



1. **Project Name:** Lick Creek Culvert Replacement Project
2. **Applicant:** Wallowa Resources / Wallowa-Whitman NF
3. **Participating Landowner(s) and Agencies:**

Agency	Contact	Address	Phone	Email
Wallowa Resources	Nils Christoffersen	401 NE First St Suite A Enterprise, OR 97828	541.426.8053	nils@wallowaresources.org
Wallowa-Whitman NF	Alan Miller	PO Box 905, Joseph Oregon 97846	541.426.5682	amiller@fs.fed.us
GRMW	Coby Menton	1114 J Ave. La Grande, OR 97850	541.663.0570	rcoby@grmw.org
Nez Perce Tribe	Mitch Daniel	PO Box 900, Joseph, Oregon 97846	541.432.2506	mitchd@nezperce.org

4. **Project Contact(s):**

Agency	Contact	Role	Address	Phone	Email
Wallowa Resources	Nils Christoffersen	Project Manager / Administrative Contact	401 NE First St Suite A Enterprise, OR 97828	541.426.8053	nils@wallowaresources.org
Wallowa-Whitman NF	Alan Miller	Technical - Fisheries	PO Box 905, Joseph Oregon 97846	541.426.5682	amiller@fs.fed.us
Wallowa-Whitman NF	Brett Yaw	Technical - Engineering	1550 Dewey Ave Baker City, OR 97814	541.523.1243	bmyaw@fs.fed.us
Nez Perce Tribe	Mitch Daniel	Technical	PO Box 900, Joseph, Oregon 97846	541.432.2506	mitchd@nezperce.org

5. **Project Location:**

The project is located in T5S, R46E, S1. The project is located on Lick Creek in the Upper Big Sheep Creek Watershed (HUC 1706010203) in Wallowa County. The Lat/Long of the project is N45.154/W117.033. The project is located on the Hells Canyon National Recreation Area, Wallowa-Whitman NF.

## 6. Project Objectives:

The Imnaha Subbasin Plan (Ecovista and Nez Perce Tribe, 2004) identifies reconnection of existing functional habitats as a key strategy for restoration actions in the subbasin. Three fish passage barriers in the Big Sheep Creek watershed have been identified: the Wallowa Valley Improvement Canal and Buhler diversions on Big Sheep Creek and the Lick Creek culvert. GRMW replaced the Buhler diversion in 2011.

The Lick Creek culvert is undersized, is a barrier to juvenile salmonids during low summer flows, and is structurally failing. Lick Creek is prone to high stream temperatures downstream of the culvert while cool water refugia is present upstream of the culvert. The culvert represents a risk to an estimated 1 mile of spawning and rearing habitat for all species present downstream of the culvert should the culvert fail. The stream crossing is located in an area with a relatively broad floodplain and historically Lick Creek was likely a multi-thread channel through the project area. The road prism interrupts floodplain connectivity through the project area. Lick Creek provides high quality habitat for native salmonids both upstream and downstream of the stream crossing. A large pool is located just downstream of the culvert. This pool provides important holding habitat for adult spring Chinook salmon. Additionally, LWD is present at desired levels in the project area.

Objectives for the Lick Creek Culvert Replacement Project are:

- Restore access to spawning and rearing habitat above the culvert,
- Restore access to cool water refugia present above the culvert for juvenile salmonids,
- Remove risk to spawning and rearing habitat downstream of the culvert,
- Restore floodplain connectivity through project area,
- Retain/enhance habitat features that provide complex habitat for all life stages of native salmonids.

Replacement of the Lick Creek culvert is part of the Lick Creek Aquatic Restoration Project (LCARP) that the Wallowa-Whitman NF is currently implementing. Additional activities associated with LCARP include road reconstruction, campground improvements, OHV trail improvements, hardwood restoration, and closure of dispersed sites to restore and improve aquatic/riparian habitat in the Lick Creek Watershed.

The Lick Creek culvert is located on Forest Road 3925-015, which accesses the Lick Creek Trailhead. The Lick Creek TH is a popular portal to the Eagle Cap Wilderness; used by both local outfitters and guides, and the public.

## 7. Project Description

Subheadings:

Introduction - The project will replace the culvert on the FR 3925-015 crossing with a bridge using the design developed through a 2015 OWEB Technical Assistance Grant. The Lick Creek culvert has been identified as a passage barrier to juvenile salmonids. The culvert prevents movement of juvenile salmonids during low water periods to key cool water habitat present above the culvert. The culvert is also structurally failing, putting spawning and rearing habitat for spring Chinook salmon, steelhead, bull trout, and lamprey downstream of the culvert at risk.

Existing condition – The current culvert at the FR 3925-015 crossing was identified as a barrier to juvenile salmonids as part of the BPA-funded NPT culvert survey project in Wallowa County in the mid 2000's. The culvert was constructed with a concrete lip at the intake that creates a velocity/jump barrier to juvenile salmonids under most flow conditions. The culvert is undersized and creates a velocity barrier to adult salmonids during high flows.

The culvert blocks access to 2.5 miles of spawning and rearing habitat for SR steelhead; 1 mile of rearing habitat for juvenile SR spring Chinook salmon, 5 miles of spawning and rearing habitat for bull trout, and an estimated 2.5 miles of spawning and rearing habitat for Pacific lamprey (Figure 1). Improving/restoring access to cool water refugia is a key component in the Forest Service's response

to climate change. Replacing the culvert would restore access for juvenile salmonids to cool water refugia upstream of the culvert during low warm water conditions.

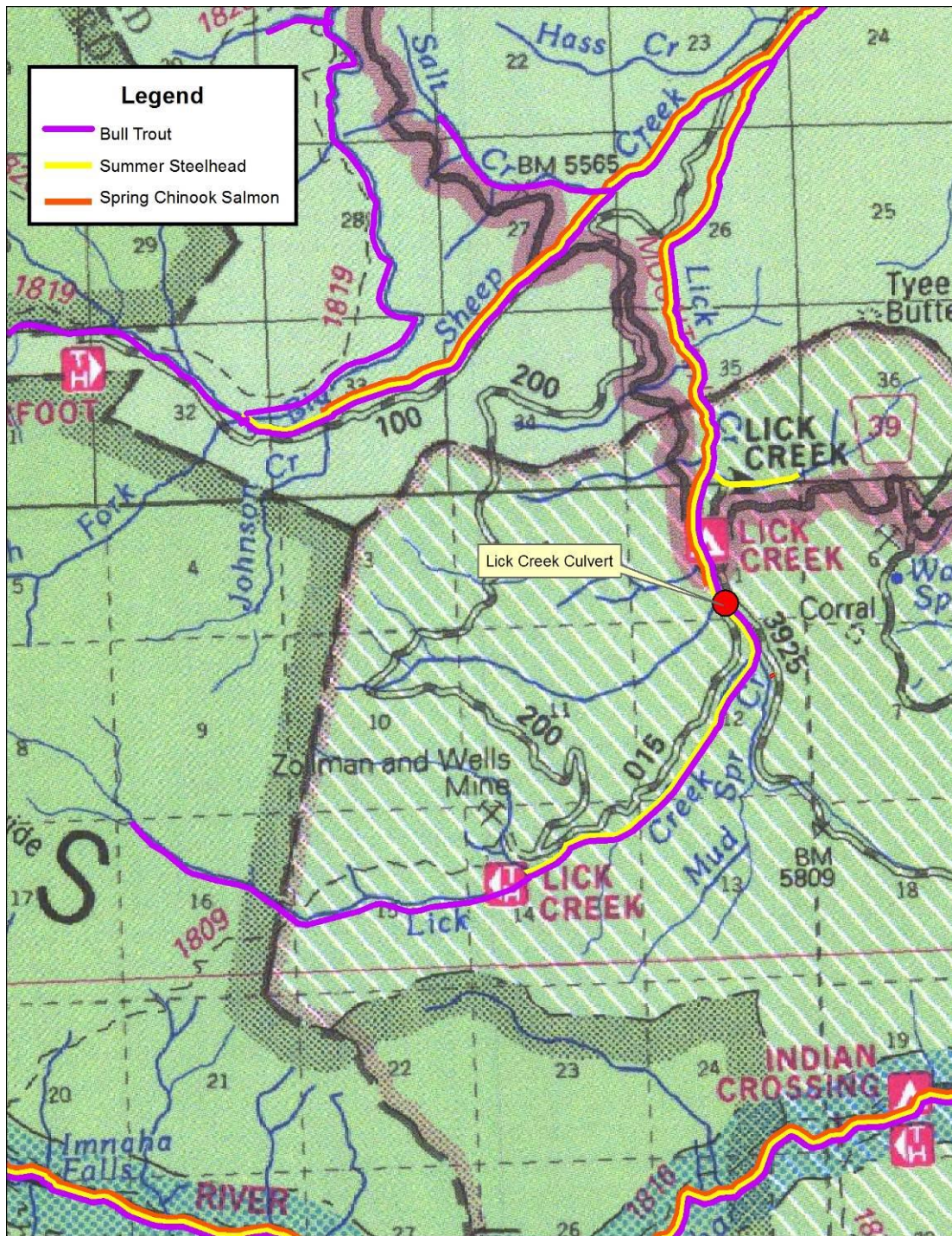


Figure 1. Location of Lick Creek Culvert.

The USFS has been monitoring the condition of the culvert since 2006 when cracks started to form in the concrete abutments on the upstream side of the culvert. Since 2006, the condition of the culvert has continued to decline (Figure 2). Failure of the culvert would likely result in degradation to an estimated 1 mile of spawning and rearing habitat for all species present below the culvert. Since failure would likely occur during spring runoff there is a high likelihood of smothering of redds resulting in the death of salmonid embryos.



**Figure 2. Lick Creek Culvert, upstream view (2011).**

The roadbed of FR3925-015 is built up where it crosses the floodplain of Lick Creek. This has resulted in a disruption of floodplain connectivity through the project area. An overflow culvert is present in the roadbed on the eastside of Lick Creek. However, this culvert is too small to effectively handle a 100-year flood and resultant overbank flow.

Specific Actions –The existing culvert will be replaced with a bridge as designed under the 2015 OWEB Technical Assistance Grant (TAG). The 2015 TAG evaluated a number of options for replacing the existing culvert and recommended a precast concrete bridge structure as the most economical. The bridge is designed to pass a 100 year flood event.

Construction of the precast concrete bridge will involve removing the existing culvert, constructing the new channel, adjusting the road alignment to provide space for the fill for the abutments, and installing the proposed concrete bridge. The new bridge will be a 40-foot-span concrete bridge with concrete footings and abutments, and riprap banks.

Task 1: Removing existing culvert. The construction site will be isolated and aquatic organisms will be removed and released above the construction site. The existing culvert will be removed.

Task 2: Constructing new channel through project area. A new stream channel through the culvert site will be constructed using stream simulation techniques. The new channel will be about 250 feet long. Three LWD/pool structures will be incorporated into the new channel segment to retain and

enhance existing pool habitat and channel complexity. Streambanks upstream and downstream of the bridge that are impacted during construction will be reconstructed with local material and tied into existing channel banks.

Task 3: Road adjustment. Adjustments to the existing road will occur to align it with the new bridge. A 36-inch diameter floodplain relief will be installed on the eastside of the bridge to reduce the risk of damage to the road during a 100 year flood event. Additionally, the road grade will be raised 2 to 3 feet to get it above the height of a 100 year flood event. An 18-inch diameter culvert will be installed on the westside of the bridge to provide drainage from a wet area on the upstream side of the road. These culverts will assist with restoration floodplain connectivity through the project area.

Task 4: Installing new bridge structure. The proposed concrete bridge will have a length of 40 feet, a width of 17.5 feet (including 6 inch wide curbs) and a deck thickness of 18 inches. This will allow the minimum 14 feet of vehicular travel width. Additionally, the proposed bridge will be placed on concrete abutments providing 35 feet of span between them. The skew of about 25 degrees will be maintained to minimize adjustments to the existing roadway prism.

Benefits - Replacing the culvert will remove a passage barrier to 2.5 miles of spawning and rearing habitat for SR steelhead; 1 mile of rearing habitat for juvenile SR spring Chinook salmon, 5 miles of spawning and rearing habitat for bull trout, and an estimated 2.5 miles of spawning and rearing habitat for Pacific lamprey. Replacing the culvert will allow juvenile salmonids to access cool water refugia upstream of the stream crossing. Replacing the culvert will also remove the risk to an estimated 1 mile of spawning and rearing habitat for all species present below the culvert should the culvert fail. Replacing the culvert and installing floodplain relief culverts will restore floodplain connectivity through the project area. The new stream channel through the project area will retain and enhance complex habitat features (i.e. pools and LWD) currently present.

Project Maintenance –Maintenance would occur as need by the USFS.

Permits – ESA consultation for the project would be covered under the ARBO II programmatic consultation (USFS/USFWS/NOAA Fisheries). Removal and fill permits would be acquired through the ARBO II process. Section 106 clearance (Heritage) has been completed as part of the completed NEPA process.

Monitoring Plan – The new bridge will be monitored annually for 3 years after replacement of the culvert to determine if the bridge and stream channel are functioning as designed. This monitoring would occur after spring runoff and will be accomplished by the Forest engineering staff representative, District fish biologist and/or hydrologist. The bridge will be inspected every two years by the Forest bridge inspector for structural integrity. The FS and NPT will conduct effectiveness monitoring for five years above the stream crossing to determine if Chinook spawning or juvenile habitat is extended upstream of the stream crossing.

Work Dates –The requested term for the BPA contract is January 1, 2017 to December 30, 2017. The project will be implemented during the instream work window for Lick Creek (July 15 to August 15).

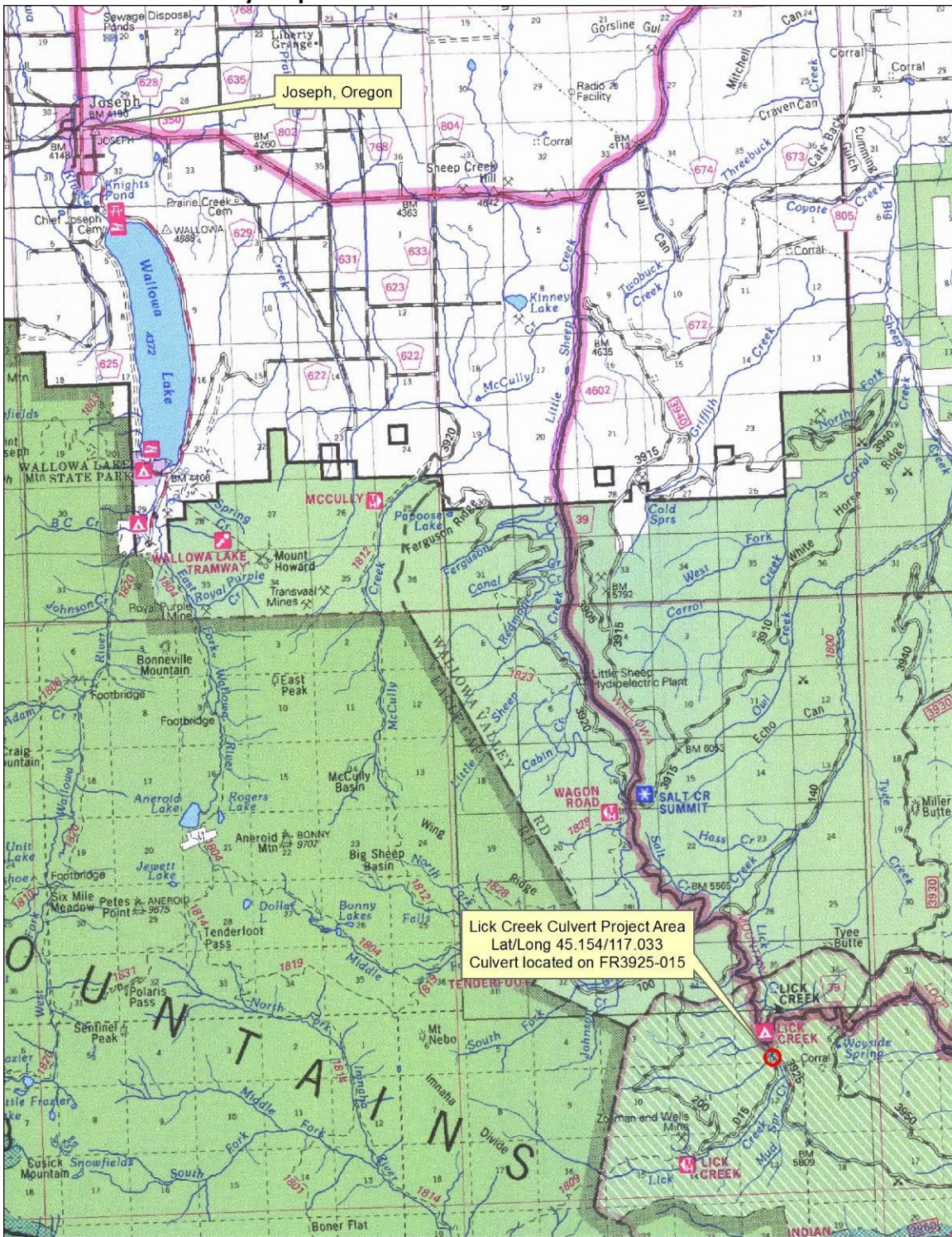
## **8. Project Budget**

See attached budget.

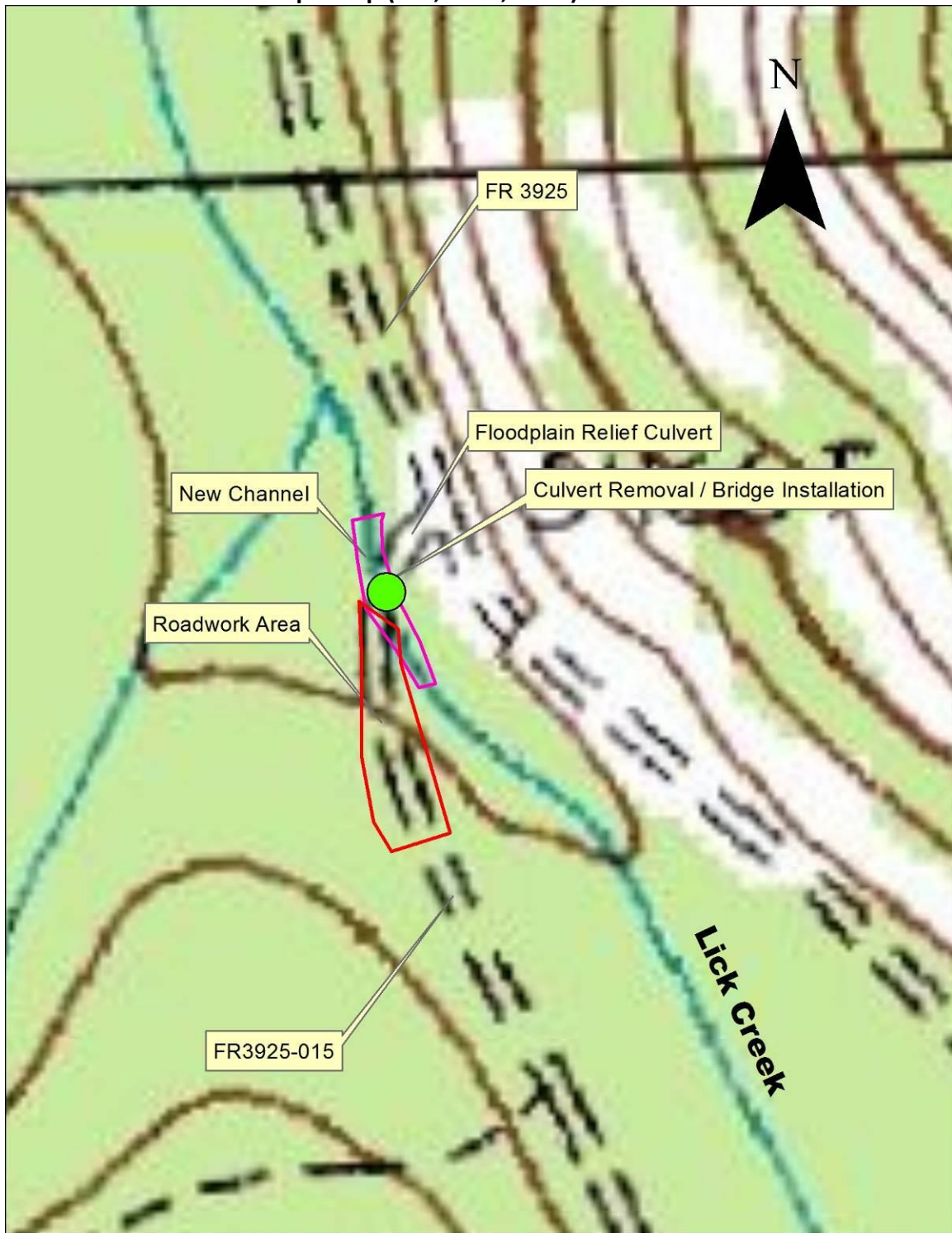
## **9. Attachments:**

1. Vicinity Map
2. Topo Map
3. Budget
4. 100% Design Study Report for Lick Creek Culvert Replacement Project

# Attachment 1 - Vicinity Map



Attachment 2 - 1:24000 Topo Map (T5S, R46E, Sec 1)



**Attachment 3 – Budget (see attached spread sheet)**

**Attachment 4 - 100% Design Study Report for Lick Creek Culvert Replacement Project  
(see attached file)**