Chapter 2 – Clearwater Complex

The Clearwater Complex Fire encompasses 47,478 acres within Clearwater, Lewis and Idaho Counties, Idaho. Land cover consists of forestland (53%), grassland (24%), and shrub/scrub (19%). Ownership is predominately private (68%), followed by federal (15%), state (8%), and tribal (9%). The majority of the fire area received a low burn severity classification (70%, 33,415 acres), with 24% moderate and 3% high. Precipitation ranges from 20 to 36 inches while elevations range from 1,100 along the Clearwater River corridor to 3,170 feet at higher elevations.

USFS identified 16 structures as at risk for post-fire debris torrent damages. It should be noted that the Idaho County property tax rolls lists over 63 homes lost during the fire, however the assessment only includes structures left standing after the fire that are at risk. A total of 175 miles of fence were burned, 211 non-residential structures were damaged and a total of 62 homes were burnt. In addition, 2 culverts were identified as undersized and potentially at risk for debris flow hazard. In addition 14 miles of fire suppression lines were identified as needing treatment on private lands.

According to Jerry Zumalt, the Idaho County Emergency Operation Center Director, there is a flood risk to both life safety and public infrastructure in Lawyer Creek from Suzie Creek down to and including the City of Kamiah; also on Tom Taha Creek. Both drainages have a diminished capacity to slow and contain water flow within their normal high water marks. Lolo Creek has a significant risk, but unless someone is down there and in the way, the risk is primarily environmental.

USGS considered 14,981 acres, and 9 miles of stream at a moderate risk for post-fire debris flow hazard risk. According to the USFS GeoWEPP model, 10,372 acres with >10 tons/acre are identified as high erosion hazard. There are 304.5 miles of roads within the burned area. The majority of these occur on private ownership (68%). Of these roads, 14.5 miles were identified as having a road erosion hazard.

Over 15,975 acres of private forestlands were damaged with the majority of these occurring on slopes greater than 20%. NRCS recommends 4,101 acres of private lands for reforestation. IDFG identified 3,067 acres of burned area as bird nesting habitat needing 1 to 3 trees per acre to provide nesting habitat for birds.

Hazard trees were not inventoried and no specific geographic location is identified for tree removal. However, future risks as trees decompose may pose risks to homes and roads. Continued monitoring is recommended and identified trees removed for the next three to five years.

The following areas were assessed but no concerns or issues were found: Burn Scar Flash Flooding Analysis. The following assessment areas are in progress and no data is available at the time of this publication: Weed Invasion Analysis. The following assessment areas were not evaluated: FS BAER Analysis and Salvage Analysis.

Key Findings:
- 3% of burned area is considered high burn severity, while 72% is considered low or unburned.
- 3 culverts on public roads identified as undersized and potential for debris flow hazard. Both culverts identified as a transportation infrastructure critical value risk. 2 culverts on private drives were identified as undersized. One is at risk of failure due to rusted culvert bottom.
9 miles of stream segments were identified as moderate debris flow hazard. Stream segments are considered a potential sediment source and impact to environmental critical values for water quality and fish habitat.

10,372 acres are identified as high or very high erosion hazard (>10 tons/acre) primarily due to the steeper slopes of the area. Of these, 6,490 (63%) are located on private lands. These lands are considered environmental risks for both water quality and critical steelhead habitat.

175 miles of fence were reported as needing replacement.

14 miles of fire suppression lines identified as needing treatment on private lands.

53% of the burned area was forestland.

68% of the area is privately owned (32,409 ac).

4,101 acres of private forestlands identified for reforestation.

14.5 miles of road erosion hazards were identified for treatment.

77% of the area has a slope >20%.

15 structures identified as at risk of post-fire flooding. 12 sites are low to very low potential for being affected by post fire debris flooding or debris. Access to additional homes could be affected due to culvert failure as identified above.

3,067 acres of private forestlands identified for nesting bird habitat protection. Acres are considered a risk to environmental critical value for sensitive areas.

Prioritized Actions

The Idaho Soil and Water Conservation District coordinated a meeting with representatives from Idaho County, Lewis County, Clearwater County, Lewis Conservation District, Clearwater Soil and Water Conservation District, US Forest Service, Idaho Soil and Water Conservation Commission, and the Idaho Department of Lands to review the assessment findings and prioritize actions. The group identified the following actions:

1. Replace two culverts on Pardee Road. One structure is completed and one remains to be completed.
2. Carrot Ridge Road erosion control measures.
3. Remove hazard trees along public roads, near infrastructure and homes.
4. Rehabilitate 14 miles of untreated fire suppression lines.
5. Perform weed control measures. Idaho County Weed Control has started re-seeding.
6. Tree plantings on private lands identified as needing reforestation – 15,759 acres.
7. Replace culverts along Glenwood Road, Adams Draw, Linder Draw. These structures will be addressed by USFS.
8. Replace Clearwater Concrete culvert.
9. Assess two culverts on Adams Grade.
10. The Hall mailbox private road needs assessed.
11. Oatman family on Tom Taha Creek has debris issues on their property and flooding.
12. Church Canyon highway culvert needs tree removed from the outlet.
13. Cornish road culvert needs assessed for sizing.
14. Erosion control on roads.
Burn Scar Flash Flooding Analysis

The National Weather Service (NWS) conducts flash flooding and debris flow risk analysis in burn scars.

Locations downhill and downstream from burned areas are very susceptible to flash flooding and debris flows, especially near steep terrain. Rainfall that would normally be absorbed will run off extremely quickly after wildfire, as burned soil can be as water repellant as pavement. As a result much less rainfall is required to produce a flash flood.

No increased flash flooding or debris flow risk areas were identified by the NWS for this fire area.
Burn Severity Characterization

Legend

- Idaho Streams
- Clearwater Complex Fire Boundary

Burn Severity

- Low (33,415 AC)
- Moderate (11,449 AC)
- High (1,436 AC)
- Unburned (1,178 AC)

Description: The burn severity map is developed from remote sensing (Burned Area Reflectance Classification (BARC)) derived data layer of post-fire vegetation condition and validated and adjusted during field surveys. The maps show the burn severity of soils and watersheds by categories of unburned, very low, low, moderate, and high. These ratings indicate the level of post-fire conditions for the soil and ground surface that is likely to affect water infiltration, runoff, and soil erosion.

Source: United States Forest Service; Burn Severity GIS layer. 2015. Map generated by Cody Dawes, Nez Perce Soil and Water Conservation District.
Culverts/Bridges at Risk

Sixteen culverts were identified as at risk from post-fire debris flows (Table 21). The following sites were modeled for post-fire runoff using Streamstats: CC01, CC05, CC08, CC09, CC10, CC15, CC16. Modeled calculations are located in Appendix O.

Table 21. Clearwater Complex culvert/bridges at risk summary

<table>
<thead>
<tr>
<th>Site Number</th>
<th>Site Name</th>
<th>Comments</th>
<th>Easting</th>
<th>Northing</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC01</td>
<td>Church Canyon aka Nikesa Creek</td>
<td>Culvert on private road.</td>
<td>0577999</td>
<td>5117196</td>
</tr>
<tr>
<td>CC02</td>
<td>Suzy Creek</td>
<td>Drainage experienced debris flow in February 1996, affecting private road</td>
<td>0567760</td>
<td>5118117</td>
</tr>
<tr>
<td>CC03</td>
<td>Tom Taha Creek Bernard Property</td>
<td>House and culvert on Tom Taha Creek</td>
<td>0575910</td>
<td>5121379</td>
</tr>
<tr>
<td>CC04</td>
<td>Beaverslide-Tom Taha Road (Private road)</td>
<td>Culvert on unnamed tributary to Tom Taha Creek is corroded and worn out</td>
<td>0577674</td>
<td>5121168</td>
</tr>
<tr>
<td>CC05</td>
<td>Unnamed stream aka ‘Pethtel Draw’ ID 162 at MP 21.1</td>
<td>Drainage experienced floods in February 1996 and June 2010. Culvert inlet under ID 162 ~40% plugged, private infrastructure at risk</td>
<td>0572552</td>
<td>5118119</td>
</tr>
<tr>
<td>CC06</td>
<td>Tom Taha Road</td>
<td>Culvert at ‘Adams Creek’ is undersized and at risk</td>
<td>0576859</td>
<td>5121730</td>
</tr>
<tr>
<td>CC07</td>
<td>Tom Taha Road</td>
<td>Culvert at ‘Linder Creek’ is undersized and at risk</td>
<td>0576121</td>
<td>5121499</td>
</tr>
<tr>
<td>CC08</td>
<td>Lolo Creek @ mouth</td>
<td></td>
<td>0563914</td>
<td>5135716</td>
</tr>
<tr>
<td>CC09</td>
<td>Nikesa Cr @ mouth</td>
<td></td>
<td>0576409</td>
<td>5117691</td>
</tr>
<tr>
<td>CC10</td>
<td>Tom Taha @ mouth</td>
<td></td>
<td>0575267</td>
<td>5120777</td>
</tr>
<tr>
<td>CC11</td>
<td>Nikesa @ cornish</td>
<td></td>
<td>0577978</td>
<td>5117199</td>
</tr>
<tr>
<td>CC12</td>
<td>Linder Creek (unnamed trib to Tom Taha)</td>
<td>Culvert at ‘Linder Creek’ is excess to need and undersized and at risk. Existing road on farside of culvert needs to be upgraded.</td>
<td>0576132</td>
<td>5121493</td>
</tr>
<tr>
<td>CC13</td>
<td>Tom Taha Trib @ Rock Pit</td>
<td>Site identified, but removed from assessment as no location data was provided.</td>
<td>unknown</td>
<td>unknown</td>
</tr>
<tr>
<td>CC14</td>
<td>Pethtel @ mouth</td>
<td></td>
<td>0572514</td>
<td>5118121</td>
</tr>
<tr>
<td>CC15</td>
<td>Adams Cr @ mouth</td>
<td></td>
<td>0576859</td>
<td>5121730</td>
</tr>
<tr>
<td>CC16</td>
<td>Linder Cr @ mouth</td>
<td></td>
<td>0576121</td>
<td>5121499</td>
</tr>
<tr>
<td>CC17</td>
<td>Tom Taha trib @ Beaverslide</td>
<td>Site identified, but removed from assessment as no location data was provided.</td>
<td>unknown</td>
<td>unknown</td>
</tr>
<tr>
<td>CC18</td>
<td>Hwy 64</td>
<td>Hwy 64 culverts needing re-aligned and potentially resized</td>
<td>0570031</td>
<td>5120968</td>
</tr>
</tbody>
</table>
Description: Analysis shows culverts/bridges identified as at risk for post fire debris flow and flooding damages. Sites identified through field inventories. Unique numbers are assigned to each culvert/bridge.

Source: One or more of the following entities identified culvert/bridge locations USFS, NPSWCD, IC, CC and ISWC.
Debris Flow – Basin Hazard

Legend

- Roads
- Idaho Streams
- Clearwater Complex Fire Boundary
- Low (45,500 AC)
- Moderate (14,981 AC)

25 Year Debris Flow Basin Hazard, Clearwater Complex Fire

Source: Preliminary Hazard Assessment by USGS

Map Generated by Cody Dawes, Nez Perce Soil and Water Conservation District. January 2016
Debris Flow – Segment Hazard

Legend
- Low (351 mi.)
- Moderate (9 mi.)
- Roads
- Idaho Streams
- Clearwater Complex Fire Boundary

25 Year Debris Flow Segment Hazard, Clearwater Complex Fire
Source: Preliminary Hazard Assessment by USGS
Map Generated by Cody Dawes, Nez Perce Soil and Water Conservation District. January 2016
Erosion Hazard

Legend

GeoWEPP Hillslope Erosion Potential

- 0 to 1 tons/acre (17,847 Acres)
- 1 to 10 tons/acre (17,784 Acres)
- 10 to 50 tons/acre (9,316 Acres)
- >50 tons/acre (1,056 Acres)

Description: Within the fire boundary, hillslope erosion rates were identified. Data was organized into one of four categories: low (0-1 tons/acre), moderate (1-10 tons/acre), high (10-50 tons/acre), and very high (>50 tons/acre). Potential hillslope erosion was estimated using the GeoWEPP model. GeoWEPP is a geo-spatial interface for WEPP (Water Erosion Prediction Project).

Source: GeoWEPP Model Runs completed by Mary Miller, Michigan Tech Research Institute and USFS Rocky Mountain Research Station, Moscow, Idaho. Map Generated by Nikki Lane, Nez Perce Soil and Water Conservation District, June 2016.
Erosion Hazard – Private Lands

Description: Within the fire boundary on private land, hillslope erosion rates were identified. Data was organized into one of four categories: low (0-1 tons/acre), moderate (1-10 tons/acre), high (10-50 tons/acre), and very high (>50 tons/acre). Potential hillslope erosion was estimated using the GeoWEPP model. GeoWEPP is a geo-spatial interface for WEPP (Water Erosion Prediction Project).

Source: GeoWEPP Model Runs completed by Mary Miller, Michigan Tech Research Institute and USFS Rocky Mountain Research Station, Moscow, Idaho. Map Generated by Cody Dawes, Nesc Pierce Soil and Water Conservation District. July 2016
Farm Infrastructure Damages

Farm infrastructure damaged or destroyed as a result of the fire includes 175 miles of fences. No geospatial data is available (Rowan, 2015).
Fire Suppression Restoration Needs

Fire Suppression Lines, Clearwater Complex Fire

Description: Fire suppression lines created during August 2015 firefighting efforts. Data classified as No Rehabilitation Needed identifies lines where rehabilitation efforts are not needed. Further split into jurisdiction responsibility (private or governmental); Rehabilitation Needed indicates lines where restoration efforts are required, such as grass seeding, grading/shaping, water bars. Further split into private or governmental jurisdictions.

Source: Idaho Department of Lands

Map Generated by Nikki Lane, Nez Perce Soil & Water Conservation District, April 2016
Fish Habitat at Risk

Legend

- High (0.5 mi.)
- Low (10 mi.)
- Moderate (5 mi.)
- Roads
- Idaho Streams
- Clearwater Complex Fire Boundary

Steelhead Critical Habitat by Burn Severity, Clearwater Complex Fire

Source: Critical Habitat from National Marine Fisheries Service, Burn Severity verification by USFS
Map Generated by Cody Dawes, Nez Perce Soil and Water Conservation District, January 2016
Flooding Hazard

Percentage increases from estimated impacts of the burn, from only the burned sub-basin, ranged from about 75 percent, at the 10 percent annual chance exceedance, to almost a 90 percent increase in peak flow, at the 1 percent annual chance exceedance. When combined with the unburned portion of the drainage, the percentage increases drop significantly, with values ranging from 3 percent to 6 percent at the junction of the burned/unburned areas. Similarly, the increased peak discharges at the confluence range from 4 percent to 6 percent higher, as compared to the pre-fire condition. This indicates that, while overall flood flows would not be expected to increase significantly along the majority of the reach, there will likely be substantially increased peaks from the burned area that could result in increased local flooding. It is worth noting that the combined peak discharges at the burned area junction exceed those of the overall basin at the outlet, indicating potential for localized high peaks at tributary confluences, for example. Some areas, such as the outlet of Suzie Creek and along areas of Sevenmile Creek, could also produce significantly higher discharges in the shorter-term (the next 5 years or so) before the burned areas recover sufficiently.
FS BAER Analysis

A FS BAER analysis was not completed as minimal US Forest Service lands are located within the burned area.
Hazard Trees

No physical inventory was completed to identify the geographic locations of hazard trees. The potential for hazard trees to pose a risk to public safety is moderate to high depending upon the stability of the near proximity to homes and roads and climate conditions over the next several years. Burned areas with trees adjacent to homes and roads will need continuous monitoring over the next three to five years and any trees posing a risk removed. Following the fire, many trees adjacent to homes were removed the Fall of 2015. Trees identified as hazards on USFS and IDL lands were removed.
NRCS EWP Analysis

In response to a request for NRCS assistance from Idaho County Board of Commissioners, Clearwater Soil and Water Conservation District and Lewis County Soil and Water Conservation District, a Damage Survey Report (DSR) team assessed damage and threats caused by wildfires in the Clearwater Complex fire.

Impacted forest types varied throughout the burn areas from dry Ponderosa pine habit types transitioning into minor amounts of dry and cool dry Grand fir habitat types with favorable elevation and aspect changes. All fire impacted soils have an elevated risk of erosion where burn severity was high, especially on steeper slopes where soils tend to be shallow to moderately deep with corresponding low levels of surface debris and organic matter.

Fortunately, regeneration of understory plants has already initiated in some areas, with grasses and forbs emerging on the drier Ponderosa pine sites providing a degree of beneficial ground cover. Perennial grasses are largely returning from surviving rootstock, and forb seedlings were observed in several locations indicating a good surviving seedbank. In addition, a scattered layer of ponderosa pine needles has fallen and is evenly distributed across the more severe burned areas, creating natural mulch that will provide erosion protection on burned soils. Plant growth and needle fall will continue under current weather conditions. Over the next few growing seasons most of the natural understory fire-adapted species will fully establish in the burned areas and erosion risk and occurrences should decline. Riparian vegetation appeared to be largely unaffected.

The application of common post fire upland forest erosion control measures (i.e. seeding via aerial or ground based application, hydro-mulching, straw bales, etc.) may not be economically feasible or necessary.

Stand replacement fires occurred on virtually all of the high burn severity areas. Many of the moderate burned areas will also experience stand replacement, either by initial burn impact or by subsequent die off from stress induced insect attacks. A degree of banked conifer seed may be present and viable in the soil, especially in low to moderate severity burned areas, and limited natural regeneration of desirable tree species will likely occur. The amount of expected natural regeneration was impossible to determine during the site reviews.

Loss of the conifer seed sources will necessitate conifer replanting to an appropriate species mix utilizing seed from appropriate transfer zones in order to establish forest cover. The forest nursery suppliers do not have nearly enough suitable conifer seedlings at present to satisfy planting operations in the spring of 2016, and are likely to be unable to supply enough seedlings for 2017 as the “sow” orders were filled prior to these fires. Local private nursery capacity is full. Therefore many landowners are looking at the spring of 2018 as the first opportunity to replant. Significant site preparation operations(s) may be necessary if planting will be delayed until 2018. There is a balance that has to be struck between the positive elements of vegetative recovery for soil protection, and the need to address excessive plant competition from grass and shrubs that would adversely affect seedling establishment.

Engineering practices implemented in post-fire areas are typically those that help to address increased runoff flow due to negative hydrologic characteristics. Aside from a couple sites described in the “Daily Log” section of this report there are little to no engineering practices that should be applied for exigent conditions, as well as those that could practically be applied to address non-exigent, non-pre-existing conditions. However, culvert replacements as listed in the assessment compiled by Annie Connor (USFS) and Nick Gerhardt, Preliminary Critical Sites, should be addressed by local governing authorities. EQIP funding, if available, may be a suitable NRCS funding source to assist with implementation.
Summary Findings

- Many structures (homes), especially in the Clearwater Complex, are located on ridges or highpoints, not in draws, and therefore are not highly susceptible to issues associated with runoff events.
- The majority of concerns on the Preliminary Critical Sites List related to potential debris flows and culvert plugging – most culverts listed are assessed as being undersized or past their operative lifespan.
- Some concerns from the Preliminary Critical Sites List referred to homes situated on alluvial fans at the base of drainages. Due to the steep slopes and shallow soils these were largely seen to be at risk prior to the fires, and at increased risk levels post-burn.
- New growth of grasses and forbs is evident in low to moderate severity burned areas. Naturally recovering vegetation precludes the need to additional seeding on these sites.
- Ponderosa pines are shedding needles adding a natural mulch barrier to the soil. This will reduce erosion potential and serve to reduce evaporation and aid seedling germination.

Conclusion and Recommendations:

Erosion, runoff and sedimentation is likely to occur as a result of the wildland fires, but these “pulse” type impacts are common following fire disturbance, and eventually moderate in severity as natural vegetation recovery occurs. EWP in itself will not directly mitigate on-site vegetative conditions that presently exist. All sites visited showed characteristics of non-exigency. Additionally, due to funding for EWP being at an all-time low, only Priority 1 projects (imminent threats to life and property) may be funded. Priorities 2-4 may go on the national waitlist until such time that funding might be available. NRCS EQIP may be a suitable funding alternative, is well suited to assist landowners in efforts to re-establish forest tree species where stand replacement fire has eliminated viable forest stands, and to could address additional resource concerns that EWP cannot.

Clearwater Complex (Lawyer Creek Area)
Flying B Ranch
Seeding unnecessary due to natural recruitment. Structure not in path of drainage; no engineering practices recommended

Clearwater Complex (Lolo Area)
Aerial or hydro-seeding would speed up recovery time of understory grasses and forbs and reduce potential for erosion. The electrical installation at the bottom of the hill near the creek could be better protected by adding eco-blocks to the upslope side.

Clearwater Complex (Kamiah/Woodland Areas)
Homes in these areas are primarily situated on the tops of hills and not directly threatened by flooding or erosion. Natural regeneration of vegetation is visible. No treatments are suggested.
Land Cover Characterization

Legend

- Idaho Streams
- Clearwater Complex Fire Boundary
- Land Cover
  - Cultivated Crops (1,446 AC)
  - Deciduous Forest (26 AC)
  - Developed, Low Intensity (32 AC)
  - Developed, Open Space (330 AC)
  - Emergent Herbaceous Wetlands (29 AC)
  - Evergreen Forest (24,983 AC)
  - Grassland/Herbaceous (11,554 AC)
  - Open Water (5 AC)
  - Pasture Hay (12 AC)
  - Shrub/Scrub (9,024 AC)
  - Woody Wetlands (37 AC)

Description: Land Cover classes include; Developed, Open Space - mix of constructed materials, but mostly lawn grasses. Impervious surfaces < 20% of total cover. Deciduous Forest - >20% deciduous trees. Evergreen Forest - >20% evergreen trees. Mixed Forest - >20% trees with mix of deciduous and evergreen trees. Shrub/Scrub - >20% shrub vegetation. Grassland/Herbaceous - >80% grass/other herbaceous vegetation. Pasture/Hay - Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Cultivated Crops - Areas used for the production of annual crops and/or being annually tilled. Woody Wetlands - Soils that are periodically saturated or covered with water and contain >20% forest or shrubland vegetation. Emergent Herbaceous Wetlands - Soils that are periodically saturated or covered with water and vegetation is >80% herbaceous.

Map generated by Cody Dawes, Nez Perce Soil and Water Conservation District.
Land Ownership Characterization

Legend
- Idaho Streams
- Clearwater Complex Fire Boundary

Ownership
- Federal (6,911 AC)
- Private (32,409 AC)
- State (3,771 AC)
- Tribal (4,387 AC)

Description: Land ownership classes include BLM = Bureau of Land Management, Federal agency; IR = Indian Reservation, designated as tribal ownership; Private = non-governmental ownership; State = State of Idaho; USFS = United States Forest Service, federal agency; Federal = federal agency.

Reforestation Needs – Private Forestland Acres

Legend

- Roads
- Idaho Streams
- Clearwater Complex Fire Boundary
- Forest (15,975 AC)

Forested Acres on Private Land, Clearwater Complex Fire

Source: BLM ownership layer, National Land Cover Database

Map Generated by Cody Dawes, Nez Perce Soil and Water Conservation District, January 2016
Reforestation Needs – Planting Groups

Legend
- Streams
- 0 (2830 AC)
- 1 (1396 AC)
- 2 (6024 AC)
- 3 (749 AC)
- 4 (4760 AC)
- Clearwater Complex Fire Boundary

Planting Groups on Forested Private Land, Clearwater Complex Fire

Source: BLM Land Status of Idaho Layer, NLCD 2011 Landcover (USGS) Layer, Planting Groups (NRCS)

Map Generated by Cody Dawes, Nez Perce Soil and Water Conservation District. February 2016
Reforestation Needs – Private Forestlands Slope
Road Characterization
Road Erosion Hazard

14.5 miles of road erosion hazard was identified by the ISWC along Lolo Creek Cutoff Road, Carrot Ridge Road and Pardee Road.
Salvage Analysis

No analysis was completed for this fire.
Slope Characterization

Description: Slopes were identified using Digital Elevation Model data. Slopes were divided into 3 categories 0–20%, 21–40%, and >40%.


Map generated by Cody Dawes, Nez Perce Soil and Water Conservation District.
Stream Characterization

Legend
- Clearwater Complex Fire Boundary
- Clearwater Complex Roads

ClearwaterComplexStreams
- Intermittent (123.3 mi)
- Perennial (35.2 mi)

Description: Stream segments are classified by perennial or intermittent. Perennial segments have water flowing throughout the calendar year. Intermittent segments contain water flow on a seasonal basis.

Structures at Risk

Legend
- Clearwater Complex Fire Structures
- Clearwater Complex Streams
- Clearwater Complex Roads
- Clearwater Complex Boundary

Structures at Risk, Clearwater Complex Fire

Description: A review of structures at risk of damage from post fire hydrologic effects was done using Google Earth and the burned area severity maps. Structures that were located in the floodplain or alluvial fans (generally at the base of steep draws) were located and mapped. Many of these properties have an existing risk of flooding and debris torrents that have been elevated to varying degrees due to the fires of 2015 and are represented by yellow dots.

Water Systems at Risk

![Map of water systems at risk in the Clearwater Complex fire area.]

Legend:
- **GROUND WATER** (3)
- **SPRING** (1)
- **UNNAMED STREAM** (2)

Idaho Streams
Clearwater Complex Fire Boundary

Source: Idaho Department of Water Resources; Licensed or Decreed Points of Diversion GIS layer, 2015. (http://www.idwr.idaho.gov/GeographicInfo/GISdata/water_rights.htm)

Map Generated by Cody Dawes, Nez Perce Soil and Water Conservation District, January 2016
Weed Invasion Analysis

The Idaho County Weed Department identified 1,800 acres of weeds needing monitoring and potential treatment. The majority of the weeds are considered 5H in priority.

Data Description: Weed treatment needs by management priority group. Categories are 1 to 5, with 1 being the highest priority and 5 the lowest priority.

Weeds are prioritized by management priority with 1H being the highest priority and 5H the lowest priority. There are 25 acres of 1H weeds which include the following species: butter and eggs, common tansy, garden yellowrocket, Japanese knotweed, nodding plumeless thistle, perennial pea, scotch broom, and whitetop (Table 22).

Table 22. Clearwater Complex Invasive Weed Priorities by Species

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Species Code</th>
<th>Management Priority</th>
<th>Area (AC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butter and eggs</td>
<td>LIVU2</td>
<td>1H</td>
<td>1</td>
</tr>
<tr>
<td>Canada thistle</td>
<td>CIAR4</td>
<td>3H</td>
<td>2</td>
</tr>
<tr>
<td>common crupina</td>
<td>CRVU2</td>
<td>5H</td>
<td>319</td>
</tr>
<tr>
<td>common mullein</td>
<td>VETH</td>
<td>3H</td>
<td>178</td>
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<tr>
<td>common St. Johnswort</td>
<td>HYPE</td>
<td>3H</td>
<td>17</td>
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<tr>
<td>common tansy</td>
<td>TAVU</td>
<td>1H</td>
<td>1</td>
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<tr>
<td>Dalmatian toadflax</td>
<td>LIDA</td>
<td>5H</td>
<td>138</td>
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<tr>
<td>garden yellowrocket</td>
<td>BAVU</td>
<td>1H</td>
<td>11</td>
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<td>Japanese knotweed</td>
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<td>jointed goatgrass</td>
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<td>meadow hawkweed</td>
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<td>nodding plumeless thistle</td>
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<td>orange hawthorne</td>
<td>HIAU</td>
<td>5H</td>
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<td>oxeye daisy</td>
<td>LEVU</td>
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<td>perennial pea</td>
<td>LALA4</td>
<td>1H</td>
<td>2</td>
</tr>
<tr>
<td>Queen Anne's lace</td>
<td>DACA6</td>
<td>3H</td>
<td>79</td>
</tr>
<tr>
<td>rush skeletonweed</td>
<td>CHJU</td>
<td>5H</td>
<td>221</td>
</tr>
<tr>
<td>Scotch broom</td>
<td>CYSC4</td>
<td>1H</td>
<td>0</td>
</tr>
<tr>
<td>spiny plumeless thistle</td>
<td>CAAC</td>
<td>5H</td>
<td>4</td>
</tr>
<tr>
<td>spotted knapweed</td>
<td>CEBI2</td>
<td>3H</td>
<td>281</td>
</tr>
<tr>
<td>whitetop</td>
<td>CADR</td>
<td>1H</td>
<td>3</td>
</tr>
<tr>
<td>yellow star-thistle</td>
<td>CESO3</td>
<td>5H</td>
<td>254</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>1,853</strong></td>
</tr>
</tbody>
</table>
Wildlife Habitat at Risk

Source: BLM Land Status of Idaho Layer, NLCD 2011 Landcover Layer (USGS)
Map Generated by Cody Dawes, Nez Perce Soil and Water Conservation District. February 2016