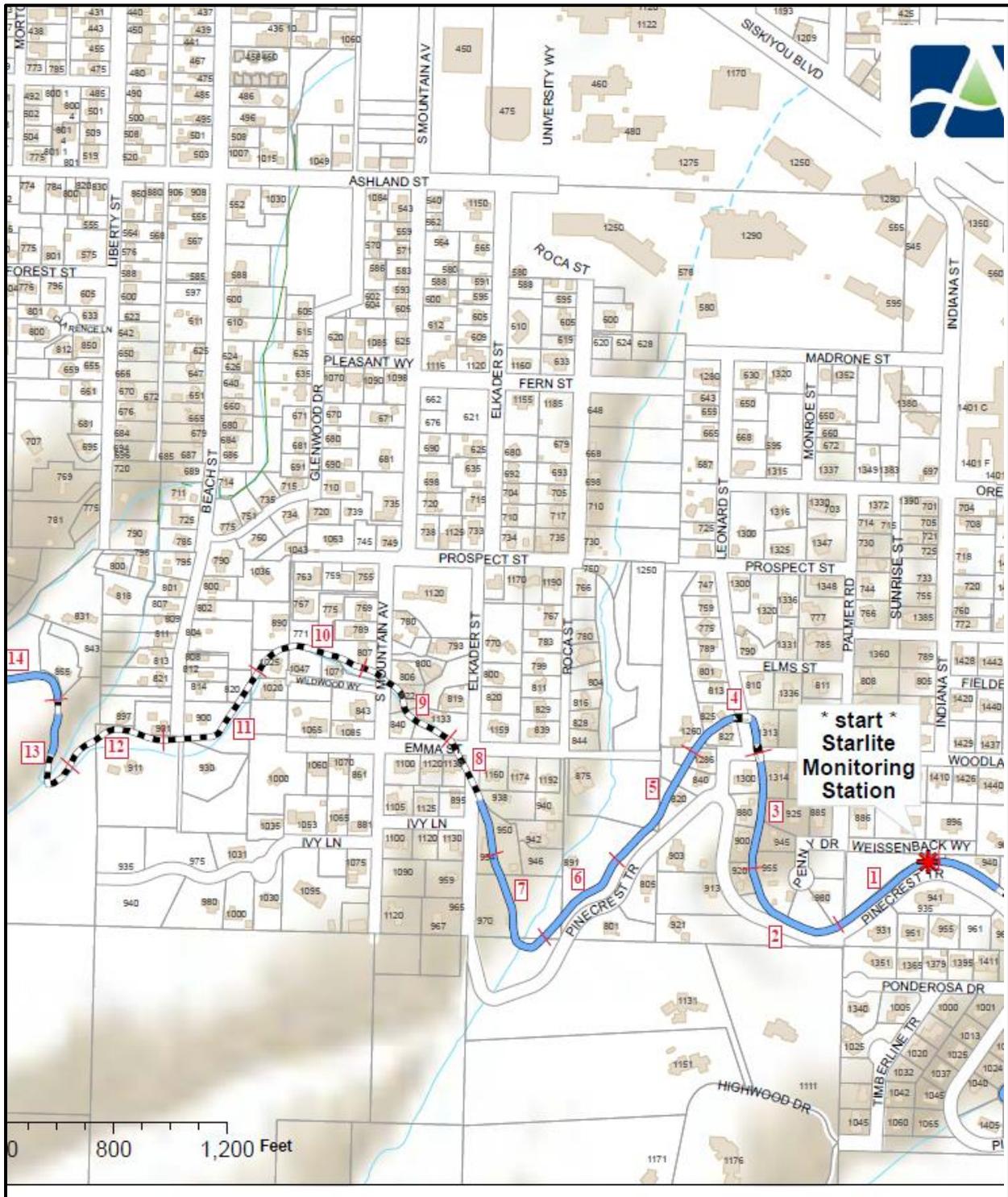


APPENDICES

Appendix A: Ashland Canal Tenth Mile Segment Profile Summaries

Figure 4: Map of Canal East Half with Survey Segments 1-12



Ashland Canal Piping Project Segment #1 Summary

Location within Project. Segment #1 occurs between mile 0.0 and 0.10; it begins at the Starlite Monitoring Station above Weissenback Way and below Pinecrest Terrace, and continues southwest, ending at a private, gated, and signed non-public right of way portion upslope of 957 Penny Drive.

Segment Description. This segment is currently an open channel canal with an adjacent narrow paved trail. On the east end of the segment, there is a steep slope below the ditch forested by a mix of large conifers. Downslope is a substantial cutbank where a private driveway was cut into the hillside. The remainder of the segment is characterized by a madrone dominant slope with mixed black oaks and younger Douglas-firs. There is one large Ponderosa



Segment #1 Start (mile 0.0), looking SW

pine near the draw. The ground cover is mostly open.

Areas of Concern (AOC) 1.1: The cutbank associated with the private driveway downslope of the canal creates conditions that accelerate drying of the hillside above it by exposing lower slope strata that would normally be protected by layers of soil. If the

large conifers on this slope experience moisture stress following piping, the loss of summer water by the lower cutbank will increase this stress. Many of the larger conifers, particularly the Douglas firs, **are at risk of dying** following piping. The large ponderosa pines have a better chance of tolerating this change, as do all the hardwood species. The madrone dominant portion of the segment through the center and west ends appears stable and poses little concern through canal piping process.



Segment #1 End (mile 0.1), looking NE

Noxious Weeds. 1. Three patches of Himalayan blackberry-all occur upslope of the canal; one just above the water line and two between the canal and Pinecrest Terrace. **2.** One small patch of Scotch broom is located out of the project construction footprint, about 10 meters downslope.

Recommendations. AOC#1.1: Add 3"-4" of wood chip mulch covering the slope surrounding the specimen trees to delay soil drying. Thin out encroaching younger trees and shrubs to reduce competition. Monitor this site and remove trees that develop serious signs of decline or disease. Where feasible, avoid damage, disturbance and/or removal of large pines and oaks during excavation and construction. **Noxious Weeds. 1.** Remove Himalayan blackberry and Scotch broom prior to construction/excavation to reduce spread of infestation.

Ashland Canal Piping Project Segment #2 Summary

Location within Project. Segment #2 occurs at mile 0.1 to 0.2. It begins at a private gated and signed non-public right of way portion, then continues northwest and north, and ends below 880 Pinecrest Terrace, above 945 Penny Drive.

Segment Description. This segment is currently an open canal and partially paved trail. The segment occurs over a concave slope, inferring that it maintains soils moisture longer than a flat or convex slope, because water accumulates during runoff periods from upslope. This extra ground water provides for a healthy overstory of mature Douglas firs and 2 very large ponderosa pines. These large trees are susceptible to water stress from canal piping.



Segment #2 Start (mile 0.1), looking West
Upslope is mixed madrone and black oak with younger Douglas firs seeding in beneath them.



Segment #2 End (mile 0.2), looking South

Areas of Concern (AOC) 2.1: If the large conifers (noted above) are receiving augmented summer water from portions of a leaking canal, they will experience water stress impacts following its piping and may die.

AOC. 2.2: Encroaching Douglas firs within hardwood stand will increase competition for limited resources, reducing stand health and vigor.

Noxious Weeds. 1. Two patches of English Ivy occur, one downslope, one upslope and both continue into private yards. One is observed starting to climb a specimen oak tree. **2.** A single hawthorn tree occurs downslope, on the NE trail edge. **3.** One small patch of vinca (“periwinkle”) occurs upslope and down to the canal water’s edge.

Recommendations. AOC 2.1: It is important to include this area in follow up monitoring to assess tree/forest health changes following piping. There are potential steps that can be taken to reduce moisture stress on specimen trees that include: mulching, thinning, and in very special circumstance, deep watering can happen over subsequent seasons following piping to help older trees adjust to changes in the water regime. **AOC 2.2:** Select hardwoods to keep and thin encroaching Douglas fir seedlings in stand to reduce competition and make the stand healthier. Leave scattered healthy Douglas fir where appropriate for site. Also consider multi-trunked hardwoods to 1-2 trunks where appropriate. **Noxious Weeds. 1.** Remove English ivy and hawthorne tree prior to construction/excavation to reduce spread of infestation. Ensure the ivy is removed from the specimen oak to prevent its eventual damage.

Ashland Canal Piping Project Segment #3 Summary

Location within Project. Segment #3 occurs at mile 0.2 to 0.3; it begins below 880 Pinecrest Terrace and above 945 Penny Drive, continues north and ends roadside between 1300 and 1314 Woodland Drive, where the canal is piped under Woodland Drive.

Segment Description. This segment is currently an open channel canal with a trail, until it reaches Woodland Drive where it is piped north under the street. The upslope area above the canal is a cultivated landscape, while downslope presents as a native landscape with large black oaks and Douglas firs occupying the upper canopy. Younger Douglas fir seedlings are beginning to increase the forest density.



Segment #3 Start (mile 0.2), looking North at Large Douglas-fir and small conifers within 10 feet of canal.

Areas of Concern (AOC). **AOC 3.1:** Natural landscape downslope of canal is crowded by



Segment #3 End (mile 0.3), looking South

encroaching Douglas firs which creates competition for resources and ultimately water. **AOC 3.2:** Very large Douglas fir on edge of trail below canal and other large conifers near canal have roots surrounding canal liner and will likely die from construction damages to roots and following piping changes to the water table.

Noxious Weeds. **1.** A single Scotch broom plant occurs on the upslope edge of the canal. **2.** A single nut sedge plant is growing in the water at the canal's east edge. **3.** One patch of vinca ("periwinkle") occurs near the trail's east edge. **4.** A single Himalayan blackberry plant occurs upslope and close to the canal.

Recommendations. **AOC 3.1:** Thin out encroaching Douglas firs from healthy, black oaks and Douglas fir specimen trees leaving enough room to minimize competition between trees. **AOC 3.2:** Have construction steward, forester, or consulting arborist evaluate large conifers near canal to decide which to remove due to construction hazards and likelihood of dying because of moisture stress and inappropriate siting.

Noxious Weeds Treatments. Remove noxious weeds, Scotch broom, nut sedge, vinca and Himalayan blackberry, prior to construction/excavation to reduce spread of infestation. **3.** Monitor health of conifers near canal trail and downslope in post-construction years, and consider augmented watering.

Segment #3 Summary-continued

Issue and Area of Concern Photos.



Segment 3: Large Douglas-fir Along Trail, at Risk with Change in Underground Water. Looking North

Ashland Canal Piping Project Segment #4 Summary

Location within Project. Segment #4 occurs at mile 0.3 to 0.4; it begins at the NE corner of Leonard and Woodland Streets, continues north, crosses Leonard St., and turns west-southwest behind private residences and ending behind 840 Pinecrest Terrace.

Segment Description. This segment is currently an open channel canal with a walking trail. At the south end, this segment dominates the front yard of 1313 Leonard St. where a shady mix of native and planted conifers occurs: Ponderosa pine, Douglas-fir, Deodar cedar and Atlas cedar. The trees occur *in* the trail, between the canal and the street, and immediately west of the trail as yard specimen trees. One large pine occurs on the trail/canal edge near Leonard St., and two large pines and one large Douglas-fir occur 5 meters downslope of the canal, with scattered madrone and black oak. West of Leonard St., the canal threads a narrow corridor between private backyards between a wooden fence, a carport and landscaping. Habitat includes landscape trees and shrubs, and native vegetation (Ponderosa pine, hardwoods, Douglas-fir). Native conifers and hardwoods continue downslope including Douglas fir,

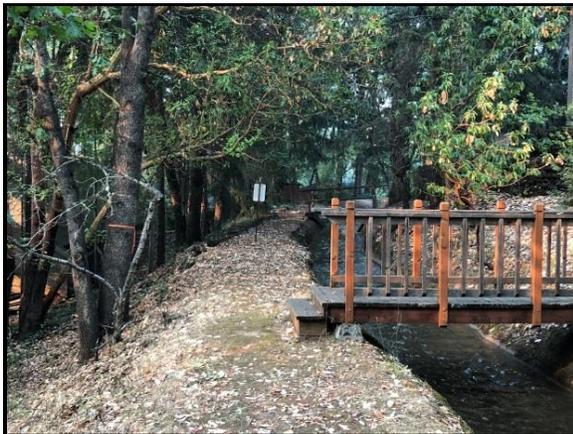


Segment #4 Start (mile 0.3), looking North

and scattered mature black oak. No obvious seepage/leakage or evidence of augmented underground water occurs in this segment. A private bridge crosses the canal as access to the front door of 1313 Leonard St. Additional private walking bridges cross the canal behind Pinecrest Terrace and Woodland St. homes. The canal liner is obviously broken in two locations, where large pines grow on the upslope edge.

Areas of Concern (AOC) 4.1. Mature Douglas-fir and Ponderosa pines on the canal or trail-side are likely to be impacted by construction

disturbance and may require removal. **AOC 4.2.** Mature sized Douglas-fir trees downslope of the canal, may be negatively impacted by a change in underground water. **AOC 4.3.** Landscape trees and shrubs near canal trail (dogwood, bamboo) may be impacted by construction disturbance and/or change in available water (if not irrigated).



Segment #4 End (mile 0.4), looking NE

Noxious Weeds. 1. A single “wild” holly tree occurs 0.5 meters upslope of the canal and within native vegetation. **2.** A single “wild” hawthorn tree occurs 3 meters downslope of canal. **3.** Two patches of English ivy occur, one along the canal trail and extending into a private yard, and one linear patch south of the canal.

Segment #4 Summary-continued

Recommendations. AOC 4.1, 4.2, and 4.3: Construction steward and Rep should consult on probable outcomes and appropriate actions. Also meet with private landowners on respective issues. Where feasible, avoid damage, disturbance and/or removal of large conifers during construction. **2.** Monitor health of conifers following construction and prepare for mitigation techniques such as mulching where advised. Potentially supplement deep watering 2 or more times as necessary each month over the summer to help important trees transition from their water dependency to a more natural drought tolerant state. This process could easily require 10 years of supplemental watering for very large trees gradually reducing the frequency of watering. Thin young understory Douglas-fir trees near specimen trees for long-term vegetation health and resiliency. **Noxious Weeds Treatments.** Remove holly and hawthorn trees, and English Ivy prior to excavation to reduce infestation risks.

Issue and Area of Concern Photos.



Segment 4: Bridge Over Canal to Front Door (1333 Leonard St.), Looking East



Segment 4: Large Pine Near Construction Footprint, Looking North



Segment 4: Broken Canal at Large Pine, Looking South



Segment 4: Broken Canal at 2nd Large Pine, Looking NE

Ashland Canal Piping Project

Segment #5 Summary

Location within Project. Segment #5 occurs at mile 0.4 to 0.5, beginning behind 840 Pinecrest Terrace and continuing southwest beyond a private fence and gate below 805 Pinecrest Terrace.

Segment Description. This segment is currently an open channel canal with a walking trail located on a northwest-facing slope above Roca Creek. Slopes are often steep above the canal, and moderate downslope. Habitat up and downslope is a native mixed black and white oak woodland, with scattered madrone, young Douglas-fir, and a notable stand of native and non-native grass cover. Sub-mature conifers (Douglas-fir and Ponderosa pine) are scattered trailside and up and downslope. At the segment's south end a grass pasture begins 10 meters



Segment #5 Start (mile 0.4), looking SW

downslope and continues down to Roca Creek. No obvious seepage or evidence of augmented underground water occurs in this segment.



Segment #5 End (mile 0.5), looking NE

Areas of Concern (AOC) 5.1. Two mid- to large-sized Douglas-fir, on the canal's southern edge, will likely be impacted by construction disturbance and may require removal. **AOC 5.2.** Young to mid-sized Douglas-fir, located downslope of the canal, may be negatively impacted by a change in underground water.

Noxious Weeds. 1. A single "wild" hawthorn tree occurs ~5 meters downslope of canal. **2.** Two patches of Scotch broom occur: one patch downslope, and one patch upslope continuing south to Pinecrest Terrace. **3.** Two patches of Himalayan blackberry, both on the north, downslope trail edge or just below the trail.

Recommendations. AOC 5.1. Where feasible, avoid damage, disturbance and/or removal of large conifers and oaks during construction. **AOC 5.2.** Monitor health of conifers (esp. Douglas-fir located downslope) in post-construction years; consider augmented watering. **3.** Thin young understory Douglas-fir trees for long-term vegetation health and resiliency. **Noxious Weed Treatments.** Remove Himalayan blackberry, Scotch broom, and the hawthorn tree prior to excavation to reduce increase in infestation.

Ashland Canal Piping Project Segment #6 Summary

Location within Project. Segment #6 occurs at mile 0.5 to 0.6; it begins below 805 Pinecrest Terrace and above Roca Creek, and continues southeast to the east side of the Roca Creek crossing.

Segment Description. This segment is currently an open channel canal and walking trail located on a northwest facing slope above Roca Creek. Habitat is native vegetation of mixed conifers and hardwoods. Oak woodlands with white oak, madrone and Douglas-fir occur on steep slopes above the canal. Downslope is a mixed conifer/hardwood forest that extends downslope to the riparian zone of Roca Creek, where scattered large pines and Douglas-fir occupy the overstory, and young sapling Douglas-fir dominate the understory, with scattered hardwoods. A private metal fence occurs along the canal trail's NW side. No obvious canal-related seepage or evidence of augmented underground water is visible



Segment #6 Start (mile 0.5), looking SW

In this segment. The presence of large Douglas-fir trees below and along the canal, however, suggests that large Douglas-fir are unnaturally present and benefiting from some level of increased moisture, or underground water related to the canal.



Segment #6 End (mile 0.6), looking NE

Areas of Concern (AOC) 6.1. Young to large Douglas-fir, located downslope of the canal, may be negatively impacted by a change in underground water. **Observation of Note.** Private fencing is located on the NW edge of the canal trail and may require measures to avoid construction disturbance and/or damage.

Noxious Weeds. **1.** A single wild hawthorn tree at 5 meters north of the trail. **2.** Three patches of Himalayan blackberry, with one large infestation that covers the trail and continues downslope with 100% cover [photo below]. **3.** A single patch of vinca ("periwinkle") occurs on the downslope edge of the trail. **4.** A small patch of scattered Scotch broom plants downslope of the trail. **5.** A small patch of broad-leaved sweet pea (*Lathyrus latifolius*) occurs on the NW trail edge.

Recommendations. **AOC 6.1.** Thin small Douglas-fir trees adjacent to/downslope of canal to favor pines and oaks and to increase long-term vegetation health and resiliency. Monitor health of conifers (esp. Douglas-fir located downslope) in post-construction years; consider augmented watering. **Noxious Weeds.** **3.** Remove noxious weeds (hawthorn tree Himalayan blackberry, Scotch broom, vinca and broad-leaved sweet pea) prior to excavation to reduce and control infestations.

Segment #6 Summary-continued

Issue and Area of Concern Photos.



Segment 6: Private Fencing Trailside, looking NE



Segment 6: large blackberry infestation along trail, and metal culvert (top to right), looking NE



Segment 6: Metal culvert (and rope swing) upslope from Pinecrest Terrace Road, looking SE

Ashland Canal Piping Project Segment #7 Summary

Location within Project. Segment #7 occurs at mile 0.6 to 0.7, beginning on the east side of the Roca Creek crossing and continuing north, and ending between the backyards of 950 and 954 Elkader St.

Segment Description. This segment is currently an open channel canal on a northeast-facing slope above Roca Creek. The segment begins in native vegetation and then shifts to private yards. Upslope, along Roca Creek, is a natural white oak woodland with multi-stem oaks and a grassy understory. Downslope is a riparian zone of mixed conifers and oaks: young sapling and older Douglas-fir, scattered large Ponderosa pine, white oak, Pacific madrone, and occasional black oak, incense cedar and poplar. Moist-site species are also present, and include poplar, bigleaf maple, dogwood, mock orange, and horsetail. At the Roca Creek crossing, significant leakage occurs out of the canal and into/over a dry culvert; this appears to be intentional augmenting of water to Roca Creek (see photos below). Roca Creek is currently dry and likely flows only during winter or high precipitation events. The presence and cover of



Segment #7 Start (mile 0.6), looking West

moist site riparian species suggests that downslope and trailside vegetation receive both increased surface and underground water. This impact extends some unknown distance down creek. The north end of the segment passes through the yards of 950 and 952 Pinecrest Terrace, with a mix of native oaks and lawn, and two private bridges.

Areas of Concern (AOC) 7.1. When the augmentation of canal water to Roca Creek is stopped, riparian vegetation is likely to be



Segment #7 End (mile 0.7), looking SE

negatively impacted. Young and larger Douglas-fir are unlikely to survive this transition longterm. The moist site trees and shrubs (poplar, maple, dogwood, mock orange) and the wet creekside vegetation will likely die back, especially in drought years.

Noxious Weeds. 1. A single wild hawthorn tree occurs 1 meter downslope. **2.** Himalayan blackberry occurs as multiple distinct patches and as smaller sites along this segment. The larger site occurs at the Roca Creek crossing and above. **3.** A single patch of Scotch broom occurs above the Roca Creek crossing. **4.** A small patch of broad-leaved sweet pea (*Lathyrus latifolius*) occurs 2 meters downslope of the trail, and is entering the riparian zone.

Recommendations. AOC 7.1. 1. End canal flow to Roca Creek by building a culvert at the Roca Creek crossing. **2.** Thin the young Douglas-fir downslope and adjacent to trail to favor pines and oaks and increase forest health and resiliency. **3.** Selectively thin multi-trunk oaks upslope to increase long-term

Segment #7 Summary-Continued

Recommendations-con't.

health and resiliency. **4.** Monitor health of conifers (esp. large Douglas-fir located near/downlope of trail) in post-construction years; consider augmented watering. **5.** Remove noxious weeds prior to excavation to avoid infestation.

Issue and Area of Concern Photos.



Segment 7: Site of Leakage/flow Out of Canal, to Roca Creek, looking Down at Canal



Segment 7: Flow of Water out of Canal to Roca Creek, looking NE



Segment 7: Flow of Water out of Canal to Roca Creek, looking SW



Segment 7: Moist Site Vegetation near Canal Augmentation to Roca Creek, looking East

Ashland Canal Piping Project Segment #8 Summary

Location within Project. Segment #8 occurs at mile 0.7 to 0.8, beginning in the backyards of 950 and 954 Elkader Street and continuing north, and crossing northwest under Elkader Street to the northwest corner of Emma and Elkader Street.

Segment Description. This segment begins as an open channel canal and walking trail, and passes through a narrow corridor between residential backyards before ending as an underground pipe under Elkader Street. The habitat is residential landscaping (primarily lawn) with scattered Ponderosa pines. The upslope side of the canal passes within 1 to 3 meters of deck pier foundations. Two large Ponderosa pines occur on the canal edge where roots have cracked the concrete liner. No visible moisture or seepage from the canal occurs in this segment. A small plastic drainpipe at 954 Elkader St. currently dumps runoff



Segment #8 Start (mile 0.7), looking NW

water directly into the canal. At the north end of this segment, the canal is piped under the NE corner of 1130 Emma St., and NW under Emma Street.



Segment #8 End (mile 0.8), looking SE

Areas of Concern (AOC) 8.1. Large pines occur on the canal edge and trailside, all within the construction footprint and will likely need to be removed; the pines provide shade and privacy.

Noxious Weeds. 1. Multiple and nearly continuous patches of Himalayan blackberry occur along the east trail edge.

Recommendations. AOC 8.1. Where feasible, avoid damage, disturbance and/or removal of large pines during construction. Consult (construction steward and rep) on appropriate action. Monitor and mitigate as necessary if any are selected to protect. **Noxious Weed Treatment.** Remove the blackberry prior to excavation to avoid increased infestation.

Segment #8 Summary-Continued

Issue and Area of Concern Photos.



Segment 8: Narrow Construction Corridor And Mature Trees Along Upper Slope Edge, Looking North



Segment 8: Pine On Canal Upper Slope Edge, Looking West



Segment 8: Large Pine At Broken Canal Edge, Looking West



Segment 8: 2nd Large Pine At Broken Canal Edge, Looking West



Segment 8: Large Pine On Trail Edge, Looking North

Ashland Canal Piping Project Segment #9 Summary

Location within Project. Segment #9 occurs at mile 0.8 to 0.9, beginning at the NW corner of Emma and Elkader Streets, continuing northwest through the front yard of 1133 Emma St., and ending on the west side of S. Mountain Avenue.

Segment Description. This segment is currently a buried underground pipe, beginning in the private front yard of 1133 Emma St., and continuing NW under a 10 ft. wide paved driveway between 840 and 822 S. Mountain Ave., that provides access to a carport at 133 Emma St. and a garage at 822 S. Mountain Ave. This segment is dominated by native landscaping: scattered mature Ponderosa pine, Douglas-fir, black oak, Pacific madrone, whiteleaf manzanita and birchleaf mountain mahogany. Large specimen pines are located along the construction footprint. The corner of the 1133 Emma Street carport occurs at a curve in the construction foot-



Segment #9 Start (mile 0.8), looking NW

print. No visible moisture or seepage from the underground pipe occurs in this segment. Native vegetation is similar to that outside of the piped canal corridor.



Segment #9 End (mile 0.9), looking SE

Areas of Concern (AOC) 9.1. Mature pines, and madrone, oaks, and manzanita occur within the construction corridor in the front yard of 1133 Emma St., (and additional pines along the corridor to the north); all will be significantly impacted, as roots and/or entire trees may be disturbed during excavation.

Noxious Weeds. None located in Segment #9.

Recommendations. AOC 9.1. Consult among experts to refine the pipe replacement methods to ensure least impacts to selected portions of existing mature landscape, including large pines, oaks, madrones and manzanita along project corridor.

Segment #9 Summary-Continued

Issue and Area of Concern Photos.



Segment 9: Carport Structure and Large Pine at Corner of Construction Footprint, Looking SE



Segment 9: Large Pine along Construction Footprint, at Carport Structure, Looking NW



Segment 9: Large Pine in Yard, 1333 Emma St., Looking NW

Ashland Canal Piping Project Segment #10 Summary

Location within Project. Segment #10 occurs at mile 0.9 to 1.0, beginning just west of S. Mountain Ave., and continuing west, below and north of Wildwood Way, and ending below 1020 Wildwood Way.

Segment Description. This segment is currently a buried underground pipe along a flat unpaved road and then trail between private backyards along Mountain Ave., Wildwood Way and Beach St. The segment is dominated by a mix of native vegetation and horticultural plantings. Natives include Ponderosa pine, young Douglas-fir, black oak, pacific madrone and a single bigleaf maple. Two large specimen pines and four mature black oaks are located immediately adjacent to the construction/excavation corridor (one of the pines is also adjacent to a deck and residence). Mature private plantings include a deodar cedar and prune/cherry. No moisture or seepage is visible from



Segment #10 Start (mile 0.9), looking NW

the underground pipe in this segment; native vegetation is similar to that outside of the canal corridor; the exception being a single maple adjacent and north of the trail.



Segment #10 End (mile 0.9), looking NE

Areas of Concern (AOC). 10.1. Large specimen pines, a large Douglas-fir, mature oaks and a Deodar cedar occur in or near the construction/excavation zone and will likely risk root damage or removal. A large pine growing near Wildwood Way is at risk of damage or removal and is a shade/privacy tree.

Noxious Weeds. 1. Two patches of Himalayan blackberry occur, one along a fenceline and a scattering of young sprouting canes in the construction corridor. **2.** One patch of vinca occurs on north edge of the construction corridor.

Recommendations. AOC 10.1. Refine the pipe replacement methods to ensure least impacts to selected portions of existing mature landscape, including large pines, oaks, madrones and manzanita along project corridor. **2.** Monitor health of conifers, maple and deodar cedar in post-construction years; consider augmented watering. **3.** Thin young understory Douglas-fir trees and selectively thin oaks for long-term health and resiliency. **Noxious Weed Treatment.** Remove Himalayan blackberry and vinca, prior to excavation to avoid spread of infestation.

Segment #10 Summary-Continued

Issue and Area of Concern Photos.



**Segment 10: Large Conifers
Along Construction Corridor, Looking West**



**Segment 10: Large Pine along Construction Corridor,
Looking NE**



**Segment 9: 2nd Large Pine near Construction
Corridor, Looking SW**

Ashland Canal Piping Project Segment #11 Summary

Location within Project. Segment #11 includes mile 1.0 to 1.1; it begins below 1020 Wildwood Way, then continues southwest and west, and crosses a driveway at the south end of Beach Street, and ends on the east side of 911 Beach Street.

Segment Description. This segment is currently a buried underground pipe under a level wide trail behind and below private residences of Wildwood Way and upper Beach Street. The habitat is dominated by native vegetation. Downslope of the canal corridor is a mixed conifer-oak woodland, with scattered large Ponderosa pines, a single large Douglas-fir, an understory of young Douglas-fir, black and white oak and Pacific madrone. Upslope of the canal corridor a native oak woodland occurs, with scattered white and black oaks, native shrubs and grasses. Four large conifers occur at the far west end



Segment #11 Start (mile 1.0), looking SW

of the segment. No visible moisture or seepage from the current buried pipe is visible in this segment.



Segment #11 End (mile 1.1), looking East

Areas of Concern (AOC) 11.1. One large Douglas-fir located downslope at the segment north end may be at risk for changes in underground water. **AOC 11.2.** Three large Ponderosa pine and one large Douglas-fir occur at the west end of this segment, near the front/side yard of 911 Beach St.; all four trees are within the construction/excavation zone and will likely risk root damage or may need to be removed.

Noxious Weeds. 1. Multiple patches of Himalayan blackberry occur within the canal corridor trail, and on the northside of the trail. **2.** One small patch of Scotch broom is located on the northside of the canal trail.

Recommendations. AOC 11.1. Monitor health of conifers (especially the large Douglas-fir), oaks, madrones and remaining pines, after project completion. Consider augmenting irrigation to Douglas-fir. **11.2.** Thin young understory Douglas-fir trees for long-term vegetation health and resiliency. **Noxious Weed Treatments.** Remove Himalayan blackberry and Scotch broom prior to excavation to avoid infestation.

Segment #11 Summary-Continued

Issue and Area of Concern Photo.



**Segment 11: Four Large Conifers at West End,
In Construction Corridor, Looking West.**

Ashland Canal Piping Project Segment #12 Summary

Location within Project. Segment #12 includes mile 1.1 to 1.2. It begins on the east side of 911 Beach Street and continues southeast, above 897 and 901 Beach St. and ends on a northwest facing slope above a dry creek within Liberty Street Park.

Segment Description. This segment is currently a buried pipe on a level wide trail that crosses under two driveways and the private yards of 911 and 901 Beach St., then changes to a southeast stretch through native habitat above a riparian area. Native vegetation (downslope) is a shady riparian area with a notable cover of white oak, and a mix of pines, Douglas-fir, black oak, and Pacific madrone. Vegetation above the corridor is a white oak woodland/chaparral with scattered pines and madrone. While no obvious seepage is visible along this segment, the shady overstory below the canal corridor suggests that riparian vegetation is likely enhanced by underground pipe-related moisture. The overstory pines and white oaks are not expected to



Segment #12 Start (mile 1.1), looking West

be impacted; the understory species however, (young Douglas-fir, shrubs, grasses and forbs), may be negatively impacted by a change in underground moisture. The start of the segment includes a short zone where the pipe is buried on a non-terraced slope (at the top of 897 Beach St.), unique in this project.



Segment #12 End (mile 1.2), looking East

Areas of Concern (AOC). 12.1. Vegetation in the riparian area below the construction/excavation zone may receive less moisture and Douglas-fir, shrubs, and forbs may be negatively impacted by the change in available underground water.

Noxious Weeds. 1. One large patch of Himalayan blackberry occurs at end of this segment along the construction corridor. **2.** Two small patches of Scotch broom occur on the south side of the canal trail/construction corridor. **3.** One patch of English ivy occurs on the canal trail/construction corridor and continues north, downslope.

Recommendations. AOC 12.1. Monitor health of trees in the riparian area after project completion. Consider adjusting to species appropriate to moistness of site following construction by removing those species not well suited including thinning of young understory Douglas-fir trees for long-term vegetation health and resiliency. **Noxious Weeds:** Remove Himalayan blackberry, Scotch broom and English Ivy prior to excavation to avoid spread of infestation.

Segment #12 Summary-Continued

Issue and Area of Concern Photos.

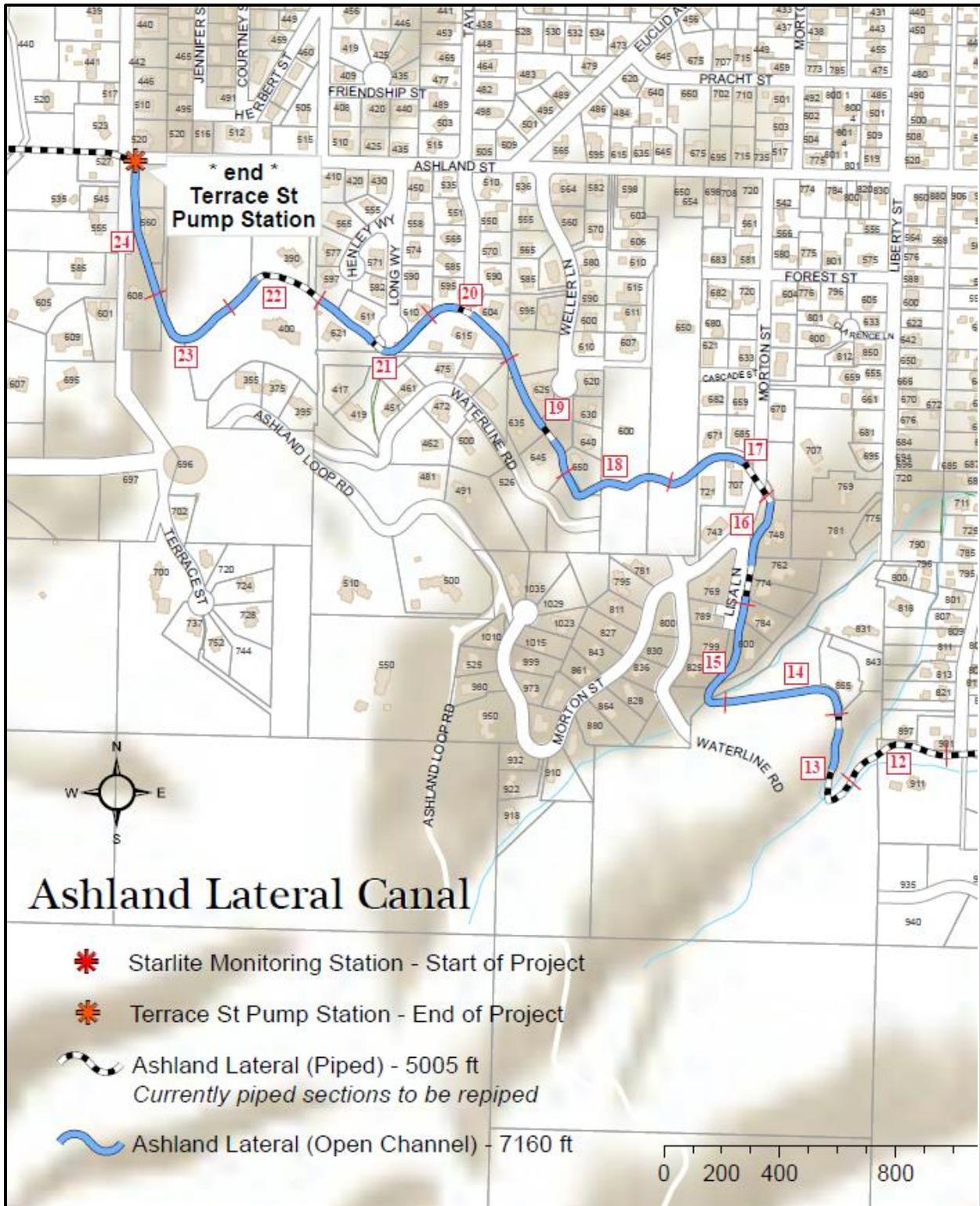


Segment 12: Large Pine along Canal Construction Corridor, Looking Northwest



Segment 12: Large Pine along Canal Construction Corridor, Looking West

Figure 5: Map of Canal West Half with Survey Segments 13-24



Ashland Canal Piping Project Segment #13 Summary

Location within Project. Segment #13 includes mile 1.2 to 1.3, and begins on a northwest facing slope above an unnamed dry creek within Liberty Street Park, and continues north to the end of public land, at the south end of 855 Liberty Street.

Segment Description. This segment includes the northwest and east-facing slopes above the unnamed dry creek in Liberty Street Park. It begins as an underground pipe at and ends as an open canal. The segment starts above steep slopes where an older concrete retaining wall and safety fence have been built. Downslope habitat includes shady riparian native vegetation with notable white oak cover, and scattered Ponderosa pine, Pacific madrone, young Douglas-fir and black oak. Upslope vegetation is a dry site white oak woodland/chaparral with scattered pines and madrone. No obvious seepage is visible along this segment, but the downslope presence of



Segment #13 Start (mile 1.2), looking SW

shady riparian-like species suggests the trees and other woody vegetation are likely being enhanced by underground pipe-related water.



Segment #13 End (mile 1.3), looking South

Areas of Concern (AOC) 13.1. One large Ponderosa pine occurs along the canal trail (east side), and may be at risk for root damage or removal. **AOC 13.2.** Vegetation in the riparian area below the construction/excavation zone may receive less moisture and certain species, Douglas-fir, shrubs, forbs, may be negatively impacted.

Noxious Weeds. 1. One very large patch of Himalayan blackberry occurs along the construction corridor and continues up and down slope into native riparian vegetation. **2.** Two small patches of Scotch broom occur: one on the east side of the trail in native vegetation, and a second as a continuation of the Segment 12 infestation.

Recommendations. AOC 13.1. Where feasible, avoid damage or disturbance to large conifers during construction. **AOC 13.2.** Monitor health of trees in/near the riparian area after construction; consider augmented water for trees near the trail. Thin young understory Douglas-fir trees for long-term vegetation health and resiliency. **Noxious Weed Treatments.** Remove Himalayan blackberry and Scotch broom prior to excavation to avoid spread of infestation.

Segment #13 Summary-Continued

Issue and Area of Concern Photos.



Segment 13: Trees below Concrete Wall on Steep Slope below Canal Corridor, Looking SW



Segment 13: Large Pine Adjacent to Canal Construction Corridor, Looking East

Ashland Canal Piping Project Segment #14 Summary

Location within Project. Segment #14 includes mile 1.3 to 1.4. It begins at the south end of 855 Liberty Street, continues west and ends at the crossing of an unnamed creek at the northwest end of Liberty Street Park. The segment is nearly all within the Liberty Street Park.

Segment Description. This segment is currently an open channel (canal) with a level canal-side walking trail. The east end begins adjacent to a fenced private backyard and then continues west through undeveloped native vegetation (Liberty St. Park). Vegetation in the private yard includes native pines and white oaks. The trees and the wooden fence are on the east edge of the trail. West of the house, and downslope, to the north, habitat is a Ponderosa pine overstory, with scattered sub-mature Douglas-fir, white oak, Pacific madrone, and scattered young Douglas-fir. Upslope the vegetation changes to a dry oak woodland/chaparral with white oak, whiteleaf manzanita and an open overstory of scattered large



Segment #14 Start (mile 1.3), looking North

pinus, a dry grassy understory, and scattered young Douglas-fir. A large pine occurs at the segment's west end, on the south side of the canal just above the water. Large pines occur downslope in the creek.



Segment #14 End (mile 1.4), looking West

Areas of Concern (AOC) 14.1. One large Ponderosa pine occurs on the south edge over the canal, with previously cut roots; this tree is unlikely to tolerate construction and will need to be removed. **AOC 14.2.** Vegetation in the riparian area below the construction/excavation zone may receive less moisture and certain species (Douglas-fir, shrubs, forbs) may be negatively impacted.

Noxious Weeds. 1. One large patch of Himalayan blackberry continues from Segment 13. **2.** One small patches of Scotch broom occur on the west side of the canal. **3.** One extensive infestation of English ivy occurs below the canal, covering multiple native tree trunks.

Recommendations. AOC 14.1. Consult (construction steward and rep) on appropriate action whether to remove or preserve large pines in this segment; follow up with monitoring if kept. Where feasible, avoid damage or disturbance to, and/or removal of the large pine during construction. **AOC 14.2.** Monitor health of trees in stand after project completion. Thin young understory Douglas-fir trees and selectively thin multi-trunk oaks, for long-term health and resiliency. **Noxious Weed Treatment.** Remove Himalayan blackberry, Scotch broom and English Ivy prior to construction/excavation to avoid spread of infestation.

Segment #14 Summary-Continued

Issue and Area of Concern Photos.



**Segment 14: Large Pine on Canal Edge,
Looking East**



**Segment 13: Large Pine Adjacent to Canal
Construction Corridor, Looking East**

Ashland Canal Piping Project Segment #15 Summary

Location within Project. Segment #15 includes mile 1.4 to 1.5. It begins at an unnamed creek crossing at the northwest end of Liberty Street Park, and continues north through backyard private residences along Lisa Lane. The segment ends at a buried segment under a private driveway at 769 Lisa Lane.

Segment Description. This segment is currently an open canal with a level canal-side walking trail. The east end begins in undeveloped native vegetation within Liberty St. Park, and then shifts to private residences downslope, with horticultural landscaping, and native vegetation upslope. The upslope vegetation includes a Ponderosa pine overstory with a notable understory of multi-trunk Pacific madrone, scattered black and white oaks, and scattered young Douglas-fir. Large pines and Douglas-fir trees are growing in or along the canal-side trail. At the west end of the segment, at a short underground piped section, large pines occur downslope, close to the corridor and in the yard of 769 Lisa Lane. A culvert does not exist at the unnamed creek crossing at the segment's east end; surface water is assumed to



Segment #15 Start (mile 1.4), looking North

flow into the canal during winter and precipitation events. No visible leakage or seepage occurs in this segment. The presence, of larger Douglas-fir near the canal, however, suggests trees receive augmented underground water related to the canal.



Segment #15 End (mile 1.5), looking South

Areas of Concern (AOC) 15.1. Large Ponderosa pine and Douglas-fir trees growing in the trail are at risk for removal or construction disturbance. The large pines in the yard of 769 Lisa Lane are of particular concern. **AOC 15.2.** Larger Douglas-fir growing downslope of the canal and near the upslope canal may be impacted by reduced underground water post project.

Noxious Weeds. 1. Scattered patches of Himalayan blackberry occur in the north end of the segment.

Recommendations. AOC 15.1. Consult (construction steward and rep) on appropriate actions which trees to remove or preserve; follow up with monitoring and prepare for mitigation measures. **AOC 15.2.** Monitor health of conifers downslope of canal within private yards, and upslope/near the canal- especially larger Douglas-fir-in post-construction years; consider augmenting irrigation to Douglas-fir. Thin young Douglas-fir understory and selectively thin multi-trunk madrone for long-term vegetation health and resiliency. **Noxious Weed Treatment.** Remove Himalayan blackberry prior to construction to avoid spreading infestation.

Segment #15 Summary-Continued

Issue and Area of Concern Photos.



Segment 15: Large Pine on and Near Canal Edge, Looking South



Segment 15: Douglas-fir and Pines Upslope of Canal, Looking South



Segment 15: Large Pines at 769 Lisa Lane, Looking Northeast



Segment 15: Upslope Conifers & Broken Canal Liner, Looking North

Ashland Canal Piping Project Segment #16 Summary

Location within Project. Segment #16 includes mile 1.5 to 1.6, in a north/south run just east of and parallel to Lisa Lane. It begins at a short buried segment under a private driveway at 769 Lisa Lane, and ends at a second buried short segment under 748 Morton Street.

Segment Description. This segment begins as a short buried segment under a driveway at 769 Lisa Lane, and continues north as an open channel canal with side trail, between private backyards along Lisa Lane. Habitat includes some native vegetation in a narrow strip upslope, between the canal and Lisa Lane. Common species include young and sub-mature Douglas-fir, black oak, scattered Ponderosa pine and a few whiteleaf manzanitas. Habitat downslope (east) of the canal includes non-native horticultural plantings in private yards, and Ponderosa pines and Douglas-fir father downslope. One sub-mature pine



Segment #16 Start (mile 1.5), looking North

occurs *in* the construction corridor, at the short piped section at 769 Lisa Lane. No visible seepage or leakage occurs in this segment.



Segment #16 End (mile 1.5), looking South

Areas of Concern (AOC) 16.1. A few pines are located in or near the canal construction corridor and roots may be negatively impacted by excavation.

Noxious Weeds. 1. One small patch of English Ivy occurs between the canal and 762 Lisa Lane.

Recommendations. AOC.16.1. Where feasible, avoid damage or disturbance to, and/or removal of large conifers during construction. **2.** Monitor health of conifers along canal and within private yards in post-construction years; consider augmenting irrigation to any larger Douglas-fir downslope of canal and/or in private yards. **3.** Thin young understory Douglas-fir and selectively thin small diameter pines upslope, to maintain long-term vegetation health and resiliency. **Noxious Weed Treatment.** Remove English Ivy prior to construction/excavation to reduce spread of infestation.

Segment #16 Summary-Continued

Issue and Area of Concern Photos.



Segment 16: Pines Along Canal Trail and Upslope Canal Edge, Looking North



Segment 16: Douglas-fir Upslope and Sub-mature Pine In Construction Corridor at 769 Lisa Lane, Looking North



Segment 16: Pines Near/Upslope of Canal (background), Looking South



Segment 16: Douglas-fir (background) Downslope of Canal, Looking East

Ashland Canal Piping Project Segment #17 Summary

Location within Project. Segment #17 includes mile 1.6 to 1.7, and begins at a crossing under Morton Street and continues west to upper 650 Forest Street.

Segment Description. This segment begins as a short buried segment under Morton Street, and continues west as an open channel canal behind backyards of Morton Street. The forest is mixed black oak, madrone, and younger Douglas fir along both sides of the ditch. Towards the west end of the segment where it terminates in a draw, the forest becomes dense where the upper canopy includes a few bigleaf maples. The occurrence of maples suggests the presence of sustained groundwater well into the summer which could be a result of a leaky canal or the slope configuration of the draw which captures and concentrates ground water, or both. No seepage



Segment #17 Start (mile 1.6), Looking NW

or leakage was visible near the surface in this segment.



Segment #17 End (mile 1.7), Looking East

Areas of Concern (AOC) 17.1. Douglas fir encroachment in the much older black oak and madrone woodlands.

Note: Bigleaf maples aren't common along this project and represent an opportunity for biodiversity that should be encouraged. Piping the canal may change the hydrology and force the few maples out, but that outcome is uncertain.

Noxious Weeds. 1. Himalayan blackberry is common and patchy below the ditch, but appears to be periodically treated as the clumps are small and contained.

Recommendations. AOC 17.1. This stand would benefit from thinning, to reduce competition in favor of the larger, older hardwoods, and to create a more fire safe wildland/ urban interface. Generally, thinning should generate larger canopy gaps above the canal as this zone is already predisposed to gaps. The lower slope shouldn't be as radically altered in one treatment. Thin around the bigleaf maples to provide them room from branch entanglement and competition for water and resources. **Noxious Weed Treatments.** Remove blackberry prior to thinning and construction as both forms of disturbance will encourage rapid growth and expansion of this patchy population. Follow up treatments should happen on a regiment with the other weed treatments across this project.

Segment #17 Summary-Continued

Areas of Concern Photos.



AOC #1: Segment 17: W End below canal into the dense stand requiring thinning around specimen trees, looking east



AOC #1: Segment 17: W End looking upslope above canal into the more open stand that will still benefit from thinning to leave larger canopy gaps, providing additional wildfire resiliency.

Wildlife Feature:



Segment #17: just above ditch

Wildlife tree description: This large Douglas fir has multiple dead tops that have been hollowed out by wildlife. The tree is perched just above and in close proximity to the ditch and is very much alive with several viable trunks. It does pose a construction challenge due to its proximity to the canal. We recommend a full evaluation of this tree with a bias towards protecting it through the construction process because it provides multiple dwelling opportunities for various cavity nesters. We searched below the tree for owl pellets and other signs of nesting but made no discoveries. An ornithologist may have better luck.

Ashland Canal Piping Project Segment #18 Summary

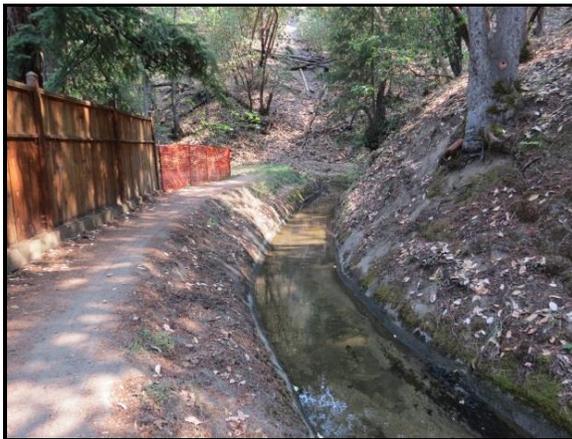
Location within Project. Segment #18 includes mile 1.7 to 1.8; it begins in upper 650 Forest Street and continues west to the backyards of 645 and 650 Weller Lane.

Segment Description. This segment is as an open channel canal passing through an undeveloped area in 650 Forest Street and continuing west between the backyards of Weller Lane residences. This native area is characterized by a mixed hardwood-dominated canopy with mostly younger Douglas firs beginning to fill in and occasional larger Douglas firs near the draw. Madrones are most consistently present, while a few large black oaks tend to dominate and white oaks occupy the drier positions. Some large manzanitas and birchleaf mountain mahogany have been favored between the trees, with a cut, grassy ground cover. In other areas, the ground cover is madrone leaf litter with only thin herbaceous vegetation. The west end of this segment includes a scoured draw with many down trees across it and steep slopes. There is a stand of bigleaf maples perched on the lower edge of



Segment #18 Start (mile 1.7), Looking West

the trail below and overhanging the canal (pictured above). These trees are presumably tapping in to the canal water through the liner and will be difficult to avoid damaging during construction. No visible seepage or leakage could be seen in this segment.



Segment #18 End (mile 1.7), Looking East

Areas of Concern (AOC) 18.1. Large bigleaf maple trunks overhanging the canal are at risk from construction damage. **AOC 18.2.** Encroaching young conifers beneath much older and larger hardwoods represent a pattern of overdue underburning from periodic wildfire. Left to progress, this encroachment leads to decline of the older hardwoods from competition for light and water by the more vigorous conifers.

Noxious Weeds. 1. Himalayan blackberry patches are present in this segment.

Recommendations. (AOC) 18.1 Assess the risk potential of the overhanging bigleaf maples to interfere with and become damaged by construction. This process should be conducted by the construction steward in collaboration with the construction representative that can evaluate the construction requirements in light of the maples and help decide what is practical. Potentially select the best specimens to protect through the construction process. **AOC 18.2.** Include this forested area in a thinning program to enhance selected trees, in this case the larger hardwoods, while removing the

Segment #18 Summary-Continued

Recommendations.-con't.

young Douglas firs. **Noxious Weed Treatments.** The blackberry should be removed prior to thinning and construction because both forms of disturbance will encourage rapid growth and expansion of this patchy population. Follow up treatments should happen on a schedule with the other weed treatments across this project.

Area Of Concern Photos.



Segment 18: East end, Looking west downslope of the canal. Photo represents some thinning opportunity with a large open slope beyond.



Segment 18: East end above ditch. Photo illustrates specimen madrone that could benefit from some thinning in its vicinity.



Segment 18: West end above the ditch, looking eastward. This photo illustrates steep slopes and a multi-trunked madrone perched just above the ditch that presents challenges to preserve during construction. Many trees like this line the canal that will require on site evaluations between the construction steward and construction team representative.

Ashland Canal Piping Project Segment #19 Summary

Location within Project. Segment #19 includes miles 1.8 to 1.9, and begins behind 645 and 650 Weller Lane and continues northwest, ending between 625 and 635 Weller Lane.

Segment Description. This segment is as an open canal passing above Weller Lane and residential yards. A short piped section crosses under the driveway of 645 Weller, and continues again as an open canal. There is a private fenced residence below the canal trail and an open steep slope above the ditch with a mixed hardwood and younger Douglas fir forest. The shrub and herb layers are mostly open. Towards the west end of this segment there are large conifers above the canal. Much of this segment includes residential landscapes of various styles. No visible seepage or leakage occurs in this segment.



Segment #19 Start (mile 1.8), Looking NW



Segment #19 End (mile 1.9), Looking SE

Areas of Concern (AOC) 19.1. Near the west end of this segment there are large conifers perched just above the canal. These trees pose construction hazards as well as being at risk from construction damage through direct contact with machinery and root damage during liner removal. In addition, it is likely they are receiving substantial water augmentation throughout the summer having root systems that surround the moist soil horizon of the (leaky) canal. For this reason, canal piping will further put these trees at risk.

Noxious Weeds. 1. Periwinkle (*Vinca major*) occurs as a ground cover on private property within this segment.

Recommendations. AOC 19.1 The construction steward and construction representative need to assess the larger conifers above the canal to decide which trees should be left, if any. **Noxious Weed treatments.** The periwinkle provides an effective ground cover planting on private land, but is known to naturalize within wildlands. This area should be included in follow up monitoring to ensure migration of periwinkle doesn't become an issue.

Segment #19 Summary-Continued

AOC and Special Feature Photos



Segment 19: East end above ditch, looking west. Thinning Opportunity on Wildlands-This forest stand is a good candidate for strategic thinning of encroaching conifers and smaller hardwoods around selected specimen trees to create greater wildfire resilience, enhance long term stand health, and to promote a mature stand aesthetic, valued along the ditch. Multi-trunked hardwoods can be thinned down to 1-2 trunks to restore their growth towards legacy tree form and improve canopy gaps.



Wildfire Feature Photo



Segment 19: On Private Residence, below ditch- This tree has a lightning strike scar that is slowly sealing over through callus tissue. The tree looks healthy and illustrates the fire prone nature of this project area within the greater fire evolved landscapes of Southern Oregon

Segment 19: West end below ditch, looking east. Landscape Objective Considerations for Resident- his forest stand is part of a residential landscape. Depending on the owners criteria, this stand density may be ideal for their privacy screening objectives or this stand may benefit from selective thinning if long term stand health is a priority.

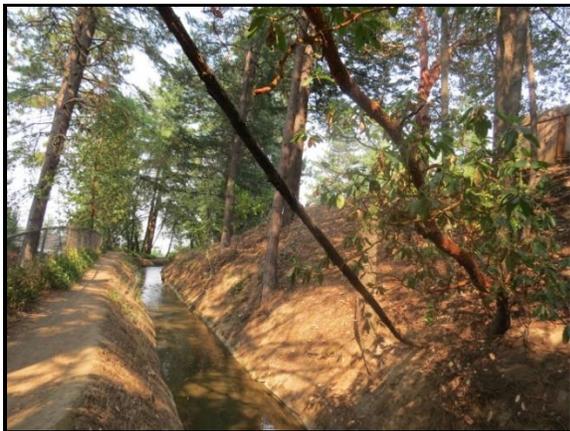
Ashland Canal Piping Project Segment #20 Summary

Location within Project. Segment #20 includes miles 1.9 to 2.0, and begins between 625 and 635 Weller Lane and continues northwest and ends between 610 Long Way and 615 Taylor Street.

Segment Description. This segment is an open canal passing above the back and front yards of Weller Lane, Long Way, and Taylor Street. A short segment is piped underground below the driveway at 615 Taylor, and then continues as an open canal. This canal segment includes substantial residential landscaping and other areas with intact native landscaping of mixed hardwoods and mixed aged Douglas firs and ponderosa pines. No visible seepage or leakage occurs in this segment.



Segment #20 Start (mile 1.9), Looking NW



Segment #20 End (mile 2.0), looking NE

Areas of Concern (AOC) 20.1. There are large pines above the canal that pose construction hazards as well as being at risk from construction damage through direct contact with machinery and/or root damage during liner removal. In addition, it is likely they are receiving substantial water augmentation throughout the summer having root systems that surround the moist soil horizon of the (leaky) canal. For this reason, canal piping will further put these trees at risk.

Noxious Weeds. 1. There are patches of Himalayan blackberry and scotch broom present in this segment.

Recommendations. AOC 20.1. The construction steward and construction representative need to assess the pines above the canal to decide which trees should be left or removed. The private landowner should also be involved in the discussion since these trees will be impacted by the piping project. These trees should be part of a monitoring program to evaluate at risk trees and stands for impacts and follow up treatments. We also suggest thinning of native landscapes to promote stand health and favor specimen hardwoods and conifers on site. **Noxious Weed treatments.** The blackberry and scotch broom patches should be treated as soon as possible to prevent their increase during disturbance activities. Those areas should be including in the project weed monitoring to ensure they are permanently eliminated from the site, especially since seeds can germinate and reintroduce plants after the parents have been removed.

Segment #20 Summary-Continued

Area Of Concern Photos.



Segment 20: AOC #1: Two ponderosa pines perched above the canal pose risks during construction. These trees require evaluation on best approach.



Segment 20: AOC #1: A large ponderosa pine above canal is at risk following piping due to changes in available groundwater during summer. This tree will require monitoring following construction for impacts and possible mitigation measures.

Noxious Weed Photo



Segment 20: Wildland portion above the ditch-demonstrates typical encroachment of young conifers without periodic wildfire, which crowds specimen trees that will benefit from a thinning prescription.



Segment 20: Wildland portion below the ditch-showing blackberry thicket on left edge of photo that will need to be treated to prevent spread during construction disturbances.

Ashland Canal Piping Project Segment #21 Summary

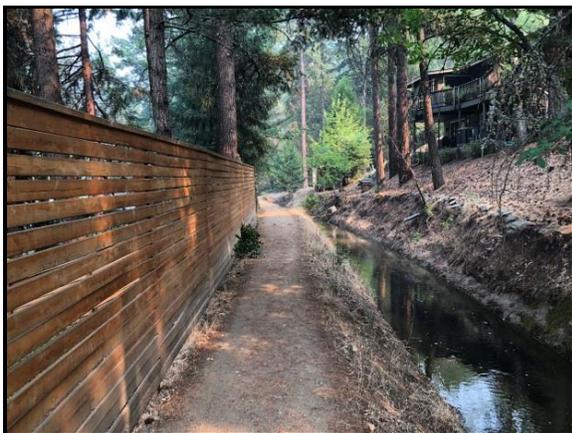
Location within Project. Segment #21 includes miles 2.0 to 2.1; it begins south/upslope of 610 Long Way, continues west on a northeast-facing slope, and ends near Guthrie St. just east of an underground section.

Segment Description. This segment is as an open canal and side trail (with a short underground piped section under a driveway) that passes between forested private yards. The east end begins in conifer dominant forest. The downslope trees (behind private fencing) include multiple large Ponderosa pine, scattered large Douglas-fir, large Deodar cedar, incense cedar, and spruce, and a few black oak and madrone. Large diameter conifers occur on the trailside and/or just downslope throughout the segment. Upslope trees include large pines, fewer large Douglas-fir, and scattered young understory Douglas-fir. The slope immediately above the south canal edge is steep and eroding; conifer and hardwood trees are growing on the upper canal edge with curved trunks-indicating soil creep and unstable slopes. A buried 4" plastic drainage pipe emerges



Segment #21 Start (mile 2.0), Looking SW

above the canal from 621 Long Way and flows directly into the canal. No visible seepage or leakage occurs in this segment. The presence of healthy mature-sized Douglas-fir near and below the canal, however, suggests these trees may be augmented by underground water associated with the canal.



Segment #21 End (mile 2.1), Looking SE

Areas of Concern (AOC). **1.** Large downslope mature Douglas-fir, and younger Douglas-firs downslope and upslope/near the canal, may be at risk for moisture stress after the canal is piped. **AOC 2.** Conifer and hardwoods growing along and above the steep south canal edge will not survive construction disturbance and will need to be removed. **AOC 3.** Large pines and Douglas-fir growing on the downslope trail edge may experience significant disturbance to roots from construction and may need to be removed. **Observation Note:** The drainage pipe will create surface runoff and/or erosion and will need to be buried.

Noxious Weeds. **1.** One patch of vinca ("periwinkle") downslope at the segment start. **2.** Himalayan blackberry patches occurs on both sides of the canal at the segment start, continuing downslope to Long Way. **3.** English Ivy is covering a large Douglas-fir trunk at the segment start.

Recommendations. (AOC) 1. The construction steward/representative need to assess the large Douglas firs in question and, where feasible, avoid damage to their extensive root systems during construction. In addition, evaluate removal of some/all trees where root compromise is likely unavoidable due to

Segment #21 Summary-Continued

Recommendations.-con't:

their extensive engagement with the liner and moist soil around the canal. **AOC 2.** Monitor the health of the conifers (esp. Douglas-fir) along and downslope of the canal in post-construction years and include these trees in mitigation measures where the priority is to preserve them. The preferred treatment is mulching with wood chips surrounding their root systems. The landowner may also consider periodic deep watering during the first few years following construction to prevent moisture stress during a transition period into eventual reliance on only natural rainfall. This should happen through the evaluation of need by the monitoring team of arborist/ forester that is overseeing monitoring for the whole project. This team will be familiar with signs of tree stresses and mitigation measures appropriate to treat them **AOC 3.** Thin out young understory Douglas-fir to maintain long-term stand health and resiliency. **Noxious Weeds.** **4.** Remove vinca, Himalayan blackberry and English ivy prior to construction to reduce spread of infestation.

Issue and Area of Concern Photos.



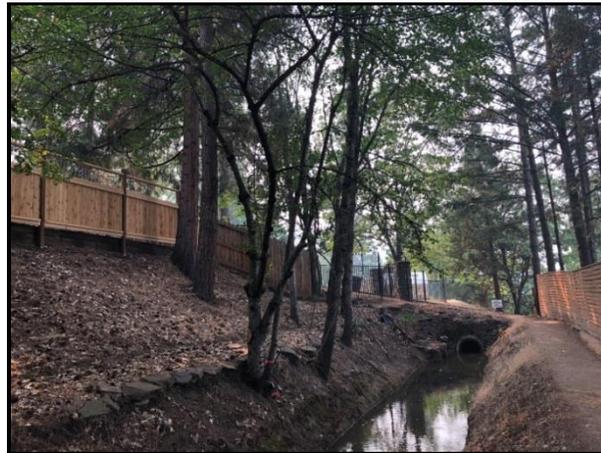
Segment 21: Large Douglas-fir downslope, Risk of Moisture Stress, Looking East



Segment 21: Large Conifers Near Trail, Risk of Construction Disturbance, Looking West



Segment 21: Small Conifers on Steep South Canal Edge, Looking South



Segment 21: Hardwoods on Steep South Canal Edge, Looking South

Ashland Canal Piping Project Segment #22 Summary

Location within Project. Segment #22 includes miles 2.1 to 2.2; it begins near Guthrie Street just east of a piped section, and continues west, ending upslope and west of the 400 Ashland Street house.

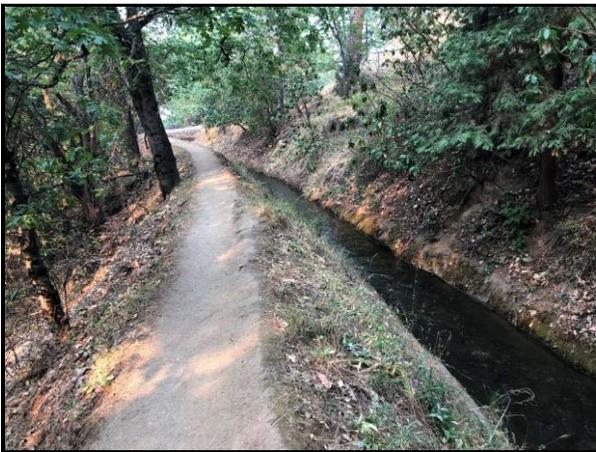
Segment Description. This segment begins as a short (approx. 200 ft.) underground piped section above 390 Ashland St., and then changes to an open channel until the segment ends. The buried pipe begins as a very narrow trail between a house and greenhouse structure. The narrow corridor is bound by a short steep slope to the north/downslope, and a leveled fenced garden and greenhouse immediately to the south. Downslope vegetation is a mix of planted landscaping and scattered madrone, black oaks, and incense cedar with a grassy ground cover. Upslope are planted garden beds. Where the canal changes back to an open canal, the corridor widens and native vegetation dominates. Downslope is a mix of conifers and hardwood (Ponderosa pine, black oak, white oak and madrone) with scattered mature manzanita; a few mature black oaks occur on the trail edge here.



Segment #22 Start (mile 2.1), Looking NW

Upslope is drier habitat with white and black oak, madrone, poison oak and occasional pines. The south slope above the canal in the western segment is convex and drops short and steeply to the water; the slope appears unstable especially if vegetation is removed. No visible seepage or leakage occurs in this segment.

Areas of Concern (AOC) 22.1. The corridor between the private greenhouse/ garden to the south, and the short downslope to the north, is a problematic narrow passage. The greenhouse/garden area is



Segment #22 End (mile 2.1), Looking NE

likely be temporarily impacted during construction; similarly, the visible roots from a trailside downslope incense cedar risks significant impact from construction. **AOC 22.2.** Farther along, in the west of this segment, the south upslope side of the canal will likely be problematic during construction: all trees and woody vegetation on the slope immediately above the canal's south side will need to be removed before construction; larger pines upslope and out of the construction footprint are at risk from construction disturbance to roots as well as increased drying from anticipated slope unravelling on the steep granitic soils.

Noxious Weeds. 1. One patch of broad-leaved sweet pea occurs on both sides of the canal.

Recommendations. 1. Develop a plan to thread the construction disturbance footprint to avoid damage and disturbance to the private greenhouse/fence/garden area above 390 Ashland Street. Alternatively,

Segment #22 Summary-continued

Recommendations-con't.

develop a plan to move private structures and maintain the level ground, fencing, and gardening area, and/or re-build where necessary. **AOC 22.1.** Avoid damage to incense cedar where roots exposed in trail. **AOC 22.2.** Regarding the south slopes along the open canal: remove woody vegetation and trees along and immediately above the canal's south edge before construction; create a more stable slope with a combination of riprap and vegetation restoration of the slope. In addition monitor the health of larger pines farther upslope after construction and consider feasibility of removing these trees vs. creating a more stable slope bank to protect larger upslope trees. **AOC 22.3.** During construction avoid damage to roots of large mature oaks along the northside of the canal trail and to cedar roots near greenhouse/garden fencing (see photos). Where oaks are maintained, monitor the health of oaks in post-construction years. **Noxious Weeds.** Remove the broad-leaved sweet pea prior to construction/excavation to reduce spread of infestation.

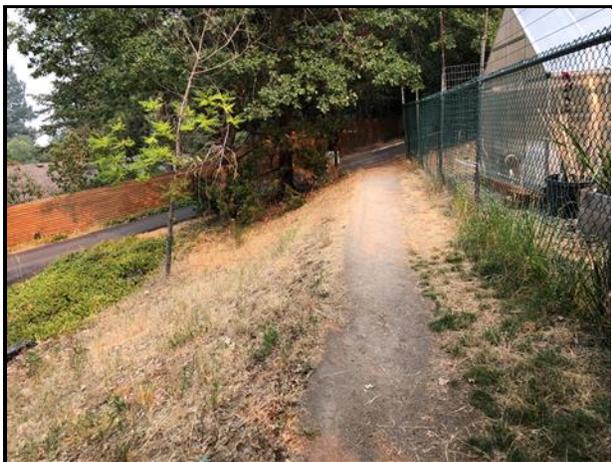
Issue and Area of Concern Photos.



Segment 22: Narrow Corridor between Private Greenhouse & Downhill Slope, Looking West



Segment 22: , Large Oaks on Trail Edge, Construction Disturbance Risk, Looking East



Segment 22: , Narrow Corridor between Private Greenhouse & Downhill Slope, Looking East



Segment 22: Steep Slope Upslope of Canal, Looking SE (see Pine Upslope)

Segment #22 Summary-continued

Additional Issue and Area of Concern Photos.



Segment 22: Incense Cedar at Risk of Construction Disturbance, Looking East



Segment 22: Incense Cedar Roots in Trail, Construction Disturbance Risk, Looking Down

Ashland Canal Piping Project Segment #23 Summary

Location within Project. Segment #23 includes miles 2.2 to 2.3; it begins upslope on the west side of 400 Ashland Street, continues west, and ends in northeast 608 Terrace Street.

Segment Description. This segment is an open channel canal with a walking trail. The east end begins in native vegetation (continuing from Segment 22) with a mixed pine/hardwood forest. Downslope habitat includes small understory and notable mature Ponderosa pine, scattered young Douglas-fir, madrone and scattered young and mature black oak. The pines extend downslope out of the project. Scattered oaks and pines occur on the downslope trail edge. Upslope habitat is a mixed pine-black oak forest with scattered incense cedar and younger Douglas-fir. In the segment's eastern area, is another problematic steep south slope with a mix of young trees that extend down to the waterline. The segment ends at a conspicuous and extensive weedy area that begins west of a bridge and large orange "Trail Closed" sign. Just west of the bridge, an old metal culvert emerges



Segment #23 Start (mile 2.2), Looking SW

out of the canal's south slope just above the waterline. No visible seepage or leakage occurs in this segment. The presence, however, of the Douglas-fir trees in this drier pine-dominant forest suggests that trees do receive some level of augmented underground water.

Areas of Concern A few sub-mature pines and black oaks occur on the downslope trail edge. **AOC 23.1** A mix of young trees occur along



Segment #23 End (mile 2.2), looking SE

the canal's south edge and may need to be removed before construction. **AOC 23.2.** Larger pines upslope and out of the construction footprint, are at risk from construction disturbance to roots and from increased drying from anticipated slope unravelling on the steep granitic soils.

Noxious Weeds. 1. A large infestation of Himalayan blackberry begins *in* the trail and continues north into Segment #24, dominating the slopes north and south well beyond the construction footprint. **2.** A site of broad-leaved sweet pea begins as a small patch at the center of segment 23 and extends north into segment #24. **3.** A large patch of Scotch broom occurs in the eastern segment, 5 meters upslope, continuing above a private fence.

Segment #23 Summary-continued

Recommendations. AOC 23.1 Where feasible protect trail-side trees and avoid damage to roots, particularly pines and oaks, along the northside of the canal trail; where trees are maintained, monitor tree health in post-construction years. **23.2:** Thin out small douglas firs from around uphill pines and hardwoods, allowing for canopy gaps. Consider slope stability above the canal along the south edge before construction and take measures to increase slope stability where helpful. In addition, monitor the health of larger pines farther upslope after construction and consider mitigation measures to support them.

Noxious Weeds: Remove the extensive blackberry infestation along the trail and work with adjacent landowners up and downslope to control the blackberry. Remove the broad-leaved sweet pea prior to construction/excavation to reduce spread of infestation.

Issue and Area of Concern Photos.



Segment 23: Short Steep Upslope of Canal, Looking Southeast (see Pine Upslope)



Segment 23: Oaks and Pines on Trail Edge, Risk Construction Disturbance, Looking West



Segment 23: Metal Culvert Above South Canal Slope, Looking SW



Segment 23: Dense Blackberry Infestation Along Canal, Looking West

Ashland Canal Piping Project Segment #24 Summary

Location within Project. Segment #24 includes miles 2.3 to 2.4, and begins on a northeast-facing slope within 608 Terrace Street property and ends at the Terrace Street Pump Station, near the southeast corner of Terrace and Ashland Streets.

Segment Description. This segment is an open channel canal with a walking trail on a north-south run. The south end begins in an open, non-forested grassland (and lawn) with a heavy weed infestation; the heaviest weed cover is located on the downslope trail edge and continues downslope well out of the construction corridor. Black oak and madrone are scattered along the downslope trail edge. At the segment's mid-point, the habitat changes to a landscaped yard, with lawn and a scattered overstory of mature black oak (at 608 Terrace). Two young planted fruit trees occur *in* the canal trail near the front-side yard at a private driving access bridge over the canal. Beyond (north of) the private bridge, the habitat changes to a line of planted Deodar and incense cedar trees, all planted along the downslope



Segment #24 Start (mile 2.3), Looking North

trail edge. This line of trees, with branches covers the level canal trail. Additional planted incense cedars occur downslope of the canal, in the private side yard. Upslope, between the canal and Terrace St., the habitat is a grassy narrow slope. No obvious seepage or leakage occurs in this segment.

Areas of Concern (AOC). **24.1.** A blackberry infestation dominates the vegetation in the southern half of the segment (extending north from segment #23). **AOC 2.** Two fruit trees on the canal trail may be impacted by construction disturbance or may need

to be moved. The line of cedars (north of the 608 Terrace private bridge) planted *on* the canal trail, may be impacted by damage to roots from construction disturbance, or may need to be removed.



Segment #24 End (mile 2.2), Looking South

Noxious Weeds. **1.** A large infestation of Himalayan blackberry continues from Segment #23; it dominates large portions of this segment, continuing well beyond the construction footprint. **2.** Scattered patches of large-leaved sweet pea co-occur with the blackberry. **3.** A small patch of Scotch broom occurs near the segment's north end, west of the canal. **4.** Two small sites of star thistle; the only sites within the project area.

Segment #24 Summary-continued

Recommendations. AOC 24.1. Assess best approach with grove of deodar and incense cedars. **Noxious Weeds:** remove the extensive blackberry infestation along the trail and work with adjacent landowners to control the blackberry up and downslope of the canal. Remove the broad-leaved sweet pea prior to construction/excavation to reduce spread of infestation. Remove the two small star thistle patches and single Scotch broom patch *prior* to construction and work with landowners to monitor and continue eradication. **2.** If feasible protect the two young fruit trees south of the bridge and the cedars north of the bridge from root damage and other construction disturbance, and monitor tree health in post-construction years.

Issue and Area of Concern Photos.



Segment 24: Fruit Trees on Canal Trail, Risk of Construction Disturbance, Looking South



Segment 24: Deodar/Incense Cedars on Canal Trail, Risk of Construction Disturbance, Looking North

Appendix B: Summary Table of Areas of Concern (AOC):

Table 2: Summary Table of Areas of Concern Located Along the TID Ashland Canal, July, 2018, Siskiyou BioSurvey, LLC

AOC ID#	Description	Location Relative to Canal	Recommendations
Segment #1 (mile 0.0 – 0.1)			
1.1	Stand of specimen trees exposed to root drying	Below canal at Starlite Station	Cover whole area with 3-4" wood chips and monitor
Segment #2 (mile 0.1 – 0.2)			
2.1	Large conifers at risk of moisture stress following piping	Below and above canal	Monitor following piping and prepare to apply mitigation measures if necessary
2.2	Encroaching Doug firs weaken specimen hardwood stand	Upslope of canal	Thin many of young encroaching Doug firs out around specimen hardwoods
Segment #3 (mile 0.2 – 0.3)			
3.1	Encroaching Doug firs weaken specimen hardwood stand	Below canal	Thin many of young encroaching Doug firs out around specimen hardwoods
3.2	Very large conifers on edge of trail at risk	Below canal	Consult (construction steward and rep) on appropriate action; monitor and mitigate as necessary
Segment #4 (mile 0.3 – 0.4)			
4.1	Mature conifers within construction zone	Near canal and trail	Consult (construction steward and rep) on appropriate action; monitor and mitigate as necessary
4.2	Mature Doug fir at risk in loss of summer water	Below canal	Monitor following piping and prepare to apply mitigation measures if necessary
4.3	Landscape trees and shrubs in construction corridor	Near canal	Construction steward meet with landowner to discuss issues
Segment #5 (mile 0.4 – 0.5)			
5.1	2 Specimen Douglas firs on canal's south edge within construction zone	Near canal	Consult (construction steward and rep) on appropriate action; monitor and mitigate as necessary
5.2	Mixed age Doug firs at risk of water stress in summer	Downslope of canal	Thin stand, monitor following piping and prepare to apply mitigation measures if necessary
Segment #6 (mile 0.5 – 0.6)			
6.1	Mixed age Doug firs at risk of water stress in summer	Downslope of canal	Thin stand, monitor following piping and prepare to apply mitigation measures if necessary
Segment #7 (mile 0.6 – 0.7)			
7.1	Water from canal flows into Roca Creek creating water dependent riparian planting	Below canal along Roca Ck channel	Thin the stand of excess trees, selecting for appropriate species; monitor following ending of summer flow into Roca Ck
Segment #8 (mile 0.7 – 0.8)			

AOC ID#	Description	Location Relative to Canal	Recommendations
8.1	Large pines on canal's edge and trailside within construction zone	Near canal	Consult (construction steward and rep) on appropriate action; monitor and mitigate as necessary
Segment #9 (mile 0.8 – 0.9) No noxious weeds identified in this segment			
9.1	Replacement of buried pipeline puts at risk mature landscape	in footprint throughout segment	Consult among experts to refine the pipe replacement methods to ensure least impacts to selected portions of existing mature landscape
Segment #10 (mile 0.9 – 1.0)			
10.1	Replacement of buried pipeline puts at risk mature landscape	in footprint throughout segment	Consult among experts to refine the pipe replacement methods to ensure least impacts to selected portions of existing mature landscape
Segment #11 (mile 1.0 – 1.1)			
11.1	Large Doug firs at risk of water stress in summer	Downslope at segment N end	Thin stand, monitor following piping and prepare to apply mitigation measures if necessary
11.2	Replacement of buried pipeline puts at risk mature conifers	in construction footprint	Consult among experts to refine the pipe replacement methods to ensure least impacts to existing mature landscape
Segment #12 (mile 1.1 – 1.2)			
12.1	Vegetation in riparian area at risk of water stress in summer	Downslope of construction footprint	monitor following re-piping and thin out weak trees and encroaching Doug firs necessary
Segment #13 (mile 1.2 – 1.3)			
13.1	Specimen trees near canal at risk from construction and piping	On canal trail	Consult (construction steward and rep) on appropriate action whether to remove or preserve; follow up with monitoring if kept
13.2	Mixed canopy downslope at risk of water stress in summer	Downslope of canal	monitor and thin out weak trees and encroaching Doug firs as necessary
Segment #14 (mile 1.3 – 1.4)			
14.1	Specimen trees near canal at risk from construction and piping	On canal trail	Consult (construction steward and rep) on appropriate action whether to remove or preserve; follow up with monitoring if kept
14.2	Mixed canopy downslope at risk of water stress in summer	Downslope of canal	monitor and thin out weak trees and encroaching Doug firs as necessary
Segment #15 (mile 1.4 – 1.5)			
15.1	Specimen trees near canal and along the trail are at risk from construction and piping	Near canal	Consult (construction steward and rep) on appropriate actions which trees to remove or preserve; follow up with monitoring and prepare for mitigation measures

AOC ID#	Description	Location Relative to Canal	Recommendations
15.2	Mixed canopy downslope at risk of water stress in summer	Downslope of canal	monitor and thin out weak trees and encroaching Doug firs as necessary
Segment #16 (mile 1.5 – 1.6)			
16.1	Multiple specimen conifers near canal at risk from construction and piping	Near canal	Consult (construction steward and rep) on appropriate actions which trees to remove or preserve; follow up with monitoring and prepare for mitigation measures
Segment #17 (mile 1.6 – 1.7)			
17.1	Doug fir encroachment below specimen hardwoods	Throughout stand	Thin out beneath specimen trees for multiple stand benefits
Segment #18 (mile 1.7 – 1.8)			
18.1	Large bigleaf maples may interfere with construction	Overhanging canal	Consult (construction steward and rep) on appropriate actions which maples to remove or preserve
18.2	Doug fir encroachment below specimen hardwoods	Throughout stand	Thin out beneath specimen trees for multiple stand benefits
Segment #19 (mile 1.8 – 1.9)			
19.1	Specimen conifers near canal at risk from construction and piping	Perched above canal	Consult (construction steward and rep) on appropriate action whether to remove or preserve; follow up with monitoring if kept
Segment #20 (mile 1.9 – 2.0)			
20.1	Large pines at risk from construction and piping	Perched above canal	Consult (construction steward and rep) on appropriate action whether to remove or preserve; follow up with monitoring if kept
Segment #21 (mile 2.0 – 2.1)			
21.1	Multiple specimen trees near canal at risk from loss of water following piping	Near and below canal	Consult (construction steward and rep) on appropriate action whether to remove or preserve; follow up with monitoring if kept
21.2	Trees in positions to conflict with construction	steep south canal edge	Remove conflicting trees following consultation to discuss tree selection
Segment #22 (mile 2.1 – 2.2)			
22.1	Incense cedar roots at risk from construction	Downslope of canal	Consult (construction steward and rep) on appropriate action to preserve tree
22.2	Trees on steep bank above canal may all require removal	Above canal on steep slope	Assess best approach for trees on challenging steep slope and monitor
22.3	Specimen oaks on canal trail at risk of construction damage	On north side of canal trail	Assess best approach to protect specimen oaks during construction
Segment #23 (mile 2.2 – 2.3)			
23.1	Construction conflicts of younger pines and black oaks	along trail	Assess acceptable locations of pines and oaks along trail and remove as necessary.
23.2	Protect and favor large pine	Upslope beyond footprint	Monitor and apply mitigation strategies where helpful

AOC ID#	Description	Location Relative to Canal	Recommendations
Segment #24 (mile 2.3 – 2.4)			
24.1	Line of planted conifers on canal trail	Canal trail	Assess appropriate measures to take to preserve trees where possible and to remove where necessary

Appendix C: Summary Table of Noxious Weed Sites

Table 3: Summary Table of Noxious Weeds Sites Located Along the TID Ashland Canal, July, 2018, Siskiyou BioSurvey, LLC

Noxious Weed Species	Infestation Area	Location UTM (E)	Location UTM (Y)	Location Relative to Canal	Comments
Segment #1 (mile 0.0 – 0.1)					
Himalayan blackberry	< 1m ²	525362	4669669	Upslope; 1meter South of canal	Just above water line
Scotch broom	2 plants	525360	4669682	Downslope; 40 meters to North	In hardwood forest
Scotch broom	6 plants	525351	4669663	Upslope; 2 meters to North	Located between road and canal
Himalayan blackberry	4 plants	525336	4669645	Upslope; 2 meters to North	Located between road and canal
Segment #2 (mile 0.1 – 0.2)					
Hawthorn	1 tree	525251	4669651	NE edge of Trail	
Periwinkle	15m x 5m	525211	4669696	Upslope and down to canal water	Same location as Periwinkle above
Segment #3 (mile 0.2 – 0.3)					
Scotch broom	1 plant	525211	4669696	Downslope; North	Located at edge of canal
Periwinkle	10m x 4m	525216	4669694	Downslope; on trail	
Himalayan blackberry	1 plant	525211	4669707	Upslope; 0.5 m to South	On canal water edge
Nut Sedge	1 plant	525216	4669717	N edge canal; in water	Remove before construction
Segment #4 (mile 0.3 – 0.4)					
English holly	1 tree	525210	4669840	Upslope x 0.5 m	
English ivy	3 patches: a. 5m x 3m b. 0.5 m x 4m c. 1m-10m x 5-10 m	525171	4669844	Downslope/in yards a. along trail b. from canal-yard c. along trail	Patches associated with private landscaping
Hawthorn	1 tree	525146	4669819	Downslope; 3m to North	A wild/naturalized tree
Segment #5 (mile 0.4 – 0.5)					
Hawthorn	1 tree	525124	4669789	Upslope; 5m to North	
Himalayan blackberry	2 patches	525075	4669709	Upslope: a. 2m to N b. 5-8m to N	Continues into Segment #6
Scotch broom	a. 15m ² (40 plants) b. 30m ² (25 plants)	525075	4669709	Upslope: a. 5-10m to North b. 5m to North and cont. to road above	Same location as blackberry above

Noxious Weed Species	Infestation Area	Location UTM (E)	Location UTM (Y)	Location Relative to Canal	Comments
Segment #6 (mile 0.5 – 0.6)					
Hawthorn	1 tree	525062	4669694	Upslope; 5m to North	
Himalayan blackberry	Two large patches	525062	4669694	Upslope to N Downslope to S	Same location as Hawthorn site above
Himalayan blackberry	Very large patch; 100% cover	525052	4669679	Downslope to N	From trail side and cont. downslope
Periwinkle	3m x 5m patch	525026	4669661	Edge of trail	
Scotch Broom	3m x 6m	525000	4669631	Downslope, and scattered to N	
Large-leaf Sweet Pea	Small patch	525000	4669631	Downslope, edge trail and to N	Same location as Scotch Broom above
Segment #7 (mile 0.6 – 0.7)					
Scotch broom	Small patch	524984	4669606	Downslope, in draw, + scattered to N	At Roca Creek
Himalayan blackberry	Large patch	524978	4669601	Downslope, in draw, + scattered to N	At Roca Creek
Himalayan blackberry	Large patch	524969	4669598	Above canal; in creek in culvert of Roca Creek	
Large-leaf Sweet Pea	3 plants	524955	4669624	Downslope to NE x 2m	
English ivy	2 tree trunks	524965	4669629	Downslope, 3m to NE	Climbing trunks
Hawthorn	1 tree	524964	4669636	Downslope x 1m	
Hawthorn	1 tree	524962	4669638	Downslope x 1m	
Himalayan blackberry	2 patches	524943	4669678	Downslope to East	Small healthy patch; cont. along canal
Segment #8 (mile 0.7 – 0.8)					
Himalayan blackberry	Large patch	524928	4669720	Downslope to E an along trail	Cont. to private yard
Segment #9 (mile 0.8 – 0.9)					
No noxious weeds identified in this segment					

Noxious Weed Species	Infestation Area	Location UTM (E)	Location UTM (Y)	Location Relative to Canal	Comments
Segment #10 (mile 0.9 – 1.0)					
Himalayan blackberry	4m x 1 m patch	524743	4669904	Downslope to N, trail edge/ fenceline	Neighbor said “left for bird cover for Towhees!”
Periwinkle	5m x 3m	524690	4669907	Downslope, from trail edge to 3m x N	
Himalayan blackberry	scattered lightly, 5m x 2m	524681	4669892	On trail above buried pipe	Young re-sprouting canes
Segment #11 (mile 1.0 – 1.1)					
Himalayan blackberry	2 patches: a. 10m x 3m b. 5m x 5m	524657	4669861	a. on trail b. downslope to N	
Scotch broom	a. 3 plants b. 25 plants	524640	4669836	a. N edge trail b. below trail x 2m	Patch “b” is west of patch “a”
Himalayan blackberry	1 large patch	524640	4669836	North edge trail, continuing into yard	Same location as above Scotch broom
Segment #12 (mile 1.1 – 1.2)					
Himalayan blackberry	1 v. large patch	524502	4669790	Begins to S, con’t. x 20m to WSW	
Segment #13 (mile 1.2 – 1.3)					
Himalayan blackberry	1 v. large patch	524472	4669771	Upslope to W, in dry creek; Downslope to E, into upper draw	Riparian infestation in Liberty St. Park
Scotch broom	Uncounted, 1m x 4m	524468	4669782	Downslope to E, in dry creek zone	In Liberty St. Park Site cont. from Segment #12.
Scotch broom	10 plants, 3m x 1m	524471	4669817	Downslope to E + along trail edge as linear patch	In Liberty St. Park
Segment #14 (mile 1.3 – 1.4)					
Scotch broom	2m ² patch	524456	4669862	Downslope, to E	25-JUL-18 1:54:16PM
Himalayan blackberry	Large patch; con’t. as scattered patches to N in Segment #15	524456	4669862	Downslope, to E	Begins at same location as scotch broom above
English ivy	Climbing multiple tree trunks	524371	4669862	Downslope to E	Climbing madrone + Douglas-fir trunks

Noxious Weed Species	Infestation Area	Location UTM (E)	Location UTM (Y)	Location Relative to Canal	Comments
Segment #15 (mile 1.4 – 1.5)					
Himalayan blackberry	Multiple patches	See above UTM's in Segment #14		Continues from #14, as scattered patches to the N end of #15	
Segment #16 (mile 1.5 – 1.6)					
English ivy	Thick patch	524372	4670029	Downslope to E, between canal/Lisa Ln.	ground cover
Segment #17 (mile 1.6 – 1.7)					
Himalayan blackberry	Scattered and clumpy	N/A	N/A	Below ditch common; above patchy	Clumpy distribution; has been treated, not dense.
Segment #18 (mile 1.7 – 1.8)					
Himalayan blackberry	Not assessed	N/A	N/A	Patchy above and below ditch	Scattered; not localized
Segment #19 (mile 1.8 – 1.9)					
Periwinkle	Extensive linear area	N/A	N/A	Below canal along private property. Used as ground cover and extends beyond fenced yard	
Segment #20 (mile 1.9 – 2.0)					
Himalayan blackberry	2m x 10m	N/A	N/A	Below ditch and trail in large, dense patch	
Scotch broom	3 plants	524108	4670230	Plants are on ditch within construction zone	
Segment #21 (mile 2.0 – 2.1)					
Himalayan blackberry	Multiple patches	523973	4670213	Downslope to N + Upslope to S	Scattered from Long Way to above canal at pipe entrance from trailside and N to Long Way
Periwinkle	7m x 3m	523973	4670213	Downslope to N	
English ivy	5m x 3m patch + climbing 20" Douglas-fir	523984	4670222	Downslope to N	
Segment #22 (mile 2.1 – 2.2)					
Large-leaved Sweet pea	20m x 5m	523832	4670278	Up + Downslope and canal edge, trail	

Noxious Weed Species	Infestation Area	Location UTM (E)	Location UTM (Y)	Location Relative to Canal	Comments
Segment #23 (mile 2.2 – 2.3)					
Scotch broom	10m x 4m, 30 plants	523790	4670245	Upslope, along fenceline far above canal	Infestation continues to W x 25 meters
Himalayan blackberry	Multiple patches	523781	4670234	Up/Downslope: above canal; on trail edges & below canal corridor	
Himalayan blackberry	Multiple patches, large linear area	523749	4670237	Up/Downslope, to canal water, beyond canal corridor to N/S	Starting location of v. large infestation, often covering trail, cont. well beyond corridor
Large-leaved Sweet pea	Begins as small 1m ² patch	523749	4670237	Downslope to N, cont. scattered to West, often on canal edge	Starts at same location as above blackberry site
Segment #24 (mile 2.3 – 2.4)					
Yellow star thistle	1m ² patch, 10 plants	523721	4670293	N edge/slope of canal	1 st site of this weed
Himalayan blackberry	3m x 1m patch	523706	4670361	Upslope to W and beyond	
Scotch broom	10 plants	523706	4670361	Upslope, West side canal	Same location as blackberry above
Yellow star thistle	15 plants	523700	4670390	Upslope, to W, near Terrace St.	Just s of Terrace St. Pumping Station

Appendix D: General Management Goals for Wildlife

(copied from the 2016 Ashland Forest Plan, p. 51)

Notes from Siskiyou BioSurvey writing staff: the following principles are well thought out and presented in this document developed for the Windburn Parcel and are applicable for the wildlands surrounding the Ashland Canal because they propose important strategies to address similar wildlife and biodiversity issues.

In 2009, *City Forest Lands Restoration Project Winburn Phase III Parcel* spelled out wildlife goals for the Winburn parcel.

Efforts will be made to increase the structural diversity of forest stands across the landscape.

Hardwoods, especially California black oak, will be retained and encouraged where appropriate.

Existing canopy gaps will be utilized to maintain structural diversity across the landscape. Where possible, a multi-layered canopy will be retained or encouraged.

Fuel hazard and density-reduction goals will be weighed with other goals. Additional coarse woody material will be added to the forest floor, if a need has been identified on a unit basis, to provide needed micro-habitats.

Snags will be retained unless they pose a hazard or conflict with other management objectives.

Should removal of non-commercial trees be inadequate to reduce stand densities to desired levels, snag creation, as opposed to removal of large trees, will be considered to meet future snag and coarse woody material goals.

Cutting trees within riparian transition zones (100-300 feet of streams and draws) will be minimized if fuel hazard reduction goals can be met.

Within riparian zones, thinning will entail either girdling or retention of downed trees on site as coarse woody material unless there is an associated hazard.

While recognizing that there will be an effect on terrestrial mollusks, salamanders and other organisms, activities will minimize the impact on terrestrial wildlife.

Appendix E: Introduction to Siskiyou BioSurvey, LLC (SBS):

Siskiyou BioSurvey, LLC



Ecological Consultants

Our team of biologists and ecologists came together as an LLC in the early 2000's to provide a range of ecological services to NGO's and government agencies to support ecological implementation of proposed projects in better alignment with natural processes rather than disrupting them. We bring a full scope of botanical and ecological understanding with an emphasis on Southern Oregon ecosystems including forest, oak savanna, montane, prairie and riparian habitats. Our team includes experts with skills ranging from old growth forest canopy ecology down to forest floor fungal inventories, botanical inventories, fire ecology, wildlife studies, wetland mitigation, native seed collection, and landscape restoration prescriptions. Besides field analysis, we provide assistance developing environmental impacts statements, landscape restoration plans and master plans to summarize the most meaningful information into cohesive and relevant products. Many of our team reside within Ashland, taking pride in our community and care in our environment. To read more, visit: www.siskiyoubiosurvey.com.