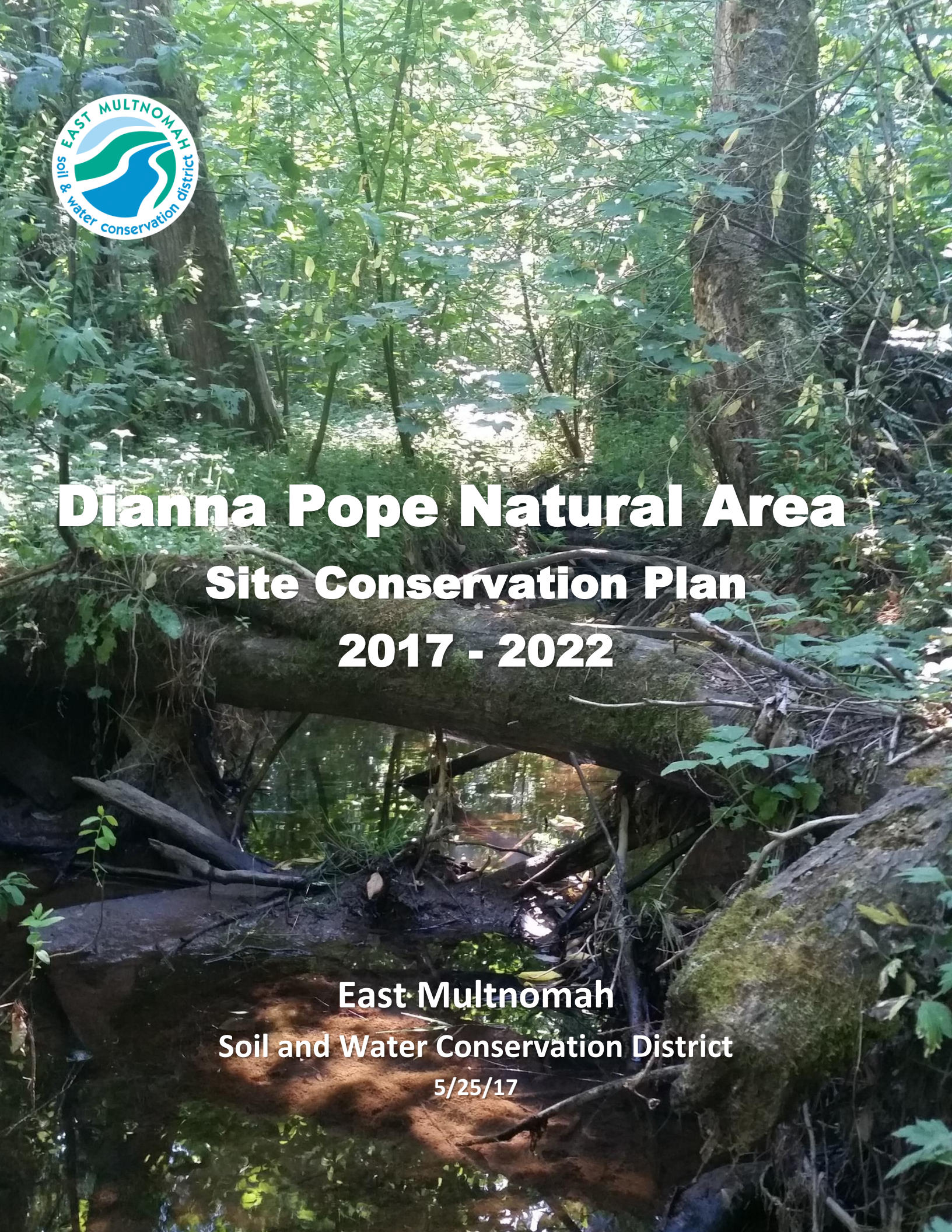


Dianna Pope Natural Area

Site Conservation Plan

2017 - 2022

East Multnomah

Soil and Water Conservation District

5/25/17

Dianna Pope Natural Area
Site Conservation Plan
2017 - 2022

For more information about this document or to receive a copy, please contact:

- Lucas Nipp, Senior Rural Conservationist; Dianna Pope Natural Area Manager (lucas@emswcd.org / 503.935.5363)
- Julie DiLeone, Rural Lands Program Supervisor (julie@emswcd.org / 503.935.5360)

East Multnomah Soil and Water Conservation District
5211 N. Williams Ave., Portland, OR 97217
Tel: 503-222-7645

Cover Photo: Johnson Creek in the Dianna Pope Natural Area, Chelsea White-Brainard, EMSWCD

Foreword

On November 18, 2014, the Dianna Pope Natural Area (DPNA) was designated in recognition of Dianna Pope's 32 years of service on the East Multnomah Soil and Water Conservation District (EMSWCD) Board. A formal ribbon cutting and dedication ceremony was held as a part of EMSWCD's Annual Meeting on September 27, 2015. A plaque and benches were installed and a western hemlock tree was planted by Dianna Pope in a commemorative area.

Dianna Pope

Dianna Pope began her service on the EMSWCD's Board as an Associate Director in 1982. Elected as a full Director in 1984, Dianna was re-elected every four years through 2010. After 32 years of service to EMSWCD, Dianna stepped down in December 2014 from her Board Director Position. Residing in Corbett, Oregon, Dianna represented residents of the EMSWCD's Zone 3, which comprises all of Multnomah County lying east of the Sandy River. During her 32-year tenure at the EMSWCD, Dianna served as Board Chair, Treasurer, and Secretary as well as on numerous EMSWCD committees.

Dianna's service with the EMSWCD began long before the EMSWCD had a tax base, so in the early years she, along with other Board Directors and Associate Directors, took on most of the day-to-day work of the EMSWCD. Her time with EMSWCD focused on working with local people to achieve consensus on natural resource issues, ensuring that all viewpoints were considered. Dianna served as a consummate "bridge" between citizens whose economic welfare depended on natural resources and those citizens whose interests were principally environmental protection. Dianna's leadership at EMSWCD supported and helped realize many monumental achievements, including the establishment of three local watershed councils, urban conservation programming (such as a very popular Rain Garden Program), and EMSWCD's tax base. Dianna helped foster EMSWCD through a dramatic evolution after the tax base was established.

Dianna Pope Commemorative Plaque

In 2017, EMSWCD's 20 full time staff work out of a restored historic home in north Portland and have an annual operating and capital budget of approximately $12.9 million. Dianna's recent work has helped expand efforts to raise awareness of and reduce water pollution in urban and rural areas.

Dianna Pope (center) planting a Western Hemlock tree at the Dianna Pope Natural Area ribbon cutting ceremony in September 2015.

Contents

List of Appendices

List of Figures

Executive Summary

In 2012, the East Multnomah Soil and Water Conservation District (EMSWCD) purchased approximately 58 acres of property along Orient Drive east of Gresham, Oregon. Approximately 43.5 acres of the property were used to establish EMSWCD's Headwaters Farm and the Headwaters Incubator Program. On the remainder of the property, which includes approximately 14.5 acres along 0.41 miles on both sides of the North Fork of Johnson Creek, vegetation restoration was initiated to restore the area to a more natural condition. These 14.5 acres eventually became the Dianna Pope Natural Area (DPNA).

Before purchase by EMSWCD, most of the land within and surrounding the DPNA had been in nursery production for over four decades. A thin band of sparse trees, many ornamental, surrounded the creek and farming operations occurred within an average of 20 feet from the creek. Weeds, grasses, dumped materials, and nursery operations filled the gaps between the trees in this riparian band. A riparian area in the western part of the property was the most intact with large trees, native shrubs, and an average width of 100 feet on each side of the creek.

After EMSWCD purchased the property, but prior to the site formally being established as the DPNA (2012 – 2014), the riparian area was enrolled in EMSWCD's StreamCare Program. The goal of the StreamCare Program is to establish more native, riparian vegetation along streams that are water quality limited according to the Department of Environmental Quality's 303(d) list, which serves to meet the requirements of the U.S. Environmental Protection Agency's Clean Water Act. Riparian vegetation provides increased shade, thereby preventing solar heating of the stream.

In the summer and fall of 2012, site preparation was completed on all but a little less than one-acre on the east side of the site, which was still in nursery stock at the time. Initial planting occurred in the prepared area in the winter of 2012/2013. Nearly all of the roadways within the site were also planted at this time. A small amount of replanting occurred throughout this area in the years since, but the main management action has been regular maintenance, primarily consisting of weed treatments to reduce competition with installed plants. The section on the east side of the site that was not planted in conjunction with the original planting was planted in February 2016. Planting around recently removed or replaced stream crossings, decommissioned roads, and where a barn, garage, and pole building were removed on the west side of the site, was conducted in February 2017. This planting means that the entire DPNA, besides existing roads and directly around the office, have been planted.

As of May 2017, the DPNA exhibits varying levels of riparian vegetation and condition. A combination of existing forest and extensive young plantings installed into areas dominated by non-native grasses and forbs can be found throughout the DPNA. A total of 82 plant species have been observed within the DPNA. Existing forest types are both mixed coniferous/deciduous riparian forest and bands of scrub-shrub wetland forest adjacent to the creek banks.

The primary goal for the DPNA is to establish and enhance a mixed coniferous/deciduous riparian forest community. Long term, desired future conditions include a diverse mix of native trees and shrubs, a rich, native, herbaceous layer, five to fifteen snags per acre, plentiful large, downed wood, and continuous canopy cover with little to no gaps. These complex features found in a mature riparian forest community take centuries to be realized, but current species and densities planted in the DPNA appear to be adequate to reach these desired future conditions.

Barring major disturbance, management actions moving forward will consist of infill planting as needed plus weed treatments in an effort to allow the installed trees and shrubs to become *free to grow*. *Free to grow* means that the installed plants have reached a height where they will no longer be outcompeted by undesired plants. Since the DPNA is owned by EMSWCD, it functions as a demonstration site for riparian vegetation restoration, and it is adjacent to Headwaters Farm, weed control may continue beyond the *free to grow* stage for aesthetic purposes and to prevent weed introduction into farm fields. Replanting will occur as needed in response to disturbance and/or changing site conditions.

As of May 2017, a total of 47 birds, mammals, amphibians, fish, and reptiles had been observed in the DPNA. As of the date of this plan, a formal wildlife survey was being conducted and was to be completed in Fiscal Year 2017-2018. A report of the findings will be completed in Fiscal Year 2017-2018.

As the DPNA is nested within Headwaters Farm and many constructed elements such as roads, stream crossings, and structures occur within the DPNA. Much of this infrastructure is managed by the Headwaters Farm Program Manager. No additional farm infrastructure is expected to be installed within the DPNA. In addition, opportunities to reduce the impact of or remove existing infrastructure (such as the mobile homes and septic systems) will be pursued whenever possible.

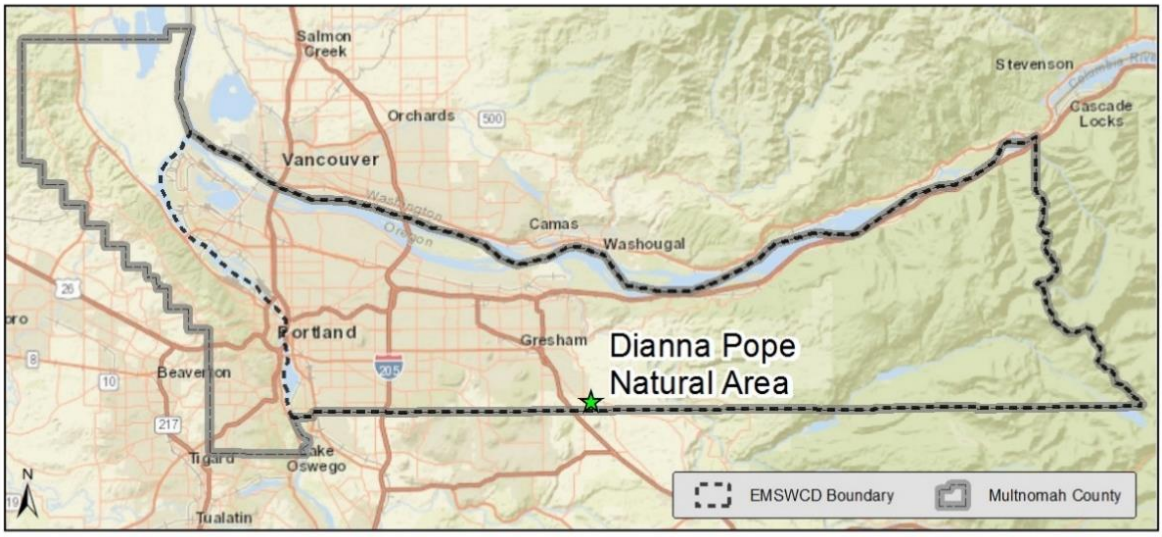
Although the DPNA is not closed to public use, as of May 2017 it was not being intentionally managed to encourage use by humans or pets, except for the Dianna Pope Commemorative Area. Other than the commemorative area, public viewing of the DPNA from roads and boundaries is the suggested method for interacting with the DPNA.

A cursory review and update of this plan will be conducted in January of each year to account for an improved understanding of the DPNA and to keep the plan current. A comprehensive review and update will be completed every five years in by the end of June (the end of the fiscal year). The EMSWCD will budget and plan for the on-site management of the DPNA on a fiscal year basis, which runs July through June of each year. Budgetary planning will take place in February through March while annual work planning will take place in May through June. Reporting of accomplishments will occur on a quarterly basis in October, January, April, and at the end of the fiscal year, after June.

1.0 Introduction

In 2012, the East Multnomah Soil and Water Conservation District (EMSWCD) purchased approximately 58 acres of property along Orient Drive east of Gresham, Oregon. Approximately 43.5 acres of the property were used to establish EMSWCD's Headwaters Farm and the Headwaters Incubator Program.[1] On the remainder of the property, which includes approximately 14.5 acres along 0.41 miles on both sides of the North Fork of Johnson Creek, vegetation restoration was begun to restore the area to a more natural condition. These 14.5 acres eventually became the Dianna Pope Natural Area (DPNA) (see Figure 1). An approximately 0.14 acre riparian easement was granted to EMSWCD by an adjacent landowner coincident with EMSWCD's purchase of the property. The easement encompasses a short stretch of land approximately 50 feet from the north bank of the creek on the adjacent property. While not technically within the DPNA, the easement lands are managed in conjunction with the lands owned outright by EMSWCD and are included in this site conservation plan.

Figure 1: Dianna Pope Natural Area Location



Protection and management of the DPNA directly supports EMSWCD strategic and programmatic goals. The creation and maintenance of the DPNA supports two of the five 2012-2017 broad strategic goals:

- Protect and improve water quality and quantity; and
- Protect and improve natural habitats

The management of the DPNA also supports Goal 2 of the Rural Water Quality Program

- Achieve a 25% improvement in water quality in upper Johnson Creek…".

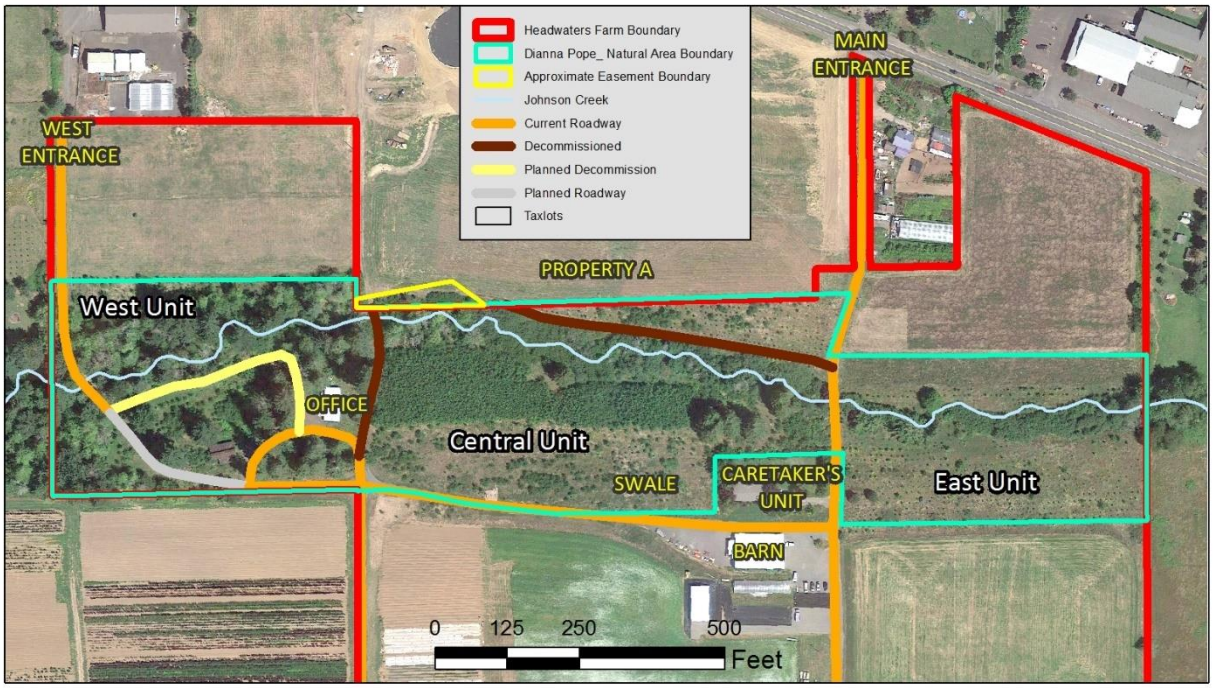
2.0 Management Authority and Responsibility

The authority to buy, own, and manage land for conservation purposes is granted to EMSWCD under Oregon Revised Statutes 271.005 to 271.540, Use of Public Lands; Easements Public Lands General Provisions.

1 To learn more about the Headwaters Incubator Program visit: http://emswcd.org/farm-incubator/.

Most actions in the DPNA will be carried out or overseen by the DPNA Manager, who will be a staff member from EMSWCD. All actions occurring in the DPNA that are not directly carried out or overseen by the DPNA Manager must approved by the DPNA Manager. As the DPNA is nested within Headwaters Farm, the many constructed elements, such as roads and structures, that occur may be managed directly by other EMSWCD staff. A complete list of the management actions identified in this plan is given in Appendix 1. For management purposes, the DPNA is divided into three administrative units; west, central, and east, separated by the recently decommissioned middle access road and the main entrance road (see Figure 2).

Figure 2: Map of Dianna Pope Natural Area



3.0 Soils

According to the United States Department of Agriculture's National Resource Conservation Service's (NRCS) National Cooperative Soil Survey, 72% of the underlying soils within the DPNA are mapped as Wollent silt loam and 28% are mapped as Powell silt loam, 3 to 8 percent slopes. (available online at: http://websoilsurvey.sc.egov.usda.gov/, accessed 3/7/2017. Wollent silt loam is classified by NRCS as a hydric soil but not highly erodible. Powell silt loam is not a hydric soil but is classified as highly erodible land. Powell silt loam is known to have a shallow fragipan soil horizon. A fragipan is a subsurface soil layer that restricts water flow. Poor drainage in areas with a fragipan soil horizon could have implications for vegetation types, stormwater management, and drainage within the DPNA.

4.0 North Fork of Johnson Creek

The North Fork of Johnson Creek runs east-west through the middle of the DPNA for 0.41 miles (see Figure 2). EMSWCD owns the bed of the creek while the water resource itself is managed in the public trust by the state.

4.1 Creek Structure and Obstructions

The North Fork of Johnson Creek, as it runs through the DPNA, is a low gradient, single channel, meandering stream. It is slightly to moderately incised for most of its distance through the DPNA, though not completely disconnected from its floodplain except possibly in the lower West Unit. In the middle of this unit the bed has cut to the underlying clay hardpan. Several high water side channels are also found in the upstream portion of this unit. Minor braiding is seen in the Central Unit created by live willows growing in the channel.

According to a site visit report by an NRCS hydraulic engineer dated October 2, 2012[2], "Overall, the channel is lacking in complexity. This means it is generally uniform in shape, has little sinuosity, and lacks in desirable riparian vegetation. A review of aerial photos indicates the channel alignment has not been altered significantly over time. Blackberry and reed canary grass are present at multiple locations along the channel. Removal of invasive species and heavily planting the riparian area with native species will greatly improve overall channel condition"[1].

As of May 2017, the structure of the creek is especially dynamic as all stream crossings were removed, regraded and retrofitted in summer 2016. Prior to culvert removal and replacement efforts, all three stream crossings found within the DPNA were partial barriers to migrating fish. The west crossing and previous middle crossing were classified as 67% passable and the east crossing was classified as 33% passable. The culvert at the west crossing was replaced with a bridge, the middle crossing was removed entirely, and the east culvert was replaced with a much larger arch culvert. A large pool, created at the east culvert because the original culvert was too small, remains after replacement efforts but flow is unimpeded as it crosses under roadways within the DPNA. All stream crossings within the DPNA are now 100% passable by fish.

4.2 Water Quality

In 1998, the Oregon Department of Environmental Quality (DEQ) added Johnson Creek to the list of waterbodies on its 303(d) list. A waterbody that is water quality limited for certain parameters is placed on this list under section 303(d) of the federal Clean Water Act. Johnson Creek is listed as water quality limited for bacteria, summer temperature, and toxics (DDT and dieldrin). In 2002, DEQ added PCBs (polychlorinated biphenyls) and PAHs (polycyclic aromatic hydrocarbons) to the 303(d) for Johnson Creek. The listing includes the entire stream from the mouth to the headwaters.

According to the Johnson Creek Watershed Council's Johnson Creek Water Quality 2009 to 2014 report[2], "High water temperature is a widespread problem within the watershed and may be the most significant limitation on aquatic communities." The riparian vegetation restoration being conducted within the DPNA is primarily aimed at shading the stream and lowering the temperature of the creek as it flows through the DPNA.

2 Report on file at EMSWCD.

4.3 Water Quality and Quantity Monitoring and Research

EMSWCD conducts monthly water quality monitoring within the rural areas of the Johnson Creek Watershed. One monthly monitoring and collection site is in the West Unit of the DPNA. Physical measurements collected include temperature, pH, conductivity, turbidity, and total dissolved solids. Samples are also collected and analyzed by a laboratory for E. coli, nitrate-nitrogen, total suspended solids, and total phosphorous.

EMSWCD also annually deploys a continuous water temperature data logger in the creek at this sampling location from May through October. The data collected is compiled with continuous temperature data collected throughout the entire watershed by partners. Data from the four years that continuous summer temperature has been collected within the DPNA have revealed that water temperatures within the DPNA are relatively low when compared with temperatures found throughout the watershed.

The temperature standard set forth by the Oregon Department of Environmental Quality for a stream identified as having salmon and trout rearing and migration is (not to exceed) 18 degrees Celsius (64.4 degrees Fahrenheit) measured as a seven-day average daily maximum (7DADM) temperature. The 7DADM temperature is a calculation of the average of the daily maximum temperatures from seven consecutive days made on a rolling basis. Although salmon or trout have not been found within the North Fork of Johnson Creek, the standard applies to the North Fork of Johnson Creek since both species are found in the main stem of Johnson Creek.

In 2013, the first year that summer temperature data was collected within the DPNA, the maximum 7DADM temperature recorded was 21 degrees Celsius and the temperature of the creek exceeded the temperature standard (18 degrees Celsius) on 28 days that year. Out of the 44 sites monitored throughout the watershed, this ranks as the 12th lowest for days of exceedance. In 2014, the maximum 7DADM temperature recorded was 17.9 degrees Celsius with zero days of exceedance. This was one of only six sites out of 39 monitored that year that did not exceed the standard. In 2015, a year with an extremely hot summer, the maximum 7DADM temperature recorded was 21.3 degrees Celsius with 48 days of exceedance, ranking sixth lowest out of 19 sites monitored for days of exceedance. Temperature data from summer 2016 shows zero days of exceedance with a maximum 7DADM of 17.8 degrees Celsius. Results from watershed wide monitoring in summer 2016 were not available at the time of writing of this report.

A United States Geological Survey (USGS) staff plate is located within the creek in the East Unit of the DPNA. The plate allows for on-site determination of stream depth and is recorded monthly at the time of water quality sampling. The median stream depth recorded since installation in September 2013 is 3.88 feet, with the minimum reading at 3.56 feet and the maximum reading at 4.68 feet. In periods of extreme rainfall, the creek has been observed at levels much higher than this although these observations did not fall on days of water quality sampling and creek height was not recorded.

USGS also installed an instrument to record streamflow in cubic feet per second (cfs) at the location of the staff plate in fall 2015. As of May 2017, preliminary data are available from October 2015 through November 2016. The median daily streamflow from this period is 0.29 cfs, with a minimum reading of 0.02 cfs, and a maximum reading of 39 cfs. Many of the higher streamflow data from this instrument, including this maximum value, are estimated due to uncertainty in the stage-discharge relationship above 20 cfs. As these data are preliminary, they are subject to change based on internal USGS review process. This report will be updated with validated data as available. EMSWCD encourages approved scientific research within the DPNA related to riparian systems, water quality, and hydrology. Further instruments and/or equipment may be installed pending approval by the DPNA Manager.

5.0 Plant Communities

5.1 Initial Conditions

Historic vegetation maps based on interpretation of public land survey records of the federal government's General Land Office classify the entire DPNA as, "*Mesic mixed conifer forest with mostly deciduous understory. May include Douglas fir, western hemlock, red cedar, grand fir, big leaf maple, yew, dogwood, white oak, red alder.*" All of these species, with the exception of yew, have been planted in the DPNA.

Before purchase by EMSWCD, most of the land within and surrounding the DPNA had been in nursery production for over four decades. Within what is now the DPNA, a thin band of sparse trees, many ornamental, surrounded the creek and farming operations occurred within an average of 20 feet from the creek. Weeds, grasses, dumped materials, and nursery operations filled the gaps between the trees in this riparian band. The riparian area in the West Unit was the most intact with large trees, native shrubs, and an average width of 100 feet on each side of the creek. Common trees found in the DPNA prior to plant installation by EMSWCD included Douglas fir, western red cedar, red alder, black cottonwood, pacific willow, and Sitka willow (a list of tree and shrub species observed in the DPNA can be found in Appendix 2).

Between 2012 and 2014, prior to formally being established as the DPNA, the area was enrolled in EMSWCD's StreamCare Program. The goal of the StreamCare Program is to establish more native, riparian vegetation along streams that are water quality limited according to the Department of Environmental Quality's 303(d) list, which serves to meet the requirements of the U.S. Environmental Protection Agency's Clean Water Act.[3] Riparian vegetation provides increased shade, thereby preventing solar heating of the stream.

3 To learn more about the StreamCare Program visit: http://emswcd.org/on-your-land/streamcare/.

In the summer and fall of 2012, site preparation of all but a little less than one acre in the East Unit that was still in nursery stock at the time was conducted (see Figures 3 and 4). Initial planting occurred in the prepared area in the winter of 2012/2013. All but the roadways within the riparian easement were also planted at this time. A small amount of replanting has occurred throughout this area in the years since, but the main management action has been regular maintenance, primarily consisting of weed treatments to reduce competition with installed plants. The section in the East Unit that was not planted in conjunction with the original planting of the DPNA was planted in February 2016. Planting around recently removed or replaced stream crossings, decommissioned roads (including in the easement), and where a barn, garage, and pole building were removed in the West Unit, was conducted in February 2017. This planting means that the entire DPNA besides current use roads and directly around the office are planted. The StreamCare project area was reduced slightly in size to 14.3 acres in the fall of 2014 to allow for construction of a farm road between the barn and the office.

Figure 3: Prior to Site Preparation for Planting

Figure 4: Following Site Preparation

5.2 Current Conditions

This section describes the conditions of plant communities within the DPNA as of May 2017. Each of the three units within the DPNA exhibit different levels of riparian vegetation and condition (see Figures 5-8). A combination of existing forest and extensive young plantings installed into areas dominated by non-native grasses and forbs can be found throughout the DPNA. A total of 82 plant species have been observed within the DPNA (a list of tree and shrub species observed can be found in Appendix 2). Existing forest types are both mixed coniferous/deciduous riparian forest and bands of scrub-shrub wetland forest adjacent to the creek banks. A formal plant inventory is currently underway and will be completed in Fiscal Years 2017-2018. No threatened or endangered plant species are known to, or likely, occur in the DPNA.

The vegetation in the West Unit is relatively intact. Excluding areas of prior human disturbance towards the upland portions on each side of the creek (i.e., roadways, yards, cleared areas, and mowed areas), this unit exhibits high ecosystem function and value. There are many mature, native coniferous and hardwood trees such as Douglas fir, western red cedar, big leaf maple, and red alder that make up a nearly complete canopy cover to within approximately 100 feet of the creek on both sides (see background Figure 6). The understory in this forested area is comprised of a variety of native shrubs including salmonberry, elderberry, vine maple, beaked hazelnut, and red-osier dogwood. EMSWCD has controlled the small populations of invasive weeds that were previously dispersed throughout this unit and conducted infill plantings as well as plantings outside of the existing forested area. Dominant ground cover species in the forested area include trailing blackberry and fringecup. In areas lacking canopy cover and comprised of plantings installed by EMSWCD, nipplewort and non-native grasses are the dominant ground cover in areas with well drained soils, while creeping buttercup is the dominant ground cover in areas with poor drainage and saturated soils.

Figure 5: Photo of Dianna Pope Natural Area from Near Eastern Boundary

Note lack of existing canopy cover in East Unit in foreground and increasing canopy cover moving towards the mature, coniferous trees in background denoting the West Unit.

Figure 6: Current Conditions in Central and West Unit

Central Unit in Foreground, West Unit in background, denoted by mature conifers.

The vegetation in the Central Unit is in a much poorer condition. Dense vegetation, primarily willow, exists in a band along the creek ranging from 15 to 30 feet from each bank and a few, mature Douglas fir and western red cedar are found on the east end of this unit (see Figure 7). Due to previous farming operations, however, this unit is lacking in canopy cover. An extremely dense stand of black cottonwood and red alder has also grown on the south side of the creek in this unit since EMSWCD purchased the property. EMSWCD has controlled invasive weeds in this unit and planted appropriate riparian species throughout. Plant communities installed include mixed coniferous/deciduous riparian forest, and scrub shrub wetland forest depending on soil, moisture, and light conditions. The ground cover where the plantings have been installed is primarily composed of non-native grasses and forbs (see Figures 5, 6, and 7).

Figure 7: Current Conditions in Central and West Unit

Central Unit in foreground denoted by young plantings, snags, and willows, West Unit in background, center left of photo, denoted by dense, mature conifers.

The vegetation in the East Unit is the most degraded. There are very few mature trees in this unit. EMSWCD has controlled invasive weeds in this unit and planted appropriate riparian species throughout. Plant communities installed include mixed coniferous/deciduous riparian forest and scrub shrub wetland forest comprised predominately of dense willow planted between ten and 25 feet from the banks (see Figure 8). The ground cover where the plantings have been installed is primarily composed of non-native grasses and forbs. A native ground cover mix was also installed to prevent erosion and further weed recruitment after large amounts of Canada thistle were controlled during the initial site preparation of this unit (see Appendix 2 for details). Compared to other units of the DPNA, this unit will make the greatest transition to mature riparian forest and represents the largest potential for increase in ecosystem function.

Figure 8: Current Conditions in East Unit

Note band of willow/shrub scrub forest along creek near center of photo.

5.3 Desired Future Conditions

The primary goal for the DPNA is to establish and enhance a mixed coniferous/deciduous riparian forest community. Long term, desired future conditions include a diverse mix of native trees and shrubs, a rich, native, herbaceous layer, five to fifteen snags per acre, plentiful large, downed wood, and continuous canopy cover with little to no gaps. These complex features found in a mature riparian forest community take centuries to be realized, but current species and densities planted in the DPNA appear to be adequate to reach these desired future conditions.

5.4 Management Actions

5.4.1 Riparian Plant Establishment

Barring major disturbance, management actions moving forward will consist of infill planting as needed plus weed treatments in an effort to allow the installed trees and shrubs to become free to grow. *Free to grow* means that the installed plants have reached a height where they will no longer be outcompeted by undesired plants. Based on current experience from the StreamCare Program, this can be achieved in as little as five years from initial site preparation, but may take longer depending on site conditions and wildlife present. As site preparation began in summer 2012 in what is now the DPNA, the trees and shrubs installed initially in February 2013 could reach free to grow status by summer 2017.

As the DPNA is owned by EMSWCD, functions as a demonstration site for riparian vegetation restoration, and is adjacent to Headwaters Farm, weed control may continue beyond the free to grow stage for aesthetic purposes and to prevent weed introduction into farm fields. Replanting will occur as needed in response to disturbance and/or changing site conditions. Many non-invasive, ornamental trees that occurred along the riparian area when the property was purchased by EMSWCD remain. These trees will remain in order to shade the creek and prevent soil erosion. If these trees interfere in the establishment of native trees and shrubs, they may be killed. If they are killed, they will likely not be cut down but instead girdled and left as snags.

5.4.2 Thinning of Vegetation

Thinning of vegetation within the DPNA may be necessary over time to support tree and understory health. Visual monitoring as well as periodic stand inventories will be conducted as needed to inform decisions on possible thinning. It is our understanding that Oregon Forest Plan rules do not apply to thinning of vegetation in riparian restoration projects. County rules governing thinning of vegetation near streams will be explored if thinning in the DPNA is deemed necessary. Thinning is not planned for the extremely dense stand of cottonwood and alder that exists on the south side of the Central Unit. This area provides unique habitat not found in other areas of the DPNA and will be left to self-thin.

5.4.3 Downed Wood and Snag Management

Downed wood and snags will increase as the area matures and both are integral parts of the desired future condition of the DPNA. Both features are used by wildlife for nesting and food resources. Downed wood will not be removed from the DPNA. The DPNA Manager will be consulted if downed wood from the DPNA is obstructing, impacting, or damaging roads, farm fields, or structures. Only those parts of downed wood extending beyond the DPNA will be removed except as described below. Due to structures existing in and near the DPNA, diseased or dying trees that threaten structures may need to be removed if the risk to safety or property is deemed high. The DPNA Manager will be consulted when a tree is threatening a structure in or adjacent to the DPNA. Trees will be removed when deemed necessary.

5.4.4 Wetland Delineation

A wetland delineation has not been conducted within the DPNA. A basic wetland reconnaissance along the path of a planned roadway within the West Unit (see Figure 2) was conducted in Fiscal Year 2015-2016. Wetland Determination Data Forms were completed for two sampling points along the roadway and wetland conditions were found at one of the sampling points. The road was installed at that time. A wetland delineation in the area of this roadway will be conducted when permitting for the construction of this road commences if required by permitting agencies. This is likely to occur in Fiscal Year 2017-2018.

5.4.5 Monitoring

Visual monitoring of plants and site conditions will be conducted quarterly. Actions, such as replanting or erosion control efforts, will be taken as needed.

6.0 Wildlife

As of May 2017, a total of 47 birds, mammals, amphibians, fish, and reptiles have been observed in the DPNA (a list of species observed can be found in Appendix 2). Fish within the DPNA have been inventoried (see Section 6.1), but a formal wildlife survey has not been completed. A wildlife survey is currently being conducted and will be completed in Fiscal Year 2017-2018. A report of the findings will be completed in Fiscal Year 2017-2018. A species list will be generated and added to Appendix 2 when the wildlife inventories are complete. A motion activated wildlife camera will also be installed in each unit in Fiscal Year 2017-2018. Wildlife in the DPNA will not be directly managed for the foreseeable future.

Several species listed as sensitive by the Oregon Department of Fish and Wildlife are known to or likely occur in the DPNA. These include the Northern red legged frog, Pileated woodpecker, and Willow fly catcher. Each of these species are addressed below.

6.1 Fish

Four species of fish have been recorded within the DPNA. A fish survey conducted by Multnomah County in September 2011 found no salmonid species, including cutthroat trout, in the North Fork of Johnson Creek including within the DPNA. Native reticulated sculpin, speckled dace, and unknown cottids were observed in the DPNA. Fish salvage operations conducted within the DPNA in summer 2016 as a component of stream crossing retrofits revealed large numbers of speckled dace, red sided shiners, and sculpin.

Both stream crossings within the DPNA were made completely passable by fish in 2016 (see Section 7.3). Three culverts downstream of the DPNA near the mouth of the North Fork Johnson Creek are classified as complete barriers to fish and hence block migrating fish from the entire North Fork Johnson Creek. One culvert each is owned by the City of Portland, Multnomah County, and the Oregon Department of Transportation. Efforts are underway between EMSWCD, the Johnson Creek Watershed Council, the City of Portland, Multnomah County, and the Oregon Department of Transportation to retrofit and/or replace these three culverts, which would allow salmonids to access to the DPNA, presumably within the next few years.

When all major fish barriers are replaced downstream of the DPNA, spot surveys for spawning and juvenile salmonids will be conducted. Spawning habitat appears to be very limited within the DPNA but juveniles may enter the area, especially given that the North Fork of Johnson Creek has relatively cool summer water temperatures when compared to the watershed at large. Other future fish investigations led by partners in upper Johnson Creek will also be supported in an effort to see if salmonids are utilizing the DPNA.

6.2 Mammals

Coyotes are the most regularly observed mammal in the DPNA. Raccoons, brush rabbits, and small ground rodents (not listed in Appendix 2 since they have not yet been Identified) are also regularly observed. Deer have not been observed in the DPNA.

6.2.1 North American Beaver

Beaver will be called out discretely in this section although they are not currently present in the DPNA. They are being addressed here as their numbers are increasing in the Johnson Creek Watershed and they will likely be present in the DPNA in the near to midterm. Beaver presence and activities can greatly alter the hydrology, existing vegetation, vegetative capacity, and vegetation structure of a site. Beavers have a positive impact on streams by slowing stream flows, reconnecting channels with their floodplains, recharging groundwater, and increasing summer base flows. The pools associated with their dams also provide ideal habitat for juvenile salmonid rearing.

Beaver also have a need for wood to build dams and they harvest trees and branches from riparian forests in order to fill this need. When beaver become present on a site that they have not been on in the past, large areas of vegetation can be cleared quickly, and their dams can seasonally or permanently flood areas that were previously well drained, changing the vegetative capacity of that area. If beaver become present within the DPNA, additional plantings may need to take place to address loss due to feeding and/or changes in vegetative capacity within the riparian area. Fencing and protection of trees may also be necessary if beaver become present in the DPNA.

6.3 Birds

As of May 2017, 36 species of birds have been observed within the DPNA. An owl box was installed in the DPNA near the caretaker's residence in January 2012 in an attempt to control rodent populations and reduce herbivory on installed plantings, but has not yet hosted a resident.

Willow flycatchers, a state listed sensitive species and federally listed species of concern, likely occur within the DPNA. They are commonly seen or heard on other EMSWCD riparian restoration sites but have not yet been observed in the DPNA. Willow flycatchers are dependent upon dense, continuous, shrubby riparian habitat, especially willows, and conservation actions for this species include improving and/or increasing this type of habitat. This type of habitat has been greatly increased and enhanced within the DPNA as over 2750 willows and associated shrub-scrub wetland species such as red osier dogwood and Douglas spiraea have been planted into areas previously dominated by invasive reed canary grass. This has created a continuous band of shrubby, willow dominated vegetation beginning at the eastern boundary of the DPNA and extending for about 0.33 miles of stream, or a little over 80% of the stream length, within the DPNA (see Figure 9). This band extends around 10-25 feet from both banks along this length.

Figure 9: Example of Dense Willow Band Found Along Majority of Stream Length

Pileated woodpeckers, another state listed sensitive species, occur within the DPNA as well. According to the Oregon Department of Fish and Wildlife's Oregon Conservation Strategy, conservation actions for Pileated Woodpeckers include maintaining and creating large-diameter hollow trees, snags, and logs. These habitat features are all stated components in the desired future conditions of the DPNA.

6.4 Pollinators

Pollinator conservation is a large focus on Headwaters Farm outside of the DPNA boundaries. EMSWCD partnered with The Xerces Society to create pollinator meadows. Also, additional pollinator meadows and hedgerows have been and will continue to be planted by EMSWCD staff. Although many of the plants installed in the DPNA provide pollinator forage, the main pollinator components within the DPNA are brush and dirt piles comprised of previous bulldozed nursery stock located on the edges of the DPNA (see Figure 10). These piles provide critical nesting habitat for native pollinators lacking in most "clean" farm systems. These piles also provide refugia for other insects, birds, mammals, and amphibians. Quail have been observed regularly using the piles for cover.

Figure 10: Debris Piles for Pollinator Nesting

6.4 Reptiles and Amphibians

Northern red legged frogs and Northern Pacific tree frogs are regularly observed within the DPNA. Northern red legged frogs are listed as sensitive by the Oregon Department of Fish and Wildlife and are a federally listed as a species of concern. As this species prefers forested, slow moving streams with associated upland forests for all life stages, the DPNA will provide increasing habitat for the Northern red legged frog as it transforms towards the desired future conditions. Unidentified garter snakes have also been observed.

6.5 Future Wildlife Habitat Improvements

Wildlife enhancements moving forward will be passive. Continual wildlife habitat improvements will occur as the area transitions toward the desired future conditions from its current conditions of a combination of existing forest and extensive young plantings installed into areas dominated by non-native grasses and forbs. Those wildlife species associated with Pacific Northwest forested, riparian areas will increase as native plantings mature and as forest composition and structure become more diverse over the next few centuries. As the densities of snags and downed wood increase, wildlife species richness and diversity will continue to change and improve. Because the DPNA will contain areas of forest dominated by dense conifers and will always consist of considerable amounts of edge habitat, wildlife species associated with these habitats will be present as well. The wildlife survey efforts underway will inform future wildlife habitat improvement opportunities.

7.0 Infrastructure

As the Dianna Pope Natural Area is nested within Headwaters Farm and many constructed elements such as roads, stream crossings, and structures occur within the DPNA. Much of this infrastructure is managed by the Headwaters Farm Program Manager. No additional farm infrastructure is expected to be installed within the DPNA. In addition, opportunities to reduce the impact of or remove existing infrastructure will be pursued. Specifics relating to each infrastructure item within the DPNA follow.

7.1 Buildings

A manufactured home that is operated as the farm office currently exists in the DPNA in the West Unit (see Figure 2). The office has an associated well and septic system that are also located within the DPNA. This building will be operated and maintained by the Headwaters Farm Program Manager in coordination with the DPNA Manager. A barn, garage, pole building, and metal shed were removed from the West Unit of the DPNA in January 2017 and the areas formerly occupied by these buildings were planted in February 2017. All new farm buildings will be sited outside the DPNA. In the ideal world, all structures within the management area would eventually be removed, but the status and location of the Headwaters office will be determined through the Headwaters planning process.

7.2 Septic System

The septic system for the Headwaters office is located within the DPNA and is situated within 100 feet of the creek. The septic system for the caretaker's unit is outside of but directly adjacent to the DPNA. The decommissioning of one or both of these septic systems is included in the *Potential Development Options* section of the Headwaters Farm Plan.

7.3 Roads, Culverts, Bridges, and Parking

Two stream crossings and several roads currently exist within the DPNA (see Figure 2). Prior to September 2016 three stream crossings existed within the DPNA. In September 2016, a project to retrofit stream crossings within the DPNA was undertaken to address partial fish passage barriers at the crossings and make all crossings completely passable to fish. At this time, the culvert at the main entrance road was replaced with a larger culvert and the culvert at the west entrance road was replaced with a bridge. A culvert that conveyed the creek below a road that roughly led from the easement to the office was completely removed and this road was decommissioned within the DPNA and easement. A road that also paralleled the north side of the creek in the Central Unit running from the main entrance road to the easement was also decommissioned (see Figure 2).

Roadways within the DPNA will be managed by the Headwaters Farm Program Manager in coordination with the DPNA Manager. Road maintenance will be the primary activity concerning roads within the DPNA. This maintenance will include grading, rocking, mowing of bordering vegetation, and the trimming of overhanging branches. Vegetation within a distance of five feet from the edge of roadways will be managed by the Headwaters Farm Program Manager in coordination with the DPNA Manager. This vegetation may be mowed and/or brushed to provide a clear roadway. Branches overhanging roads may be trimmed back to a distance of five feet from the road edge.

Parking around existing structures is currently defined by areas left unplanted and typically rocked. These parking areas will be managed by the Headwaters Farm Program Manager in coordination with the DPNA Manager.

7.4 Stormwater

A swale that manages runoff from the Headwaters Farm barn and nearby farm roadways is located within the DPNA (see Figure 2). Although NRCS soil mapping is approximate, the swale was constructed in an area mapped as having soils exhibiting a fragipan layer (see Section 3.0 above). Drainage in the swale has been very slow although evidence of overflowing has not been seen in recent years.

Two grassed ditches run through the DPNA, draining large portions of stormwater from Headwaters Farm into the North Fork of Johnson Creek. One follows the main entrance road and another runs east of the office along the path of the recently decommissioned middle road. As of May 2017, drainage on the majority of Headwaters Farm is being analyzed. These grassed ditches are being analyzed for proper function as a part of this larger analysis. Any needed retrofitting of the ditches within the DPNA will occur in Fiscal Year 2017-2018 to better address drainage and prevent sediment from entering the North Fork of Johnson Creek.

An adjacent private property directly north of the Central Unit of the DPNA (see Figure 2, Property A) also drains stormwater into the easement and the DPNA through a concentrated channel. Bioengineering practices, consisting of willow fascines, was utilized in 2016 within the easement and the DPNA to stabilize this channel, reduce the speed of the flow, and reduce sediment transport to the North Fork of Johnson Creek. Drainage and stormwater changes on Headwater Farm resulting from future development of infrastructure may necessitate further analysis and retrofitting of the stormwater features described above.

7.5 Utility Lines

A total of six utility lines are known to cross the DPNA:

1. An underground water line that serves an inholding property located within Headwaters Farm (inholding property) inholding property enters and leaves the DPNA along the east property line, crossing under the creek.
2. An underground water line that feeds the barn, propagation house, and caretaker unit enters the DPNA from the north and follows the east property line until it is approximately 25 feet from the creek. Here the line makes a 90 degree turn and crosses the DPNA in a straight line roughly parallel to the creek. Once reaching the main entrance road the line makes another 90 degree turn and follows the road south through the DPNA, crossing the creek above the culvert. A junction box has been installed at the 90-degree junction along the main road so a new water line can be installed that completely follows the main entrance road through the DPNA, eliminating the use of the line that crosses the DPNA parallel to the creek (described in number 1 above).
3. Power lines cross the DPNA along the main entrance road to serve the inholding property, caretaker unit, barn, and propagation house.
4. A telecommunications line that serves the inholding property and caretaker unit is buried along the main entrance road and crosses the creek above the culvert before rising to the power lines that follow the main entrance road.
5. Power lines follow the path of the decommissioned middle road and stream crossing to serve the office (running roughly from the easement to the office). These power lines terminate in the DPNA just north of the office.
6. A telecommunications line that serves the office is attached to the underside of the bridge that crosses the creek along the west access road. The line is then likely buried along the current road as it travels from the bridge to the office.

Utilities will be mapped by Land Legacy staff in Fiscal Year 2016-2017 and a map will be added to this plan when available.

7.7 Boundary Management, Fencing, and Signage

The south boundaries of the Central and East Unit abut EMSWCD property. Similarly, the north boundaries of the West Unit and East Unit abut EMSWCD property. These boundaries require little direct protection from encroachment. The north side of the Central Unit abuts private property that is currently being developed for residential housing and is not fenced. The south boundary of the West Unit abuts a working nursery and is fenced. The east and west boundaries of the DPNA also abut private properties. The eastern boundary is fenced south of the creek, with the fence being owned by the abutting property owner. North of the creek, this boundary is defined by a hedgerow of blackberry. The western boundary is unfenced but is defined on the north side of Johnson Creek by a straightened creek channel that flows along the property line. EMSWCD does not currently own any fencing along the boundaries of the DPNA. All boundaries will be marked with EMSWCD/DPNA boundary signs in Fiscal Year 2017-2018 and maintained annually thereafter.

Up to two permanent signs denoting the DPNA and an interpretive sign are planned for design and installation in Fiscal Year 2017-2108. DPNA signage will have consistent branding with Headwaters Farm signage.

Located on the north side of the Central Unit of the DPNA, an approximately 0.14-acre riparian easement was granted to EMSWCD when the Headwaters Farm property was originally purchased. This easement encompasses a short stretch of land approximately 50 feet from the north bank of the creek on the adjacent property. (see Figure 2).[4] The easement was originally located on one property but that property has since been divided for development. The easement now lies on three properties. A legal survey to define the boundaries of the easement has been conducted and the boundaries have been marked using wood posts with the tips painted orange. As described earlier in this document, the entire easement has been planted. The DPNA Manager shall contact the landowners (the conveyors of the easement) in person at least once per year to ensure there is a consistent understanding by both parties of the terms of the easement and that the landowner is aware of the activities that EMSWCD has conducted on the easement area during the previous year.

8.0 Public Use, Access, and Enforcement

Although the DPNA is not closed to public use, as of May 2017 it is not intentionally managed to encourage use by humans or pets, except for the Dianna Pope Commemorative Area (see Section 8.1 below). Other than the commemorative area, public viewing of the DPNA from roads and boundaries is the suggested method for interacting with the DPNA. The possibility of purposeful public recreational access (such as trails and internal signage) within the DPNA will be assessed and potentially installed when: 1) plant communities become better established and able to withstand some limited amount of impact associated with public use and access; 2) uncontrolled access from the public road can be accommodated in a manner that protects adjacent private landowners and other EMSWCD land; and 3) when public safety concerns can be addressed associated with Headwaters Farm. Staff-led tours or school visits to the DPNA may occur pending approval by the DPNA Manager.

In addition to the above general limitations on public use and access, the following activities are prohibited within the DPNA[5]:

- Dumping of any kind;
- Releasing/planting, removal, killing, or injuring of any plant/wood, plant/wood material, animal, and animal part;
- Use of the area by livestock and pets;
- Construction or destruction of any infrastructure; and
- Driving of vehicles or machinery except on existing roads as approved by EMSWCD.

In the case of emergency, 911 should be called immediately. For infractions not witnessed, the DPNA Manager shall be notified. The DPNA Manager will investigate infractions and the Multnomah County Sherriff will be notified by the DPNA Manager when appropriate.

5 Easement is on file at EMSWCD.
6 Exceptions to this list must be given explicitly by the DPNA Manager.

8.1 Dianna Pope Commemorative Area

A small wayside, on the south side of the Central Unit was constructed within the DPNA shortly after its designation. The wayside includes two logs that serve as benches and a plaque describing the reasons for designation of the DPNA as well as some information about Dianna Pope's service to EMSWCD (see Forward). This area is approximately 400 square feet and is defined by a bed of mulch and the lack of trees and shrubs (see Figure 11). A western hemlock tree was planted adjacent to the plaque area by Dianna Pope at the ribbon cutting ceremony for the DPNA. In coordination with the DPNA Manager, the Headwaters Farm Program Manager will apply mulch to this area as needed to prevent bare ground and suppress weed growth.

9.0 Future Planning and Reporting

A cursory review and update of this plan will be conducted in January of each year to account for an improved understanding of the DPNA and to keep the plan current. A comprehensive review and update will be completed every five years in by the end of June (the end of the fiscal year). The EMSWCD will budget and plan for the on-site management of the DPNA on a fiscal year basis, which runs July through June of each year. Budgetary planning will take place in February through May while annual work planning will take place in May through June. Reporting of accomplishments will occur on a quarterly basis in October, January, April, and at the end of the fiscal year, after June.

Figure 11: Dianna Pope Commemorative Area

Appendix 1: Management Actions, Timing, and Costs

Table 1.1: Management Actions and Timing

Activity	Annual Recurring Costs	One Time and Short Term Costs	Frequency	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Water Quality Monitoring	<1% FTE*		Monthly	X	X	X	X	X	X	X	X	X	X	X	X
Visual Monitoring	0 FTE#		Quarterly or as needed	X	X	X	X	X	X	X	X	X	X	X	X
Wildlife Inventory		~3%FTE, ~$150 Materials	Monthly ending in fiscal year 2017-2018	X	X	X	X	X	X	X	X	X	X	X	X
Plant Inventory		0 FTE#	Monthly ending in fiscal year 2017-2018	X	X	X	X	X	X	X	X	X	X	X	X
Miscellaneous Site Visits and Operations	<1% FTE		As needed	X	X	X	X	X	X	X	X	X	X	X	X
Continuous Summer Temperature Monitoring	<1%%FTE*		Annually	X	X	X	X							X	X
Plant Maintenance	~1%FTE, ~$5000 Contracted Costs/Materials		Annually until trees are free to grow		X	X						X		X	X
Infill Planting	~1%FTE, ~$2000 Contracted Costs/Materials		Annually as needed								X	X			

Activity	Annual Recurring Costs	One Time and Short Term Costs	Frequency	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Apply mulch to Dianna Pope Commemorative Area	<1% FTE		As needed			X									
Annual Plan Review and Updating	<1% FTE		Annually							X					
Easement Owner Contact	<1% FTE		Annually				X								
Design, Materials, and Installation of Boundary Signs		~1% FTE, ~$3000 Materials	One time		2017										
Design, Materials, and Installation of Sign(s) Denoting DPNA		~1% FTE, ~$4000 Materials	One time		2017										
Design, Materials, and Installation of Interpretive Sign		~1% FTE, ~$700 Materials	One time		2017										
Stormwater Management Retrofitting		<1% FTE^	One time		2017										
Install Wildlife Cameras		<1%FTE, $200 Materials	One time			2017									

Activity	Annual Recurring Costs	One Time and Short Term Costs	Frequency	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
West Road Realignment, Associated Permitting, and Requirements		<1% FTE^	One time			2017									
Fish Inventory		~1%FTE	One time										2019		
Five Year Plan Review and Updating		<1% FTE	One time												2022
Total	**~5% FTE & $7000 Contracted Costs/Materials**	**~10%FTE & $14,850 Materials**													

*=This FTE will be a part of a separate budget not related to managing the DPNA

#=This will be conducted when DPNA Manager is out with crew conducting other tasks

^=This FTE represents only the FTE that the DPNA Manager will spend on this effort. This management action that will be a part of a separate budget not related to management of the DPNA

Table 1.2: FTE and Costs Summary by Fiscal Year

FY2017-2018 FTE and costs	FY2018-2019 FTE and costs	FY2019-2020 FTE and costs	FY2020-2021 FTE and costs	FY2021-2022 FTE and costs
~10% FTE & ~$16,000	~6% FTE & ~$7000	~5% FTE & ~$7000	~5% FTE & ~$7000	~5% FTE & ~$7000

Appendix 2: Observed Species List

As of May 2017, these species have been observed or have been installed within the Dianna Pope Natural Area. As of May 2017, a formal wildlife survey and plant survey is underway and will be completed in Fiscal Year 2017-2018. A report of the findings of this survey will include a species list. This species list will be updated when that report is available.

Kingdom/Class	Count	Scientific Name	Common Name	Observer
Amphibians	1.001	*Pseudacris regilla*	Northern pacific tree frog	JW
	1.002	*Rana aurora*	Northern red-legged frog	JD
Birds	2.001	*Accipiter cooperii*	Cooper's hawk	JW
	2.002	*Aphelocoma californica*	California scrub jay	JW
	2.003	*Buteo jamaicensis*	Red-tailed hawk	JW
	2.004	*Callipepla californica*	California quail	JW
	2.005	*Calypte anna*	Anna's hummingbird	JW
	2.006	*Cardellina pusilla*	Wilson's warbler	JW
	2.007	*Certhia americana*	Brown creeper	JW
	2.008	*Charadrius vociferus*	Killdeer	JW
	2.009	*Circus cyaneus*	Northern harrier	JW
	2.010	*Colaptes auratus*	Northern flicker	JW
	2.011	*Columba livia*	Rock dove*	JW
	2.012	*Corvus brachyrhynchos*	American crow	JW
	2.013	*Dryocopus pileatus*	Pileated woodpecker	JW
	2.014	*Falco sparverius*	American kestrel	JW
	2.015	*Haemorhous mexicanus*	House finch	JW
	2.016	*Hirundo rustica*	Barn swallow	JW
	2.017	*Ixoreus naevius*	Varied thrush	JW
	2.018	*Melospiza melodia*	Song sparrow	JW
	2.019	*Picoides villosus*	Hairy woodpecker	JW
	2.020	*Pipilo maculatus*	Spotted towhee	JW
	2.021	*Poecile atricapillus*	Black-capped chickadee	JW
	2.022	*Poecile rufescens*	Chestnut-backed chickadee	JW
	2.023	*Psaltriparus minimus*	American bushtit	JW
	2.024	*Regulus calendula*	Ruby-crowned kinglet	JW
	2.025	*Regulus satrapa*	Golden-crowned kinglets	JW
	2.026	*Setophaga petechia*	Yellow warbler	JW
	2.027	*Sitta carolinensis*	White-breasted nuthatch	JW
	2.028	*Sphyrapicus ruber*	Red-breasted sapsucker	JW
	2.029	*Spinus psaltria*	Lesser goldfinch	JW
	2.030	*Spinus tristis*	American goldfinch	JW
	2.031	*Streptopelia decaocto*	Eurasian collared dove*	JW
	2.032	*Sturnus vulgaris*	European starling*	JW

	2.033	*Tachycineta bicolor*	Tree swallow	JW
	2.034	*Thyromanes bewickii*	Bewick's wren	JW
	2.035	*Turdus migratorius*	American robin	JW
	2.036	*Zenaida macroura*	Mourning dove	JW
Fish	3.001	*Cottus perplexus*	Reticulated sculpin	JD
	3.002	*Cottus sp.*	Unknown sculpin	RI
	3.003	*Cyprinella lutrensis*	Red sided shiner	JD
	3.004	*Rhinichthys osculus*	Speckled dace	JD
Mammals	4.001	*Canis latrans*	Coyote	RS
	4.002	*Mephitis mephitis*	Striped skunk	RS
	4.003	*Procyon lotor*	Racoon	RS
	4.004	*Sylvilagus bachmani*	Brush rabbit	RS
Reptiles	5.001	*Thamnophis spp.*	Garter snakes	LN
Plants	6.001	*Abies grandis*	Grand fir	LN
	6.002	*Acer circinatum*	Vine maple	LN
	6.003	*Acer macrophyllum*	Big leaf maple	LN
	6.004	*Achillea millefolium*	Yarrow	LN
	6.005	*Achillea millefolium*	Yarrow+	LN
	6.006	*Alnus rhombifolia*	White alder	LN
	6.007	*Alnus rubra*	Red alder	LN
	6.008	*Amelanchier alnifolia*	Serviceberry	LN
	6.009	*Athyrium filix-femina*	Lady fern	LN
	6.010	*Berberis sp.*	Barberry*	LN
	6.011	*Blechnum spicant*	Deer fern	LN
	6.012	*Bromus carinatus*	California brome+	LN
	6.013	*Cirsium arvense*	Canada thistle*	LN
	6.014	*Cirsium vulgare*	Bull thistle*	LN
	6.015	*Conyza canadensis*	Horseweed	LN
	6.016	*Cornus sericea*	Red osier dogwood	LN
	6.017	*Cornus sp.*	Ornamental flowering dogwood*	LN
	6.018	*Corylus cornuta*	Beaked hazelnut	LN
	6.019	*Cyperus esculentus*	Yellow nutsedge*	LN
	6.020	*Daucus carota*	Queen Anne's lace	LN
	6.021	*Elymus glaucus*	Blue wild rye+	LN
	6.022	*Epilobium ciliatum*	Northern willowherb	LN
	6.023	*Festuca roemeri*	Roemer's fescue+	LN
	6.024	*Foxglove digitalis*	Foxglove*	LN
	6.025	*Fraxinus latifolia*	Oregon ash	LN
	6.026	*Galium aparine*	Cleavers	LN
	6.027	*Geranium lucidum*	Shining geranium*	LN
	6.028	*Geranium robertianum*	Herb Robert*	LN

6.029	*Geum macrophyllum*	Large leaf avens	LN
6.030	*Gilia capitata*	Globe gilia+	LN
6.031	*Hedera helix*	English ivy*	LN
6.032	*Holodiscus discolor*	Oceanspray	LN
6.033	*Hordeum bracyantherum*	Meadow barley+	LN
6.034	*Hypericum calcycinum*	St John's wort	LN
6.035	*Ilex aquifolium*	English holly*	LN
6.036	*Lactuca serriola*	Prickly lettuce*	LN
6.037	*Lapsana communis*	Nipplewort*	LN
6.038	*Lonicera involucrata*	Black twinberry	LN
6.039	*Lonicera sp.*	Ornamental honeysuckle*	LN
6.040	*Lysichiton americanus*	Skunk cabbage	LN
6.041	*Mahonia aquifolia*	Oregon grape	LN
6.042	*Mahonia nervosa*	Low Oregon grape	LN
6.043	*Malus fusca*	Pacific crabapple	LN
6.044	*Osmeronia cerasiformis*	Indian plum	LN
6.045	*Phalaris arundinacea*	Reed canary grass*	LN
6.046	*Physocarpus capitatus*	Pacific ninebark	LN
6.047	*Pinus ponderosa*	Ponderosa pine	LN
6.048	*Plantago lanceolata*	Plantain*	LN
6.049	*Polystichum munitum*	Sword fern	LN
6.050	*Populus trichocarpa*	Black cottonwood	LN
6.051	*Populus trichocarpa*	Black cottonwood	LN
6.052	*Prunella vulgaris*	Heal-all+	LN
6.053	*Prunus avium*	Wild Cherry*	LN
6.054	*Prunus emarginata*	Bitter cherry	LN
6.055	*Psuedo-tsuga menziesii*	Douglas fir	LN
6.056	*Quercus garryana*	Oregon white oak	LN
6.057	*Ranunculus repens*	Creeping buttercup*	LN
6.058	*Rhamnus pershiana*	Cascara	LN
6.059	*Rhododendron spp.*	Ornamental Rhododendron*	LN
6.060	*Ribes sanguineum*	Red flowering currant	LN
6.061	*Rubus armeniacus*	Armenian blackberry*	LN
6.062	*Rubus laciniatus*	Evergreen blackberry*	LN
6.063	*Rubus parviflorus*	Thimbleberry	LN
6.064	*Rubus spectabilis*	Salmonberry	LN
6.065	*Rubus ursinis*	Trailing blackberry	LN
6.066	*Rumex obtusifolius*	Broadleaf dock*	LN
6.067	*Salix lucida*	Pacific willow	LN
6.068	*Salix scouleriana*	Scouler's willow	LN
6.069	*Salix sitchensis*	Sitka willow	LN

	6.070	*Sambucus cerulea*	Blue elderberry	LN
	6.071	*Sambucus racemosa*	Red elderberry	LN
	6.072	*Senecio jacobaea*	Tansy ragwort*	LN
	6.073	*Sonchus sp.*	Sow thistle*	LN
	6.074	*Spiraea douglasii*	Douglas spiraea	LN
	6.075	*Symphoricarpos albus*	Snowberry	LN
	6.076	*Thuja plicata*	Western red cedar	LN
	6.077	*Thuja sp.*	Arborvitae*	LN
	6.078	*Trifolium pratense*	Red clover	LN
	6.079	*Tritonia sp.*	Crocosmia*	LN
	6.080	*Tsuga heterophylla*	Western hemlock	LN
	6.081	*Urtica dioica*	Stinging nettle	LN
	6.082	*Vicia sativa*	Common vetch*	LN

*=non-native
+=component of native mix installed by EMSWCD after large areas of Canada thistle were initially controlled

Key to
Observers
JD=Julie DiLeone, EMSWCD
JW=Jon Wagner, EMSWCD
LN=Lucas Nipp, EMSWCD
RS=Rowan Steele, EMSWCD
RI=Roy Iwai, Multnomah County