, and also to fill potential agricultural data gaps that may occur in the TMDL and watershed assessment. For this plan, agricultural land use was inventoried visually in the field, starting in 2013 and updating through the summer of 2015 (Hogen, M. 2015). The main remaining agricultural uses found within the Coeur d’Alene Lake Sub-basin are hay land, pasture land, and hayed pasture land. Hay lands within the sub-basin TMDL tributaries total 664 acres, and are typically in good to excellent condition and lie on relatively flat slopes. In general, highly productive hay fields are fertilized, but at rates typically below recommended due to economic constraints. In general, the perennial reaches of the TMDL tributaries with adjacent hay lands are fairly well vegetated and buffered from agricultural use. 875 acres of pasture land was inventoried within the sub-basin. Agricultural land that is first hayed and then late grazed was also inventoried. 1,011 acres of hayed pasture was documented. Domesticated livestock observed on these pasture/hayed pasture areas included cattle, horses, elk, bison, and goats/llamas. Approximately 773 head of livestock (421 cows, 225 horses, 82 elk, 8 bison, and 37 goats/ llamas) were observed within the sub-basin. Part of the agricultural inventory included documenting livestock access to the riparian areas of the TMDL tributaries.

- **Wolf Lodge Creek and Tributaries**

The headwater of Wolf Lodge Creek originates from Treasure, Huckleberry and Wolf Lodge Mountains at an elevation of 5000’. Most of the upper sub-watershed is owned by the United States Forest Service (USFS). The lower 6 miles of Wolf Lodge Creek flows through private land and eventually empties into Wolf Lodge Bay of Lake Coeur d’Alene. Significant private land tributaries include Rutherford Gulch (2.5 miles private land), Alder/ Marie Creeks (1.5 miles private land each), and Cedar/ Stella Creeks (0.75 and 0.5 miles private land respectively). Historically, the Wolf Lodge Creek hydrologic system has been known to generate and carry large sediment. Severe flooding was last seen in the mid to later 90’s, with considerable



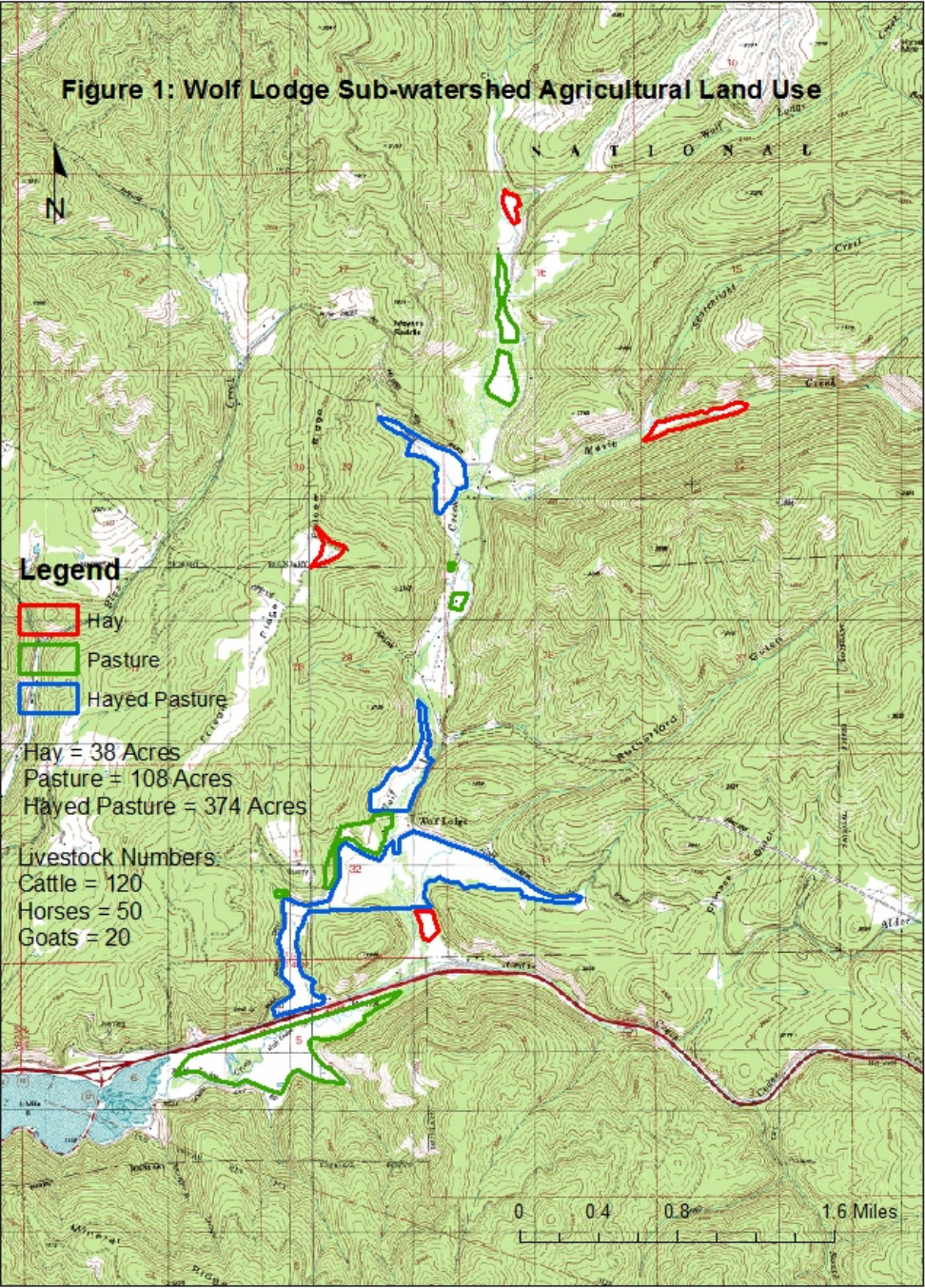
emergency remediation required (NRCS EWP Program). In early February, 2015, a large plume was documented in Wolf Lodge Bay from unknown sources.

An agricultural land use inventory was completed within Wolf Lodge Creek sub-watershed private lands and the following was observed: pasture land= 74 acres, hayed pasture= 374 acres. The agricultural land use inventory conducted for Wolf Lodge Creek and tributaries has been summarized on Figure 1. Livestock numbers were estimated at 120 cows, 50 horses and 20 goats on pastures within the Wolf Lodge Creek sub-watershed. Direct livestock access to Wolf Lodge Creek and Rutherford Gulch tributary was observed. Riparian fencing and vegetative plantings would be beneficial to water quality at these access areas.

Agricultural land use was not significant within Alder Creek and Cedar Creek. Thus, this agricultural plan does not address these two creeks.

One historic ranch does exist on Marie Creek. Marie Creek has had a major stream shift and stream work has been attempted by the ranch landowner to stabilize the reach to address the coarse sediment issues and loss of streamside vegetation (Fortier, D. 2015). The KSSWCD completed a successful bank erosion project with a private landowner near the mouth of Marie Creek.

NRCS's Stream Visual Assessment Protocol (SVAP), NRCS's Streambank Erosion Condition Inventory (SECI), and DEQ's Pathfinder Protocol for ground truthing actual % shade was conducted on four agricultural reaches of Wolf Lodge Creek. The total length of Wolf Lodge Creek inventoried was 6,700 feet. The field analysis was conducted by ISWCC staff in mid-October 2013. The leaves were just starting to drop, but still fairly well intact for % shade determination. On one reach, actual % shade exceeded DEQ's target shade by 1%. The other three reaches were found to be at most, 7% lower than DEQ's target shade. SVAP ratings for the four reaches turned out to be: 2,300' excellent, 3,700' good, and 700' fair. The fair rating proved to be where livestock were directly accessing Wolf Lodge Creek. Two of the four reaches had a moderate SECI which indicates bank erosion, bank instability, and lack of bank cover and/or vegetation. See Appendix A and B for more detail.



- **4<sup>th</sup> of July Creek and Tributaries**

The headwaters of 4<sup>th</sup> of July Creek are located under 4<sup>th</sup> of July Summit at an elevation of about 3100'. Numerous forested small tributaries feed into 4<sup>th</sup> of July Creek in the upper sub-watershed. The creek quickly positions itself adjacent to Interstate 90 where it flows southeast down the canyon for about 5 miles. The creek is certainly encroached upon by the highway and is subjected to road spoil issues. For more information on this issue, see the addendum entitled "A Preliminary Evaluation of Road Deicing Chemical Concentrations in North Idaho Streams Adjacent to Interstate 90 That Drain Fourth of July Pass" (IDEQ 2012). 4<sup>th</sup> of July Creek leaves Interstate 90 near Rose Lake exit, and travels south through existing and historic agricultural land for about 2.5 miles and empties into the Coeur d'Alene River. At the mouth is a pumping station which facilitates removal of excess water to the Coeur d'Alene River.

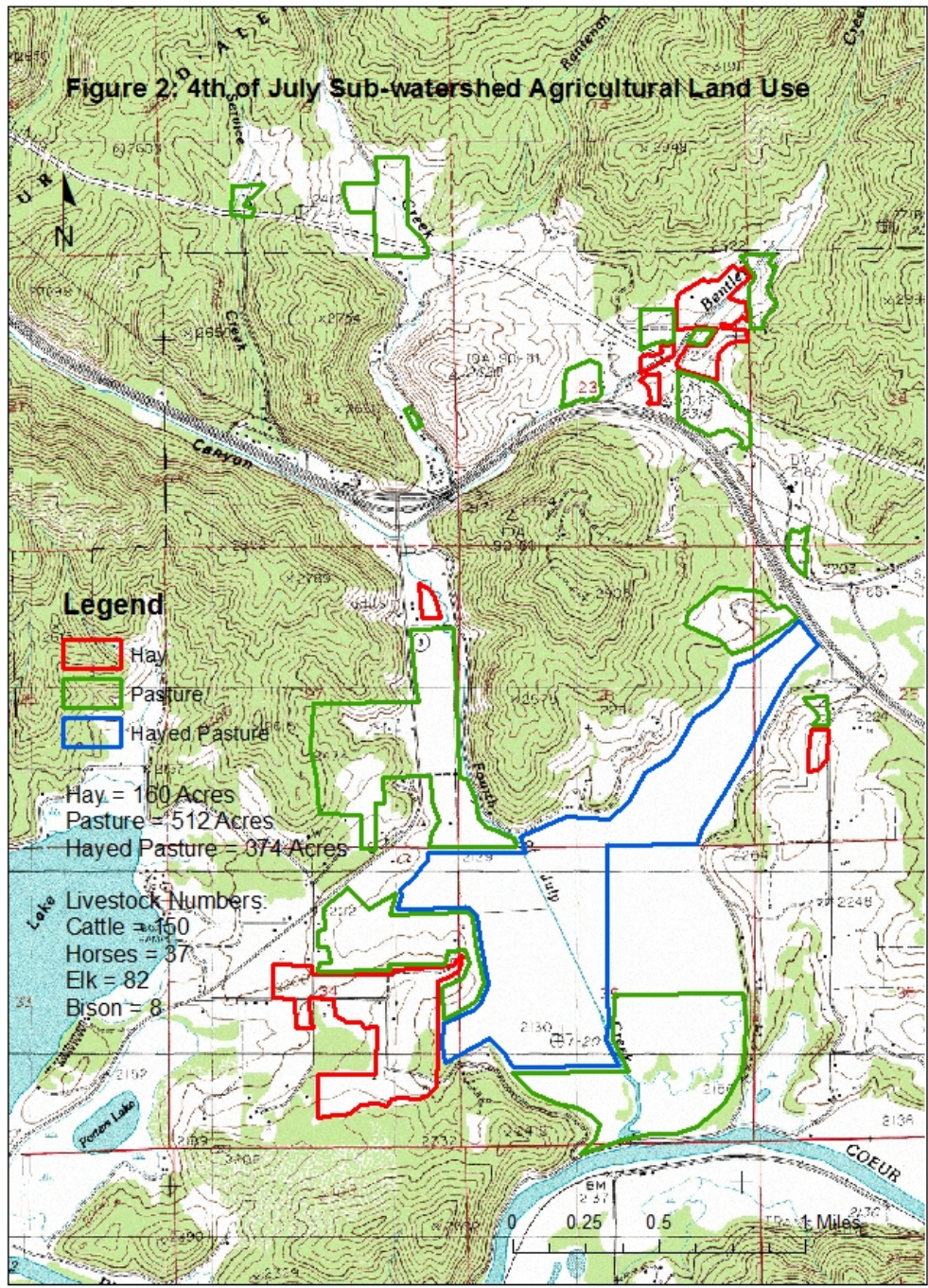
Significant private land tributaries include Bentley Creek/ Fern Creek (2 miles of private land each), and Service Creek (1.5 miles private land). Agricultural use was observed in these three tributaries. The headwaters of Bentley Creek originate from Wall Peak at an elevation of 4100'. The upper 1.5 miles of Bentley Creek flows through USFS land. The next 1.25 miles flows through private land which contains some agriculture mainly on a ranchette scale. The final 0.75 miles travels adjacent to Canyon Road then crosses under Interstate 90 and empties into 4<sup>th</sup> of July Creek. Bentley Creek is intermittent in flow and dries up fairly early after spring runoff. Agricultural land use was inventoried within private land mainly along Bentley Creek Road. This reach of Bentley Creek is encroached upon by Bentley Creek Road on the right bank and hay land in spots on the left bank. Bank erosion was observed by both road and hay land encroachment. Fern Creek flows south from its headwaters (4200' elevation) about 4 miles and empties into 4<sup>th</sup> of July Creek at interstate 90. The upper half of Fern Creek is USFS and the lower half is private land. The agricultural land observed within Fern Creek is mainly ranchettes with horses. Service Creek is a small sub-watershed that flows south from its headwaters about 2 miles and empties into 4<sup>th</sup> of July Creek at interstate 90. Agricultural lands are minimal with some horses on pasture. In addition to 4<sup>th</sup> of July Creek, this agricultural plan does address Bentley, Fern, and Service Creeks.

An agricultural land use inventory was completed within 4<sup>th</sup> of July Creek sub-watershed private lands and the following was observed: hay land = 160 acres, pasture land= 512 acres, hayed pasture= 374 acres. The agricultural land use inventory conducted for 4<sup>th</sup> of July Creek and tributaries has been summarized on Figure 2. Livestock numbers were estimated at 150 cows, 37 horses, 82 elk, and 8 bison on pastures within the 4<sup>th</sup> of July Creek sub-watershed. Direct livestock access to 4<sup>th</sup> of July Creek and Service Creek tributary was observed. Riparian fencing and vegetative plantings would be beneficial to water quality at these access areas.

NRCS's Stream Visual Assessment Protocol (SVAP), NRCS's Streambank Erosion Condition Inventory (SECI), and DEQ's Pathfinder Protocol for ground truthing actual % shade was conducted on three agricultural reaches of 4<sup>th</sup> of July Creek, and one reach of Bentley Creek. % shade on one additional reach on 4<sup>th</sup> of July Creek and Service Creek was estimated. The total length inventoried on 4<sup>th</sup> of July Creek and its tributaries was 7,825 feet. The field analysis was conducted by ISWCC staff in mid-October 2013. The leaves were just starting to drop, but still

fairly well intact for % shade determination. The three ISWCC current shade ground truthed reaches of 4<sup>th</sup> of July Creek, all exceeded DEQ's existing and target shade analysis. 10% shade was estimated on one additional 400' reach of 4<sup>th</sup> of July Creek. Livestock are allowed to water and wallow in this area and thus very little vegetation exists for shading and protecting the banks from erosion. DEQ's target shade for this reach is 52%. 400' of livestock exclusion and riparian plantings would greatly improve the water quality within this reach. DEQ's target shade for Bentley Creek is 90+%. This target is extremely optimistic in the surveyed reach where Bentley Creek Road encroaches upon the creek. ISWCC current shade for this stretch of Bentley Creek did significantly exceed DEQ's existing shade but fell way short of their target shade value. 40% shade was estimated on a 675' reach of Service Creek, which proved to be about 30% better than DEQ's existing shade analysis. DEQ's target shade for this reach is 90% which would require livestock exclusion and riparian plantings. SVAP ratings for the six reaches turned out to be: 4,350' good, 3,075' fair and 400' poor. The poor rating proved to be where livestock were directly accessing 4<sup>th</sup> of July Creek. The fair ratings on 4<sup>th</sup> of July, Bentley, and Service Creek were mainly due to road encroachment, historic stream channelization, or direct livestock access areas. One reach of 4<sup>th</sup> of July Creek had a severe SECI which indicates bank failure and significant sediment delivery to the creek. The Bentley and Service Creek reaches had a moderate SECI which indicates bank erosion, bank instability, and lack of bank cover and/or vegetation. See Appendix A and B for more detail.



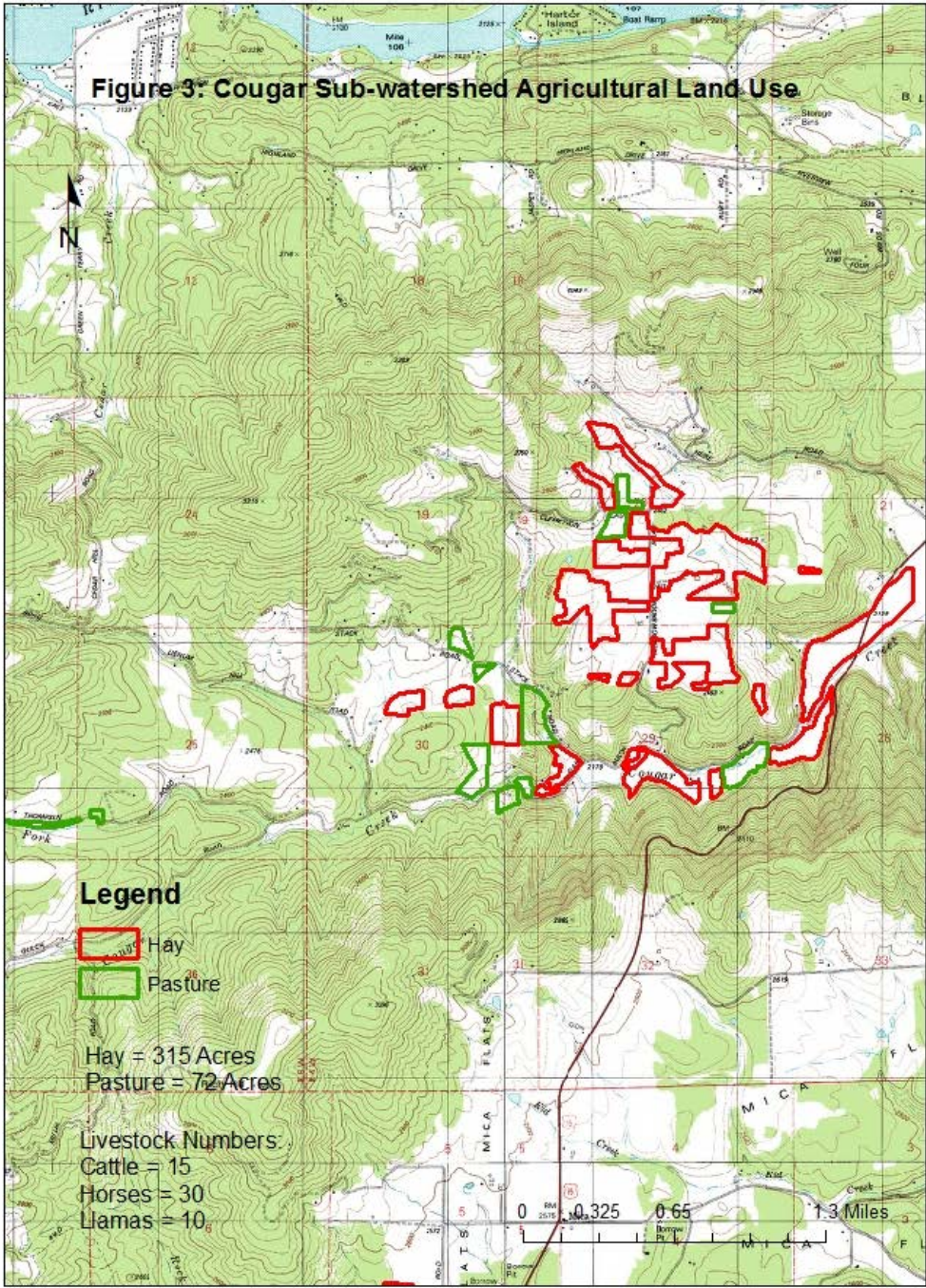


- **Cougar Creek**

The headwaters of Cougar Creek originate from Mica Peak at an elevation of about 4,600'. Cougar Creek flows for approximately 6 miles through forested land before any agricultural land use was observed. The ownership of this first 6 miles is predominately Stimson Lumber, Idaho Department of Lands, University of Idaho, private forestry and private homesteads. The lower two miles of Cougar Creek meanders along West Cougar Gulch Road and adjacent hay land and eventually crosses Highway 95 and empties into Cougar Bay of Lake Coeur d'Alene. The wetlands at the mouth that extend into the lake, are part of a conservation easement managed by The Nature Conservancy. In general, Cougar Creek remains well shaded and sediment delivery from bank erosion is minimal. Historically, an agricultural stretch of Cougar Creek was periodically dredged just above Highway 95 to facilitate drainage. This manipulation to the creek has not taken place for 20+ years.

An agricultural land use inventory was completed within Cougar Creek sub-watershed private lands and the following was observed: hay land = 315 acres, pasture land= 72 acres. The agricultural land use inventory conducted for Cougar Creek has been summarized on Figure 3. Livestock numbers were estimated at 15 cows, 30 horses, and 10 llamas on pastures within the Cougar Creek sub-watershed. Minimal direct livestock access to Cougar Creek was observed. According to DEQ's shade analysis, Cougar Creek has a shade deficit of 2-15% on the lower agricultural reach. Increasing the riparian buffer on roughly 2500' of adjacent hay land to Cougar Creek, could eventually increase shading and approach DEQ's recommended target. The overall agricultural impact to Cougar Creek is very slight. Due to the fact that the shade deficient is so small and the agricultural impact is minimal, this author would support the delisting of Cougar Creek from the next published Integrated Report for sediment and temperature.





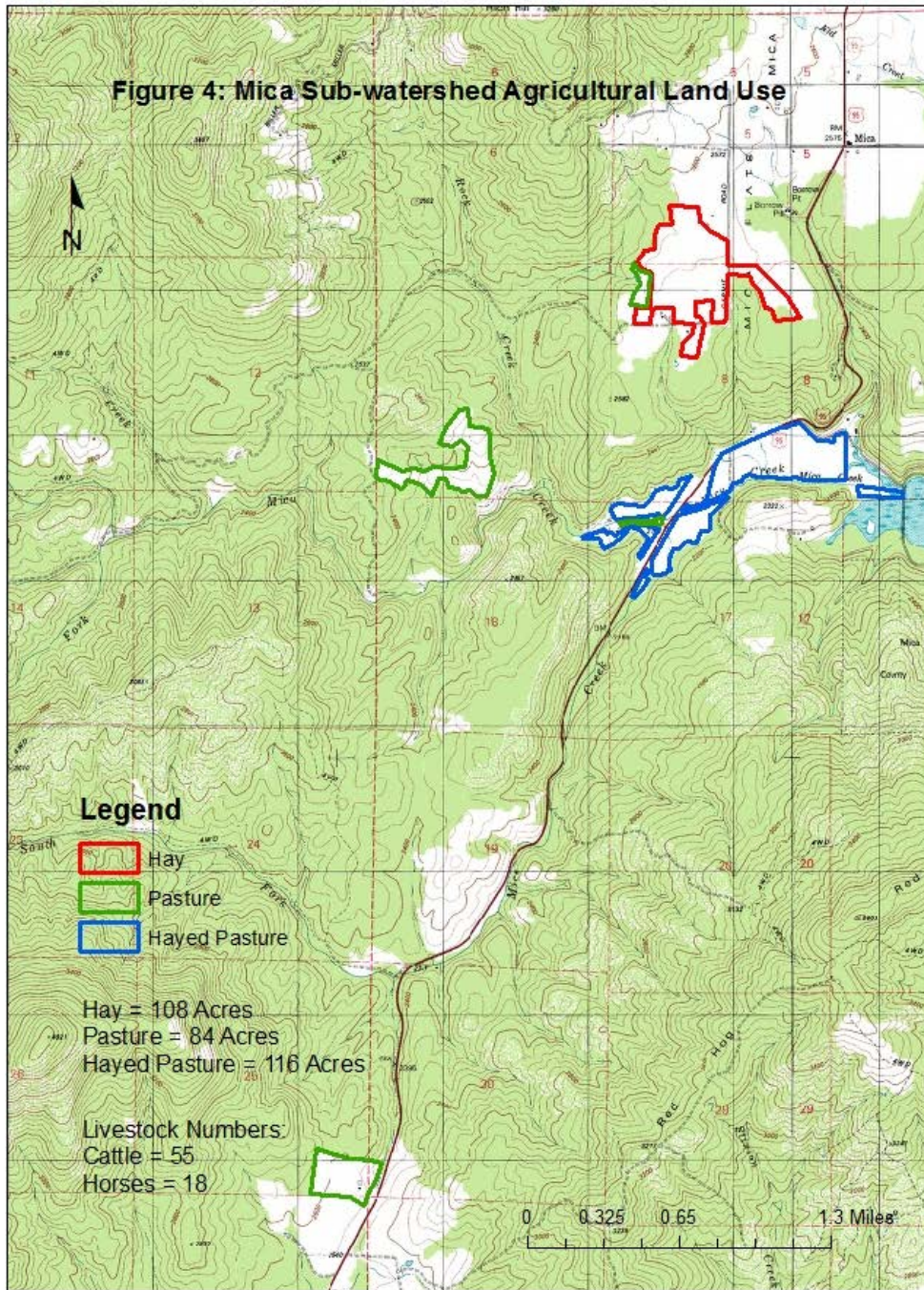
- **Mica Creek**

Mica Creek consists of the North Fork and South Fork that converge near Highway 95, and then continues to flow on to Mica Bay of Lake Coeur d'Alene. The headwaters originate from Cable, Twin, and Mica Peaks at an elevation around 4000'. The forks mainly flow through forested terrain but evidently flatten out into agricultural land just above their convergence. A huge amount of conservation work has taken place over the last 12 years on the agricultural land adjacent to Mica Creek. Private landowners have installed riparian fencing, off-site watering, hardened crossings, and have stabilized and vegetated eroding banks. These efforts have been showcased by a professional video, statewide news articles, and landowner tours. In addition to these agricultural conservation efforts, the Highway 95 grades appear to have stabilized and are no longer delivering excessive sediment to Mica Creek.

An agricultural land use inventory was completed within Mica Creek sub-watershed private lands and the following was observed: hay land = 108 acres, pasture land= 84 acres, hayed pasture = 116 acres. The agricultural land use inventory conducted for Mica Creek and forks has been summarized on Figure 4. Livestock numbers were estimated at 55 cows and 18 horses on pastures within the Mica Creek sub-watershed. No uncontrolled livestock access to Mica Creek adjacent the hayed pasture areas was observed. Pathfinder analysis was completed by ISWCC staff on the south fork and main stem of Mica Creek adjacent to private agricultural land in August, 2010. According to DEQ's shade analysis, Mica Creek has a shade deficit of 2-7% on the lower agricultural reaches. The ISWCC shade results in 2010 were slightly lower than DEQ's estimates and was most likely due to active streambank protection work taking place on eroding banks. Not only did this work target sediment reduction but included the planting of hundreds of new willows. With now up to 5 years of growth in some sections, shade should be quickly approaching DEQ's recommended shade target. The overall agricultural impact to Mica Creek is insignificant at present. This author would support the delisting of Mica Creek from the next published Integrated Report for sediment, bacteria, and temperature. See Appendix A for more detail.



**Figure 4: Mica Sub-watershed Agricultural Land Use**



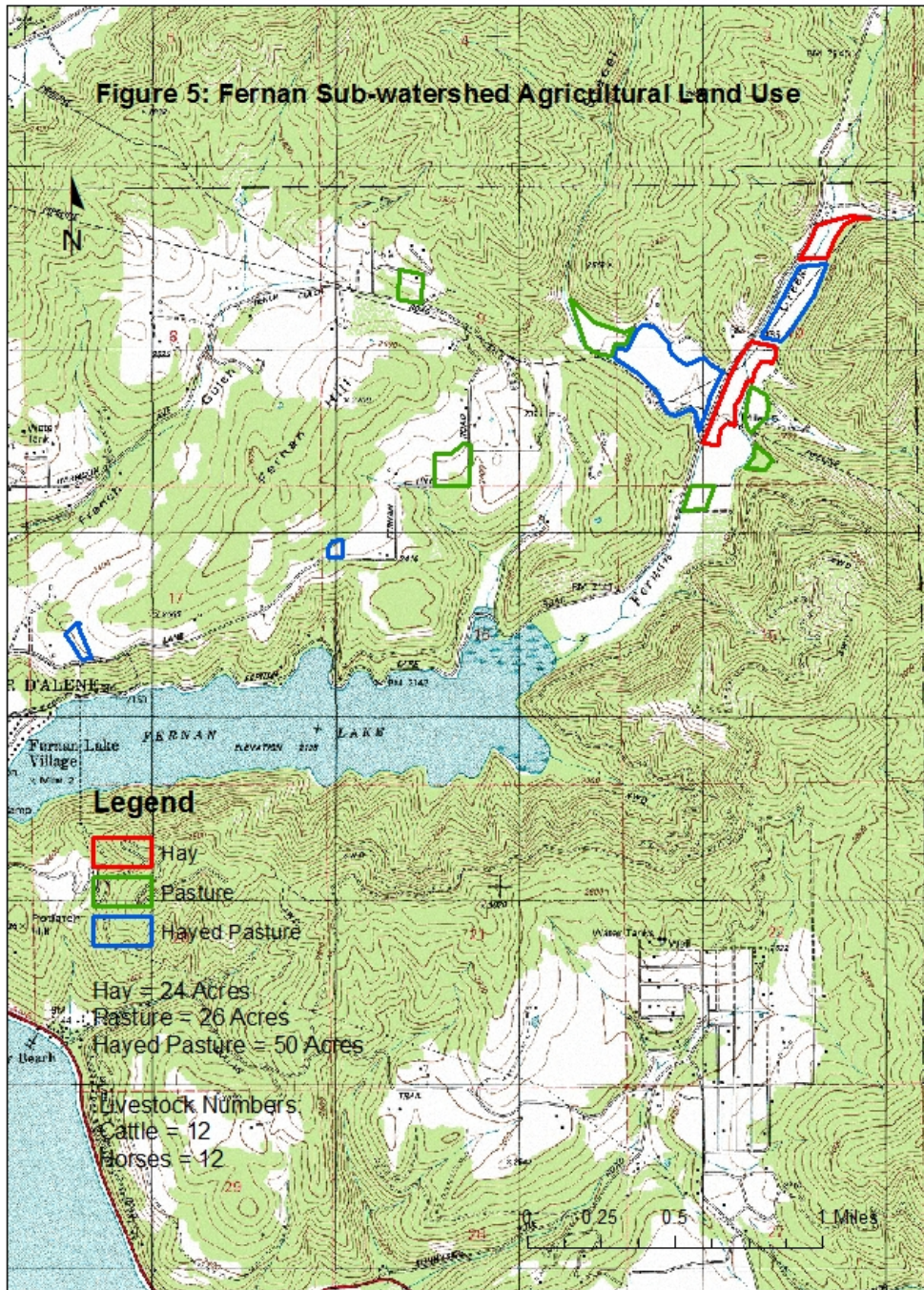
- **Fernan Creek**

The headwaters of Fernan Creek originate from Huckleberry Mountain at an elevation of 4,400'. All of the upper sub-watershed is forested and owned primarily by the USFS. From the top, Fernan Creek flows approximately 4.4 miles before entering private landownership just below the gun range and public parking lot. At this juncture, bank erosion has been observed on USFS property and slightly downstream within private land. This area was disturbed by a road construction disposal area for excess soil and rock from the road widening project along Fernan Lake (Fortier, D. 2015). The lower 3 miles of Fernan Creek flows through private land and eventually empties into Fernan Lake. The first 5,000 feet of Fernan Creek within private land is non-agricultural. Within this stretch, one private landowner has been working with NRCS to stabilize eroding banks and re-vegetate with willows for shading. About 850 feet of creek has been protected as the result of this voluntary conservation effort. In general, this upper private land, non-agricultural reach is now stable and becoming well shaded. The next 6,900 feet of Fernan Creek, flows through adjacent agricultural land and also is encroached upon by East Fernan Lake Road for about 0.5 miles within this private land section. This 0.5 mile of Fernan Creek situated alongside the county road has been treated with barbs and planted with shrubs and trees. The plantings from this coordinated conservation effort, looks really quite good in just a short period of time. Fernan Creek does flow exclusively through adjacent agricultural land for about 4,400 feet. Shading on about half of this length, or 2,200 feet of Fernan Creek could be increased with additional vegetative plantings. This agricultural reach of Fernan Creek dries up shortly after spring runoff ends and stays dry throughout the summer. The final 0.7 miles of Fernan Creek flows through non-agricultural wetlands and lake effects predominate.

An agricultural land use inventory was completed within Fernan Creek sub-watershed private lands and the following was observed: hay land = 24 acres, pasture land= 26 acres, hayed pasture= 50 acres. The agricultural land use inventory conducted for Fernan Creek has been summarized on Figure 5. Livestock numbers were estimated at 12 cows and 12 horses on pastures within the Fernan Creek sub-watershed. No direct livestock access to Fernan Creek was observed. An attempt was made to gain permission to walk and survey Fernan Creek through agricultural private land. Numerous landowner permission letters were sent out with no responses. The overall agricultural impact to Fernan Creek is minimal at present. In addition, this author feels that agriculture has no significant impact to the water quality of Fernan Lake.



**Figure 5: Fernan Sub-watershed Agricultural Land Use**

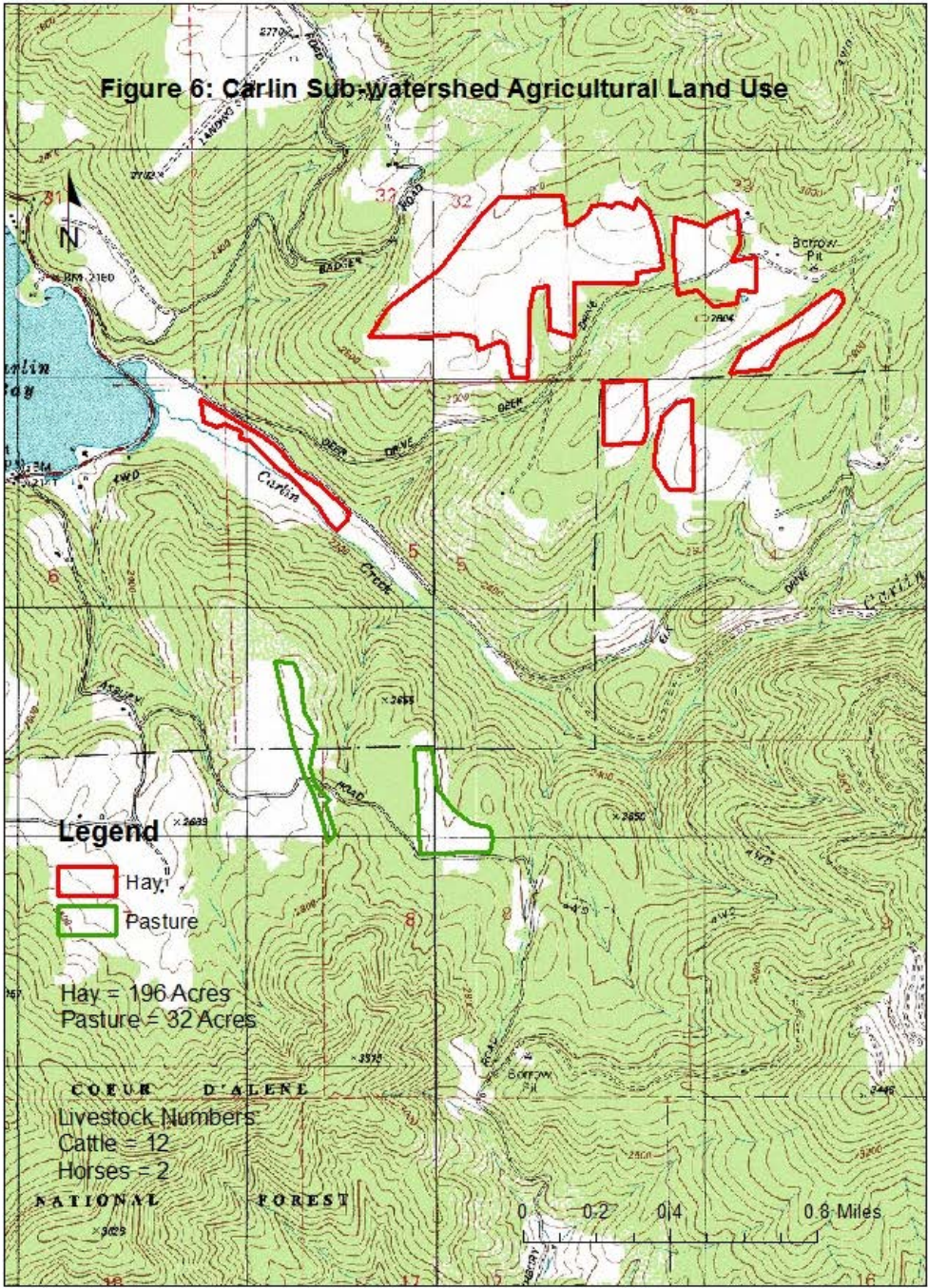


- **Carlin Creek**

The headwaters of Carlin Creek begins in USFS land at an elevation of 3,500 feet. The main stem of Carlin Creek flows 5.5 miles and empties directly into Carlin Bay of Lake Coeur d'Alene. Out of this 5.5 miles, Carlin Creek flows through 2.8 miles of USFS, 1.1 miles of commercial forestry, and 1.6 miles of private land. There is one major tributary to Carlin Creek which results from the convergence of Pleasant Creek, No Creek, and Carrill Creek. The ownership of the upper forested sub-watershed is mainly USFS, commercial forestry, and private forestry. The lower sub-watershed is predominately sub-divided into 5-40 acre plots of private land. Approximately 2,600 feet of Carlin Creek lies adjacent to private agricultural hay land. This reach is well vegetated and is appears to be meeting DEQ's % shade target. Additional agricultural land exists on benches well above Carlin Creek on each side. These agricultural areas intermittently drain to Carlin Creek but appear to be stable and well vegetated with adequate culverts.

An agricultural land use inventory was completed within Carlin Creek sub-watershed private lands and the following was observed: hay land = 196 acres, pasture land= 32 acres. The agricultural land use inventory conducted for Carlin Creek has been summarized on Figure 6. Livestock numbers were estimated at 12 cows and 2 horses on pastures within the Carlin Creek sub-watershed. No direct livestock access to Carlin Creek was observed. This author feels that agriculture has no significant impact to the water quality of Carlin Creek.





- **Blue Lake Creek**

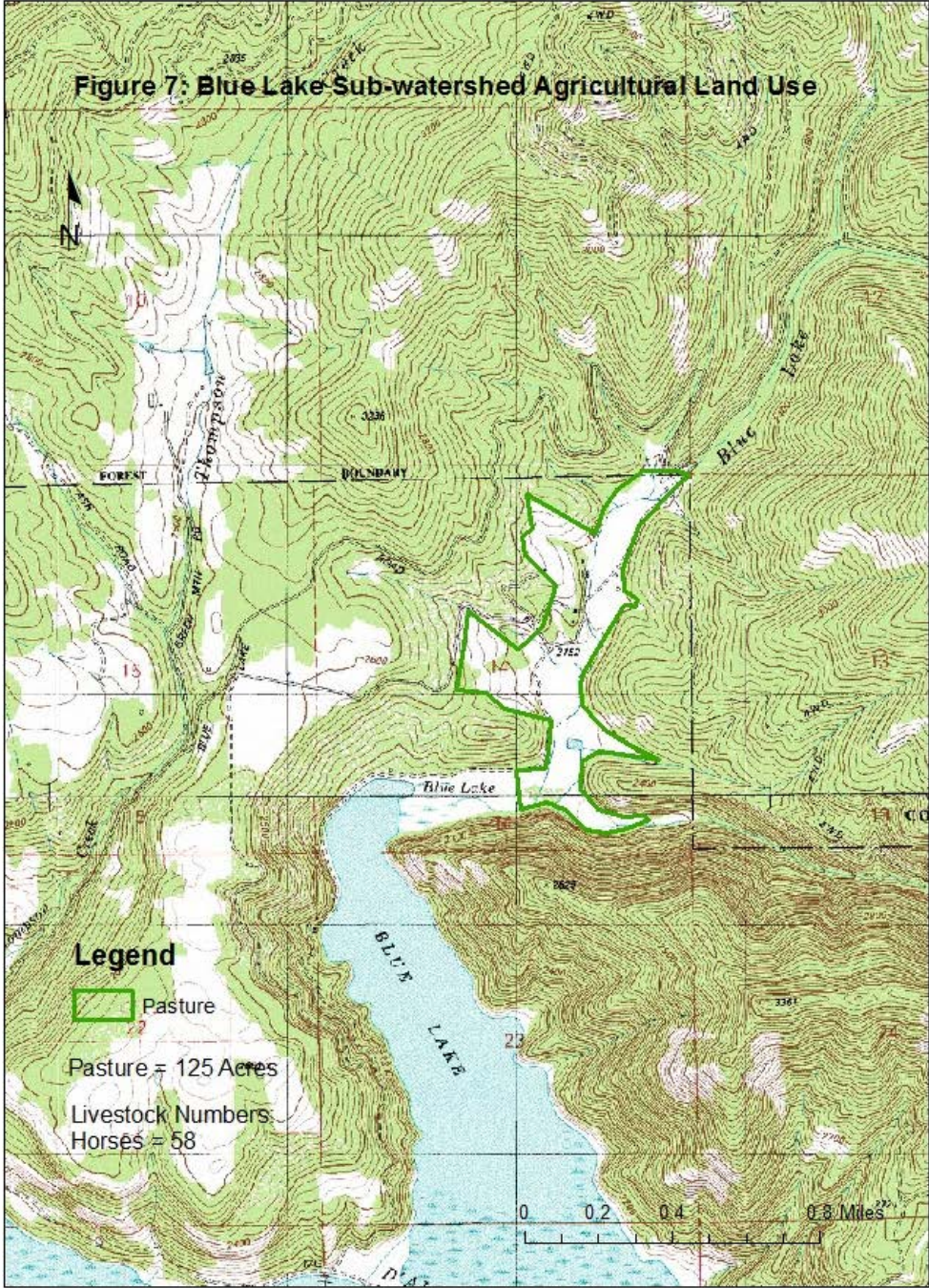
The headwaters of Blue Lake Creek originate from Red Horse Mountain at an elevation of 3,800'. Most of the upper sub-watershed is public land mainly owned by USFS. Bureau of Land Management (BLM) also owns a few parcels within the southeastern area of the sub-watershed. Blue Lake Creek flows 4.7 miles from its origin down to where it finally empties into Blue Lake. The first 3.3 miles flows through USFS land and the final 1.4 miles flows through private land. Of this private land segment about 6,100 feet lies adjacent to agricultural land use. The main forested named tributary to Blue Lake Creek is Cottonwood Creek. Numerous other smaller un-named tributaries feed Blue Lake Creek throughout the sub-watershed. The upper 3 miles of Blue Lake Creek is perennial. The lower 1.7 miles dries up in the spring and remains dry till late fall. Historically, the Blue Lake Creek hydrologic system has been known to generate and carry large sediment. Severe flooding was last seen in the mid to later 90's. At the point on USFS land just above the beginning of private land, the creek has become choked with large sediment and is considerably widened. Bank erosion and lack of riparian vegetation prevails for about 2,200 feet.

An agricultural land use inventory was completed within Blue Lake Creek sub-watershed private lands and the following was observed: pasture land= 125 acres. The agricultural land use inventory conducted for Blue Lake Creek and tributaries has been summarized on Figure 7. Livestock numbers were estimated at 58 horses on pastures within the Blue Lake Creek sub-watershed. Direct livestock access to Blue Lake Creek was observed. Streambank stabilization, riparian fencing, and vegetative plantings would be beneficial to water quality at these access areas.

Within private land, the first 1,200' of Blue Lake Creek is totally blown out and was not inventoried. NRCS's Stream Visual Assessment Protocol (SVAP), NRCS's Streambank Erosion Condition Inventory (SECI), and DEQ's Pathfinder Protocol for ground truthing actual % shade was conducted on the first agricultural reach below the blow out. Lastly, SVAP and estimated % shade was conducted on additional reach inventoried. The total length of Blue Lake Creek inventoried was 1,900 feet. The field analysis was conducted by ISWCC staff in mid-October 2013. The leaves were just starting to drop, but still fairly well intact for % shade determination. On the ISWCC pathfinder reach, actual % shade exceeded DEQ's existing shade by 6%, but still -56% below DEQ's target shade. The other estimated reach was found to be better at 40% shade, but still significantly under DEQ's target shade. SVAP ratings for the two reaches turned out to be: 900' fair, and 1,000' severe. The blown out reach and the reach below had a very severe SECI which indicates bank erosion, bank instability, and lack of bank cover and/or vegetation. See Appendix A and B for more detail.

With USFS/private landowner involvement and adequate funding from various sources, about 2,200 feet of Blue Lake Creek would be a perfect candidate for a complete stream make-over. Also, one Blue Lake Creek road/stream crossing has 3 large culverts that have a 4 foot outlet drop and certainly pose a fish barrier when water is flowing (late fall through late spring).





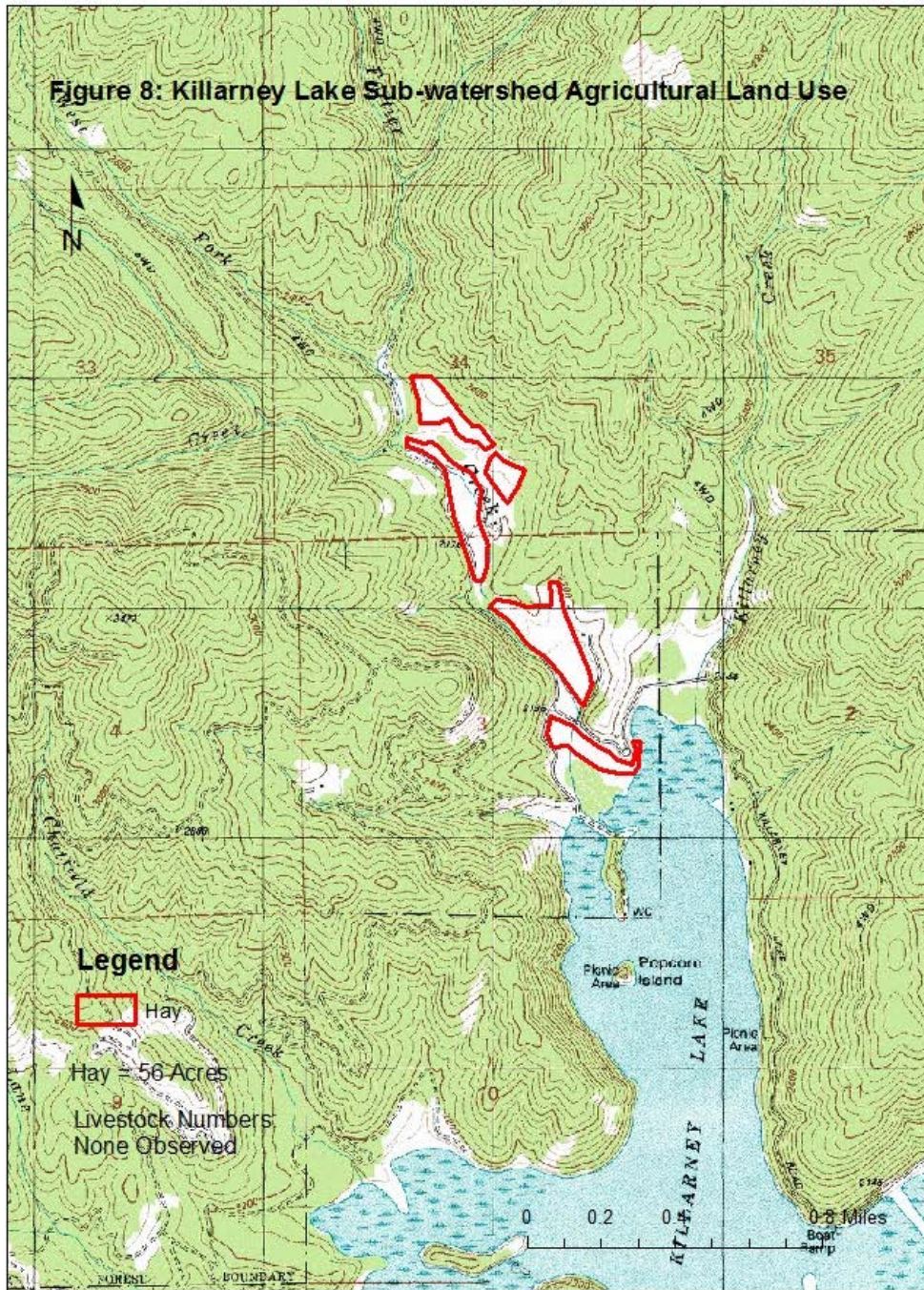
- **Killarney Lake Tributaries**

The main tributaries to Killarney Lake include: Fortier Creek, Killarney Creek, Chatfield Creek, and Lane Creek. The upper Killarney Lake sub-watershed is forested and predominately owned by USFS. Land use/ land ownership within Chatfield Creek and Lane Creek is forest land which is mainly owned by commercial forestry and USFS. No agriculture use was observed adjacent to Chatfield Creek or Lane Creek. Killarney Creek is mainly owned by USFS with the last 3000' being privately owned. This section dries up late spring and remains dry to late fall. Also, this lower reach has historically seen some large runoffs which deposited or produced large sediment in the channel. This action can create a widened and shallower channel and ultimately promote bank erosion. Some bank erosion and lack of riparian vegetation for shading was observed. No active agricultural use was seen adjacent to Killarney Creek. The upper sub-watershed of Fortier Creek is once again predominately forest land owned by USFS. The lower 9,000' of Fortier Creek flows through private land and appears to flow throughout the year. Agricultural use, mainly hay land, was observed in this lower private land reach. About 6,300 feet of Fortier Creek lies adjacent to potential hay land. A private landowner along Fortier Creek has installed 475 feet of streambank protection, and planted 0.6 acres of riparian buffer through NRCS WHIP program. In general, the creek appears to be adequately buffered and vegetated from agricultural activities.

An agricultural land use inventory was completed within Fortier Creek sub-watershed private lands and the following was observed: hay land = 56 acres. The agricultural land use inventory conducted for Fortier Creek has been summarized on Figure 8. No livestock was observed on pastures within the entire Killarney Lake sub-watershed. This author feels that agriculture has no significant impact to the water quality of Killarney Lake or its tributaries.



**Figure 8: Killarney Lake Sub-watershed Agricultural Land Use**



- **Rose Creek**

The headwaters of Rose Creek originate off the south side of Killarney Mountain at an elevation of around 3,500 feet. From the headwaters, the main stem travels slightly more than 2 miles through Forest Service land before entering private land. Once Rose Creek reaches private land it flows briefly through forestland and then adjacent to agricultural land for about a mile. From this point Rose Creek flows predominately through wetlands and eventually empties into the Coeur d'Alene River. The lower 0.5 miles of Rose Creek is an old constructed straightened drainage ditch with a flood control structure at the mouth.

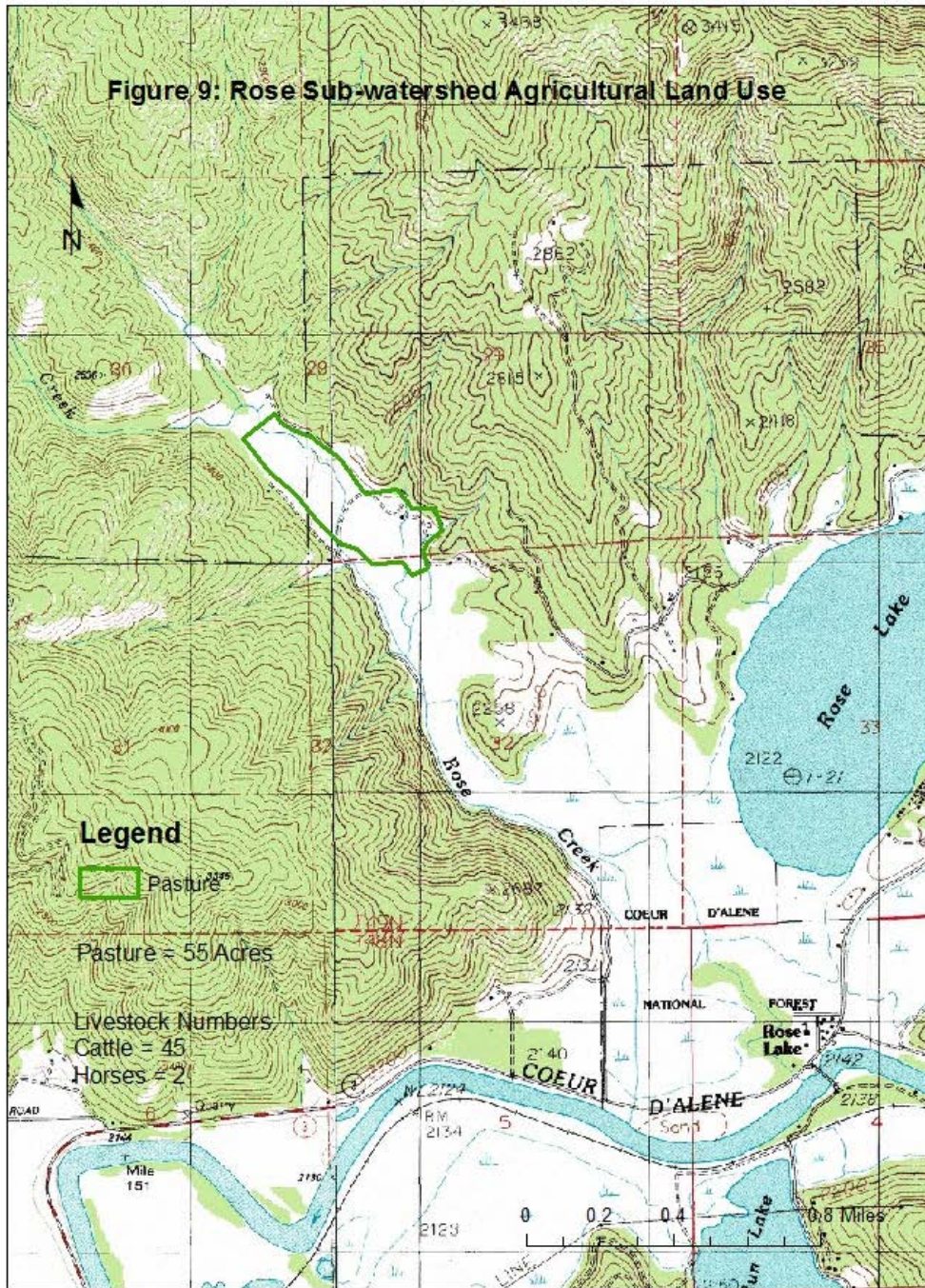
An interesting finding was discovered after visiting with an agricultural landowner and walking the creek. According to the old topo map, Rose Creek appears to have meandered directly through agricultural pasture land. But actually it was diverted long ago to the west side of the field and flows within the edge of forest land. Thus DEQ's shade predictions were made through the open field versus along the forested edge. ISWCC pathfinder ground truthing of the present location of the creek showed much higher % shade than estimated by DEQ's mapping.

An agricultural land use inventory was completed within Rose Creek sub-watershed private lands and the following was observed: pasture land= 55 acres. The agricultural land use inventory conducted for Rose Creek has been summarized on Figure 9. Livestock numbers were estimated at 45 cows and 2 horses on pastures within the Rose Creek sub-watershed. The leased cattle are allowed to graze for a short period in the summer and are then moved out. A good stubble height was observed after grazing. No livestock access to Rose Creek was observed.

NRCS's Stream Visual Assessment Protocol (SVAP), NRCS's Streambank Erosion Condition Inventory (SECI), and DEQ's Pathfinder Protocol for ground truthing actual % shade was conducted on one agricultural reach of Rose Creek. The total length inventoried on Rose Creek was 3,000 feet. The field analysis was conducted by ISWCC staff in mid-October 2013. The leaves were just starting to drop, but still fairly well intact for % shade determination. According to DEQ's shade analysis, Rose Creek had a -78% lack of shade on this agricultural reach. The ISWCC shade results indicated 54% shade which is slightly lower than DEQ's target estimates but highly adequate for the actual channel location. SVAP rating for the one reach turned out to be: 3,000 feet-excellent. SECI on this reach was slight which indicated a very low erosion potential. The overall agricultural impact to Rose Creek is extremely minimal at present. This author encourages DEQ to update their shade analysis with the actual location of the creek adjacent to agricultural land. See Appendix A and B for more detail.



Figure 9: Rose Sub-watershed Agricultural Land Use

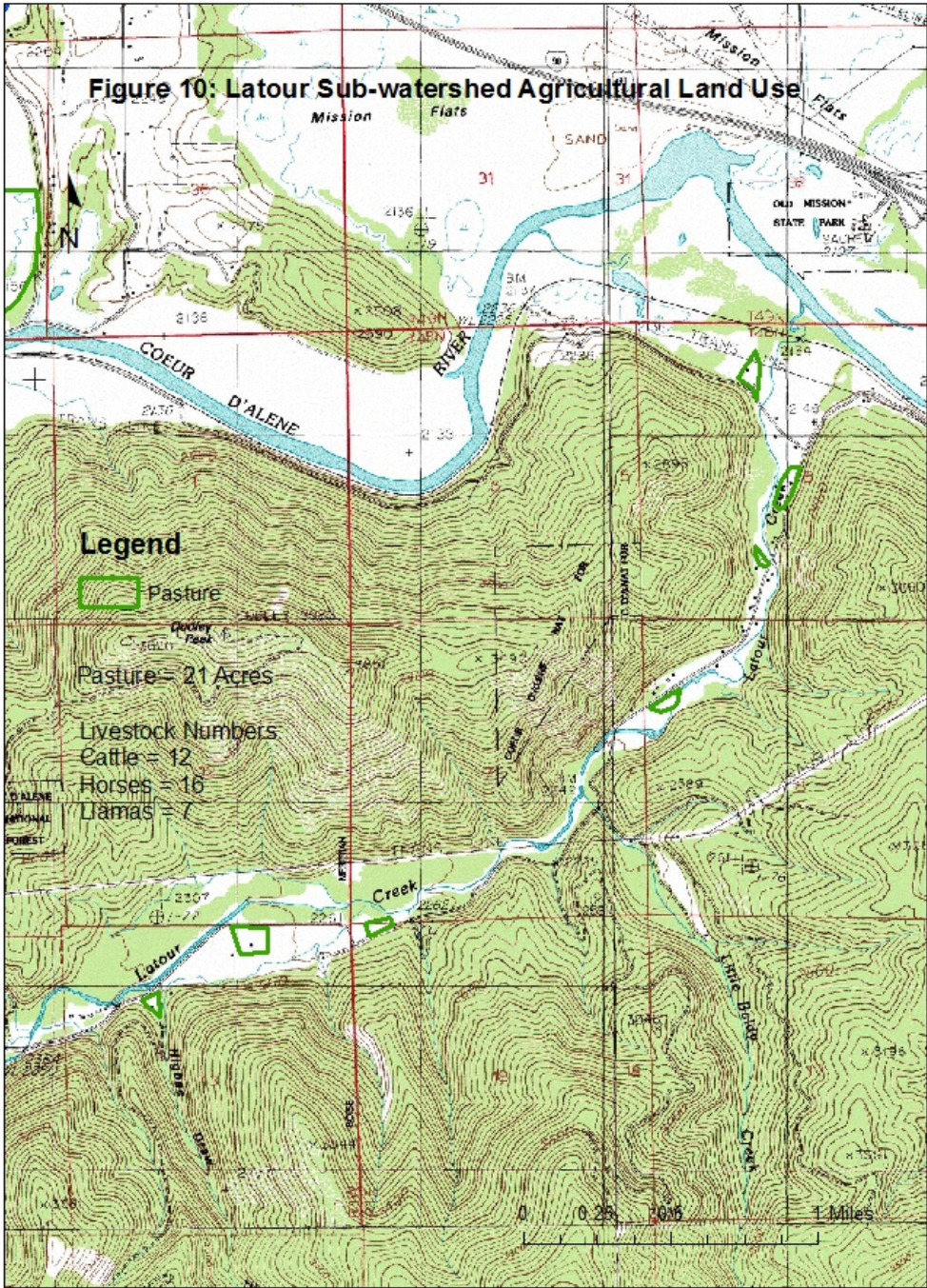


- **Latour Creek**

The headwaters of Latour Creek originate from Crystal Lake just under the north side of Reeds Baldy at an elevation of 5,000 feet. The main stem of Latour Creek flows more than 16 miles and empties directly into the Coeur d'Alene River. There are numerous tributaries to Latour Creek with the major ones being Butler, Lost Girl, Baldy, Larch, and Little Baldy Creeks. The ownership of the upper forested sub-watershed is mainly BLM, State of Idaho, commercial forestry, Coeur d'Alene Tribe, and private forestry. The lower sub-watershed is predominately sub-divided into 5-40 acre plots of private land. Small pockets of agricultural land exist in the lower four miles of Latour Creek. The agricultural pockets appear to be well vegetated and meeting DEQ's 40% shade target. Historically, the lower reaches of Latour Creek have experienced large movements of gravel and cobble sediment. This on-going process aggrades and widens the channel and ultimately increases the water temperature of Latour Creek.

An agricultural land use inventory was completed within Latour Creek sub-watershed private lands and the following was observed: pasture land= 21 acres. The agricultural land use inventory conducted for Latour Creek has been summarized on Figure 10. Livestock numbers were estimated at 12 cows, 16 horses, and 7 llamas on pastures within the Latour Creek sub-watershed. No direct livestock access to Latour Creek was observed. Since the original Latour Creek TMDL implementation plan was drafted in 2002, agricultural use continues on a major decline within this sub-watershed. This author feels that agriculture has no significant impact to the water quality of Latour Creek.





## **Critical Areas**

Agricultural areas that have the potential to contribute excess pollutants to waterways are defined as critical areas for BMP implementation. Critical areas prioritized for this plan were identified during field observations from 2013- 2015.

Agricultural critical areas within the Coeur d’Alene Lake Tributaries Temperature TMDL sub-basin include:

- Pasture land where livestock have direct access to streams and riparian areas.
- Hay land adjacent to perennial stream corridors that lack adequate riparian buffering.

In summary, approximately 22,750 feet of Wolf Lodge Creek, Rutherford Gulch, Stella Creek, 4<sup>th</sup> of July Creek, Bentley Creek, Fern Creek, Service Creek, Cougar Creek, Fernan Creek, and Blue Lake Creek have been identified as agricultural critical areas for possible treatment.

Other non-agricultural impacts that were observed or discussed in the inventory and evaluation section have been included below for potential BMP implementation.

## **Estimated BMP Implementation Costs**

The proposed treatment for agricultural pollutant reduction will be to implement BMPs through voluntary conservation plans. Table 2 lists the recommended agricultural BMPs and estimated costs, to help restore beneficial uses to the Coeur d’Alene Lake Tributaries Temperature TMDL Sub-basin.

**Table 2. Estimated BMP Installation for the Coeur d’Alene Lake Tributaries Temperature TMDL Sub-basin**

Agricultural BMPs	Amount (Units)	Sub-Watershed	Estimated Costs
Streambank Protection(Rock/Veg)	600 Feet	Wolf Lodge Creek	\$22,200
Riparian Fence	5,200 Feet	Wolf Lodge Creek	\$6,500
Riparian Forest Buffer	4,100 Feet	Wolf Lodge Creek	\$2,590
Riparian Fence	2,500 Feet	Rutherford Gulch	\$3,125
Riparian Forest Buffer	2,500 Feet	Rutherford Gulch	\$1,580
Streambank Protection(Rock/Veg)	200 Feet	4 <sup>th</sup> of July Creek	\$7,400
Riparian Fence	400 Feet	4 <sup>th</sup> of July Creek	\$500
Riparian Forest Buffer	8600 Feet	4 <sup>th</sup> of July Creek	\$5,440
Riparian Fence	400 Feet	Service Creek	\$500
Riparian Forest Buffer	800 Feet	Service Creek	\$510
Riparian Forest Buffer	2,800 Feet	Fern Creek	\$1,770
Streambank Protection(Rock/Veg)	130 Feet	Bentley Creek	\$4,810
Riparian Forest Buffer	3,000 Feet	Bentley Creek	\$1,900
Riparian Forest Buffer	2,500 Feet	Cougar Creek	\$1,580
Riparian Forest Buffer	4,400 Feet	Fernan Creek	\$2,780

Agricultural BMPs (Continued)	Amount (Units)	Sub-Watershed	Estimated Costs
Riparian Fence	10,000 Feet	Blue Lake Creek	\$12,500
Riparian Forest Buffer	8,000 Feet	Blue Lake Creek	\$5,060
Channel Restoration	2,200 Feet	Blue Lake Creek	Cost Unknown
		<b>TOTAL COST</b>	<b>\$80,745</b>
Non-Agricultural BMPs	Amount (Units)	Subwatershed	Estimated Costs
Streambank Protection(Rock/Veg)	370 Feet	Wolf Lodge Creek	\$13,690
Riparian Forest Buffer	1,450 Feet	Wolf Lodge Creek	\$920
Alder Creek Road Culvert Erosion	1 Each	Rutherford Gulch	Cost Unknown
Streambank Protection(Rock/Veg)	25 Feet	Rutherford Gulch	\$925
Riparian Forest Buffer	2,400 Feet	Stella Creek	\$1,520
Meyers Hill Road Culvert Drainage	Numerous	Unnamed Tributary	Cost Unknown
Riparian Forest Buffer	2000 Feet	Service Creek	\$1,260
Blue Lake Creek Road Culvert Drop	3 Each	Blue Lake Creek	Cost Unknown
Streambank Protection	Higbee Draw	Latour Creek	Cost Unknown

The recommended voluntary treatment process for private agricultural landowners within the Coeur d’Alene Lake and River Sub-basin begins with contacting the local conservation district, the Kootenai-Shoshone Soil and Water Conservation District. Contact information for the KSSWCD is:

7830 Meadowlark Way, Suite C-1  
Coeur d’Alene, Idaho 83815  
Phone 208-762-4939, Ext.101  
ksswcd@yahoo.com

The KSSWCD works in partnership with the Natural Resources Conservation Service and the Idaho Soil and Water Conservation Commission, to provide free technical assistance to landowners wanting to improve their agricultural lands. The process begins with a thorough NRCS resources inventory of the farm or ranch (soil, water, air, plants, and animals), and ultimately the development of a good conservation plan (for more insight on planning, go to [www.oneplan.org](http://www.oneplan.org)). Once the planning process is complete, the KSSWCD can assist the landowner in seeking grants or cost-sharing type programs, to help pay for needed BMP installation. A list of funding opportunities for private landowners has been included in the Funding Section below.

## **Funding**

Financial and technical assistance for installation of BMPs may be needed to ensure success of this implementation plan. The Kootenai-Shoshone Soil and Water Conservation District can assist interested landowners in actively pursuing potential funding sources to implement water quality improvements on private agricultural and grazing lands. The conservation partnership can provide free technical assistance to help farmers and ranchers identify and solve natural resource problems on their farms and ranches. This might come as advice and counsel through the design and implementation of a practice or treatment, or as part of an active conservation plan

Many of the following programs can be used in combination with each other to implement BMPs. These sources include (but are not limited to):

**CWA 319** –These are Environmental Protection Agency funds allocated to Tribal entities and the State of Idaho. The Idaho Department of Environmental Quality (DEQ) administers the Clean Water Act §319 Non-point Source Management Program for areas outside the Tribal Reservations. Funds focus on projects to improve water quality and are usually related to the TMDL process. Source: DEQ <http://www.deq.idaho.gov/>

**Resource Conservation and Rangeland Development Program (RCRDP)** –The RCRDP is a loan program administered by the ISWCC for implementation of agricultural and rangeland best management practices or loans to purchase equipment to increase conservation. Source: ISWCC <http://www.swc.idaho.gov/>

**Conservation Reserve Program (CRP)** –The CRP is a land retirement program for blocks of land or strips of land that protect the soil and water resources, such as buffers and grassed waterways. Source: NRCS <http://www.nrcs.usda.gov/>

**Conservation Technical Assistance (CTA)** –The CTA provides free technical assistance to help farmers and ranchers identify and solve natural resource problems on their farms and ranches. This might come as advice and counsel, through the design and implementation of a practice or treatment, or as part of an active conservation plan. Source: Bonner Soil and Water Conservation District and NRCS: <http://www.nrcs.usda.gov/>

**Environmental Quality Incentives Program (EQIP):** EQIP offers cost-share and incentive payments and technical help to assist eligible participants in installing or implementing structural and management practices on eligible agricultural land. Source: NRCS <http://www.nrcs.usda.gov/>

**Conservation Security Program (CSP)** –CSP is a voluntary program that rewards the Nation’s premier farm and ranch land conservationists who meet the highest standards of conservation environmental management. Source: NRCS <http://www.nrcs.usda.gov/>



**Agricultural Conservation Easement Program (ACEP)**- The Agricultural Conservation Easement Program provides financial and technical assistance to help conserve agricultural lands and wetlands and their related benefits.. Under the Agricultural Land Easements component, NRCS helps Indian Tribes, state and local governments and non-governmental organizations protect working agricultural lands and limit non-agricultural uses of the land. Under the Wetlands Reserve Easements component, NRCS helps to restore, protect and enhance enrolled wetlands. NRCS <http://www.nrcs.usda.gov/>

**Regional Conservation Partnership Program (RCPP)**- The Regional Conservation Partnership Program promotes coordination between NRCS and its partners to deliver conservation assistance to producers and landowners. NRCS provides assistance to producers through partnership agreements and through program contracts or easement agreements. NRCS <http://www.nrcs.usda.gov/>

**State Revolving Loan Funds (SRF)** –These funds are administered through the ISWCC. Source: ISWCC <http://www.swc.idaho.gov/>

**HIP** – This is an Idaho Department of Fish and Game program to provide technical and financial assistance to private landowners and public land managers who want to enhance upland game bird and waterfowl habitat. Funds are available for cost sharing on habitat projects in partnership with private landowners, non-profit organizations, and state and federal agencies. Source: IDFG <http://fishandgame.idaho.gov/>

**Partners for Fish and Wildlife Program in Idaho** – This is a U.S. Fish and Wildlife program providing funds for the restoration of degraded riparian areas along streams, and shallow wetland restoration. Source: USFWS <http://www.fws.gov/>

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## **Appendix A**

### **ISWCC Solar Pathfinder Ground Truthing on Various CdA Tributaries (October 15-18, 2013)**

Creek Name and Reach	IDEQ Original Lack of Shade	IDEQ TARGET SHADE (percent)	IDEQ EXISTING SHADE (percent)	ISWCC Current Lack of Shade	ISWCC Current Shade
Wolf Lodge-1	5	65	70	-7	58
Wolf Lodge-2	-20	45	25	-5	40
Wolf Lodge-3	-25	45	20	1	46
Wolf Lodge-4	-26	41	15	-7	34
4th of July-1	-22	52	30	11	63
4th of July-3	-22	52	30	23	75
4th of July-4	-28	48	20	4	52
Bentley-1	-88	98	10	-62	36
Rose-1	-78	78	0	-24	54
Blue Lake-2	-62	72	10	-56	16
Mica SF-1,3-4	-2	72	70	-5	67
Mica-2	-2	52	50	-15	37

## **Appendix B**

### **CdA Lake Sub-basin Tributaries ISWCC Assessment Results (October 15-18, 2013)**

<b><u>Creek</u></b>	<b><u>Reach</u></b>	<b><u>Pathfinder (% Shade)</u></b>	<b><u>SECI</u></b>	<b><u>SVAP</u></b>
Wolf Lodge	1(2300')	58%	3.0-Slight	9.0-Excellent
Wolf Lodge	2(2200')	40%	6.5-Moderate	7.7-Good
Wolf Lodge	3(1500')	46%	4.0-Slight	7.8-Good
Wolf Lodge	4(700')	34%	7.0-Moderate	5.8-Fair
4 <sup>th</sup> of July	1(2600')	63%	3.0-Slight	8.2-Good
4 <sup>th</sup> of July	2(400')	10%(Estimated)	9.0-Severe	4.0-Poor
4 <sup>th</sup> of July	3(1750')	75%	3.0-Slight	8.7-Good
4 <sup>th</sup> of July	4(1200')	52%	2.5-Slight	6.7-Fair
Bentley	1(1200')	36%	6.5-Moderate	5.0-Fair
Rose	1(2500')	54%	2.0- Slight	9.2-Excellent
Blue Lake	1(1200')	(Upper blowout section)		
Blue Lake	2(1000')	16%	11-Very Severe	2.3-Severe
Blue Lake	3(900')	40%(Estimated)		6.5-Fair
Service	1(675')	40%(Estimated)	5.0-Moderate	5.1-Fair

**Reach Total = 20,125 Feet**