Sandy River Delta
Plant Inventory Report

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Prepared for the
Sandy River Watershed Council

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Contents

Photos and Maps

Introduction

Sandy River Delta Plant Inventory

During the summer of 2021, in coordination with the Sandy River Watershed Council, we conducted a plant survey at the Sandy River Delta. The plant survey included over eight hundred photo points that were GPS marked and transferred to ArcGIS Online. This report provides a summary of the project and includes survey maps of the results.

As part of the survey, wapato (Sagittaria latifolia) has a special focus. The survey results show a wapato population reduction at one location along the east side of the channel. The area has a history of heavy public use in the summer as dog owners bring their dogs to play in the water at this location. The 2021 summer was an especially hot and dry year, so perhaps, lower water levels and/or a lower water table impacted the wapato. Future years will be indicators of wapato survival at this location.

However, we were able to document a much heavier wapato population along the north channel from the area just north and going eastward along the channel of the bird blind area. We hope that on-going monitoring of this area will continue. The area has moderate public use during the summer lower water period.

The Sandy River Delta landscape is a mixture of open areas that have short grasses to areas of taller areas and thick shrubs. The forested areas are covered with older Black Cottonwood with a mixture of oak and ash. The understory is a mixture of native and non-native species. The open areas are where previous tree plantings and restoration has occurred. Some of these areas were hit hard with the hot, dry year. We hope the plantings will survive and rebound. There are areas of extensive non-native species such as the Himalayan blackberry (Rubus armeniacus).

Figure 1 - A variety of wildlife use the trees and plants of the Delta.

The Sandy River Delta

Figure 2 - Base map of the Sandy River Delta

The Sandy River Delta, acquired in 1991, is managed by the U.S Forest Service. The natural area is 1,500 acres that provides numerous recreation options of the public, including hiking, biking, fishing, and horseback riding. The Delta has grown extremely popular with dog owners as a recreation place for dogs. The Delta is popular and has high public use and today there is a $5.00 vehicle day use fee.

In 2013 a dike was removed from the main channel of the Sandy River to restore a former channel. This has resulted in the restoration of the natural channel and provides opportunities for improving salmon and steelhead habitat. The Delta is at the mouth of the Sandy River as it enters the Columbia River.

The Delta landscape is comprised of several diverse environments. There are floodplain areas that seasonally may have high water. There are seasonal to year around ponds. A large part of the Delta is low land with some slightly higher hills. There are a lot of existing and former channels.

The unique history of the Sandy River plays a significant role in the makeup of the Delta. One or more Mt Hood eruptions sent enormous volumes of volcanic ash and sand down the river creating the unique Delta today. (Sources: US Forest Service Sandy River Delta and Oregon Encyclopedia websites.)

The Plant Landscape

The plant survey and inventory focused on the native plants of the landscape. A few of the non-native plants were also documented to indicate density and impact to the native species. The east end of the Delta is closed for the protection of wildlife and therefore was not surveyed. The island across the channel on the west side was also not surveyed as there may be restricted access. The survey used the extensive trail system to document the plants and excursions were made off the main trails to document these areas. Some of these trails lead to dead-ends or became very brushy to continue. There were some areas along the main Sandy River where homeless camps existed, so there was limited entry into this areas to protect their privacy. Overall, 822 GPS marked photo points were documented. In addition to the GPS photo marked points, additional photos and video were taken to help document areas. Outside of the open areas, the plant populations were quite dense and therefore the inventory is a sampling of the inventory area. The inventory was conducted from July to mid-October 2021.

Figure 3 - GPS Marked Photo Points (n= 822)

The primary trees in the forest areas include black cottonwood and Oregon ash. Other larger trees are more dispersed and include Oregon white Oak and Bigleaf Maple. The following table show the top common trees and plants identified in the survey.

Top Common Trees and Plants Identified

Common Name	Native or Non-Native	Number of Photo Points	Summary Notes
Black Cottonwood	Native	89	Mixture of young and old trees. The cottonwood is the most common tree. They stand out in the tree line.
Himalayan Blackberry	Non-Native	63	This non-native species is spread through the Delta. It will grow in heavy patches as well as be dispersed in the forest areas. A recommendation would be to replace these stands with restoration plants. Many of these are in the open sunlight areas and can grow to rather good heights.
Wapato	Native	55	The wapato population is good, but conditions have impacted it along the channel. This should be monitored to see if it will rebound. Testing of the bulbs and soil are important.
Hawthorn	Possibly mixed depending on species	48	Widespread throughout the Delta in both open light and forest transition areas. It looks like this may also be a restoration plant. It can spread and get heavy. Perhaps adding more elderberries would be an option in these areas.
Oregon Ash	Native	44	Common through the forest perimeter and forest areas. It is a canopy tree or a primary tree depending on location.
Rose sp.	Mixed	34	Rose species include both native and non-native species that are present. It is heavy in places as thickets.
Oregon Grape	Native	33	Quite common in areas and commonly planted as part of the restoration plants
Oregon White Oak	Native	31	Includes a mixture of older oak as well as younger oak and planted for restoration. Some of the younger plants were hit hard from the summer heat.
Red-Osier Dogwood	Native	28	Common throughout the forest transition and forest areas. Some places are thick such as in the low land areas and on the perimeter.
Snowberry	Native	27	Quite common and spread through the area. This has been used for restoration at the Delta also.
Elderberry	Native	23	The elderberry is seen heavier in certain locations. The populations are in an area of the former tree plantation on the east side. These are identified as blue elderberry. It would be great to plant more elderberry in the established areas where they have shown success. This is an important medicinal plant and increasing populations would be beneficial for Native people.

Other Trees and Plant Populations

Other trees and shrubs identified in the survey include big-leaf maple, cascara, birch, oceanspray, pacific ninebark, twinberry, giant horsetail, stinging nettle, red alder, bracken fern, sword fern, Douglas fir, Oso-berry, mountain ash, Douglas spirea, thimbleberry, trailing blackberry, tule, vine maple, willow, fireweed, giant horsetail, and red alder.

Non-Native species included non-native blackberry and cherry, mullein, thistle, non-native rose, and many others.

Plants Recommended for Restoration

The list of recommendations focuses on plants of interest to Tribes for the food, utility and/or medicinal purposes.

Common Name/Scientific Name	Number of Photo Points	Notes
Mock Orange (Philadelphus lewisii)	3	Mock Orange is a nice native tree that often gets overlooked. It blooms in the late spring and early summer. This tree is used by local tribes for arrows.
Camas (Camassia quamash, C. leichtlinii)	None	It would be great to try camas in some of the seasonal low water areas. The camas is an important local tribal food.
Tarweed (Madia spp.)	2	Tarweed likes open sunlight areas. The Tribes of the Willamette Valley gather the seed, ground it into flour, and mix with other first foods.
Salmonberry (Rubus spetabilis)	None	Salmonberries like wet areas, usually where there is partial shade. They can be in more open sunlight if there is water in the ground. The berries are gathered by Tribes and usually eaten fresh.
Bitter Cherry (Prunus emarginata)	Bitter cherry 5	The bitter cherry is growing on the east side where the elderberry is growing in the former plantation area.
Beaked Hazelnut (Corylus cornuta)		This tree likes a mixture of sunlight and shade. Its important for the hazelnuts as well as for basketry material. It will be important to get the native hazel which is more flexible than commercial hazel.
Stinging Nettle (Urtica dioica)	7	Stinging nettle young greens are eaten and used for tea. The next is also used to make string and cordage as it matures. It would be nice to establish some thicker stands of this. Currently it is spread out and not very thick at the Delta.
Western Red Cedar (Thuja plicata)	5	Most of the Western Red Cedar identified were younger populations. Western Red Cedar is an important to tree to NW tribes and restoration in the Delta would be beneficial.
Thimbleberry (Rubus parviflarus)		Thimbleberry is growing in areas, and it would be great to increase its population at the Delta.

Plant Population Maps & Restoration Recommendations

Oregon White Oak (Quercus garryana)

The Oregon White Oak is primarily in the deciduous forest areas with the taller Black Cottonwood and Oregon Ash. These are the older trees. The plant restoration efforts have also focused on adding Oregon White Oak.

It is recommended to continue restoration of the Oregon White Oak in the higher elevation areas as transition trees to forest boundaries and open areas. Monitor where the restoration oaks have had success and continue in these areas.

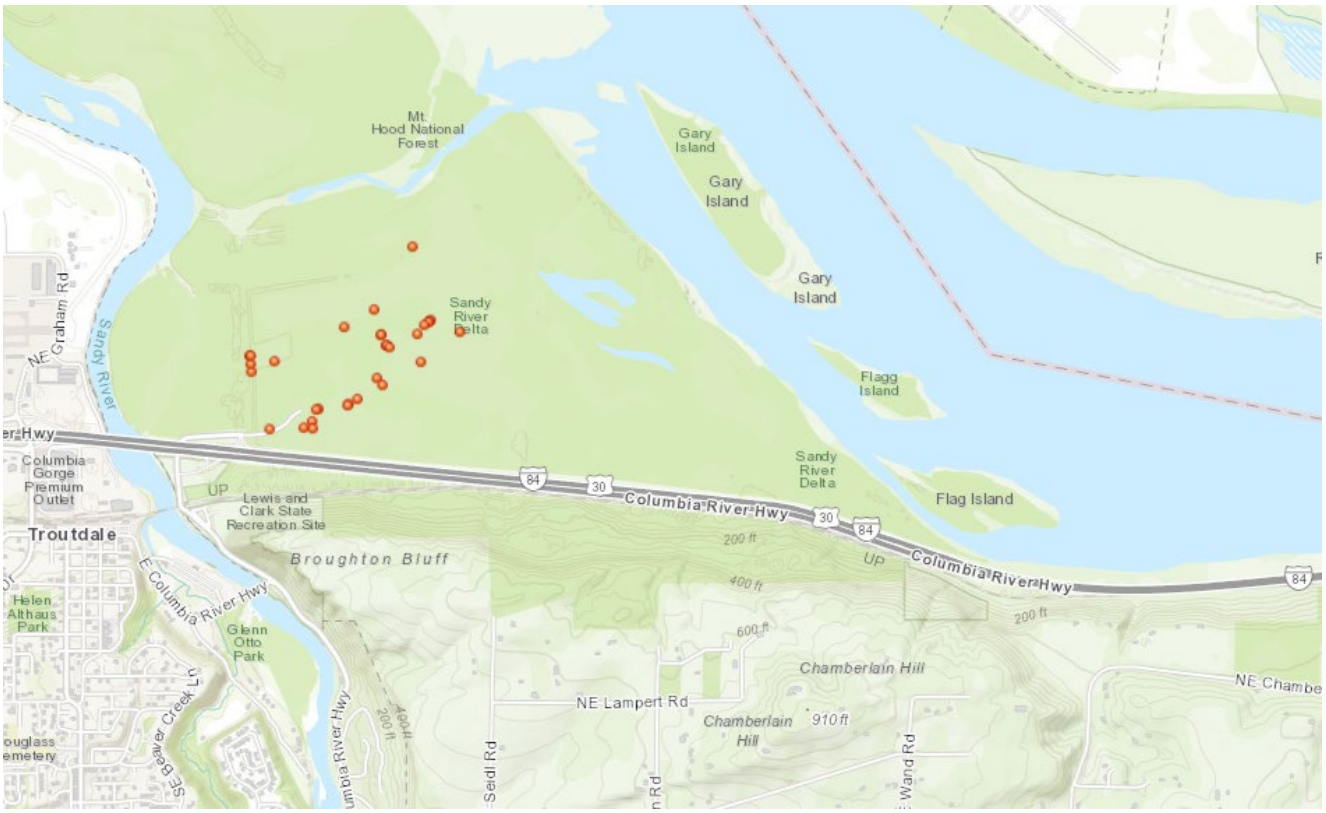

Figure 4 - Oregon White Oak sampled photo points

Figure 5 - Oregon White Oak

Figure 6 – Restoration Oak impacted by hot summer.

Elderberry (Sambuscus racemose, S. caerulea)

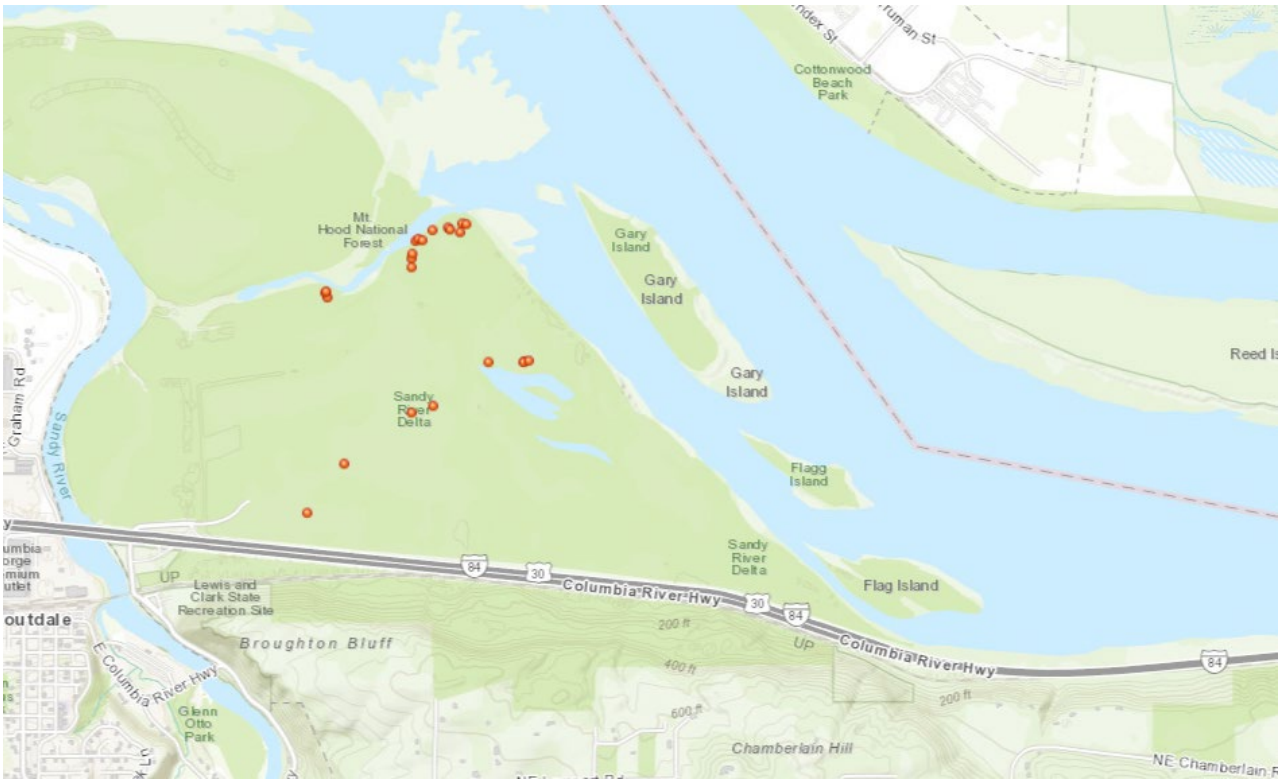

Figure 7 - Elderberry sampled photo points

Figure 9 - Blue Elderberry

The elderberry populations are scattered throughout the Delta. The populations may be both red and blue elderberry. The northeast population is blue elderberry. The

Figure 8 - Blue Elderberries

red and blue elderberries are used by Tribes with the blue being the most popular. The elderberries like forest transition zones to open light for the blue elderberry.

Increasing the populations of red and blue elderberries would be a beneficial to the Native community. There are areas near the parking area where the elderberry could be planted for elder access. Additional elderberry could be planted where existing populations occur. We know the elderberry like it in these areas and similar areas. It will be important to avoid these areas from any spraying to protect those gathering them.

Oregon Ash (Fraxinus latifolia)

Figure 10 - Oregon Ash sample photo points

Oregon ash is common at the Sandy River Delta. It can be found in the forested areas under the black cottonwood canopies or in more open areas. The populations vary in age from mature trees to younger trees. This tree does well on its own and should be allowed to naturally maintain its population on the landscape. The tree likes moist areas and can tolerate areas that may be underwater for periods of time. The tribes of Western Oregon use ash bark for making cooking and other types of containers from the bark. Paddles are made from the trees and leaves may be used in the cooking ovens for camas and other first foods.

Figure 11 - Oregon Ash leaves

Figure 12 - Oregon Ash bark

Black Cottonwood (Populus balsamifera)

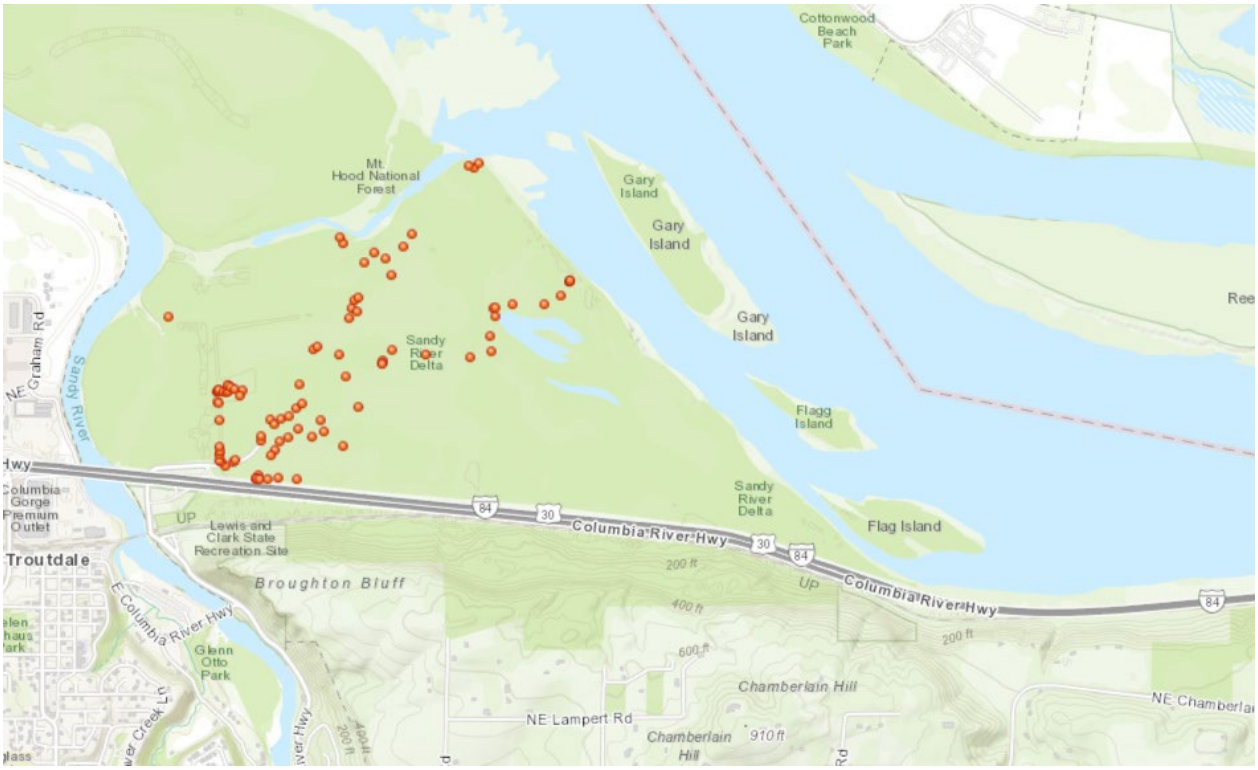

Figure 13 - Black Cottonwood populations

The Black Cottonwood is the primary tree at the Sandy River Delta. The tree has high populations along the Columbia, Willamette, and Sandy rivers overall also. The tree has varied age classes in the Delta from the mature primary canopy tree to younger ones that are spread throughout the area. This tree reproduces well on its own.

Native American uses vary by tribe. In the Willamette Valley, the roots are used for a base for making fire. Some tribes use it for making dugout canoes. The tree has old stories about it, like many of the native trees of the area. It does well in moist areas and needs lots of water and can grow rapidly.

Figure 14 - Black Cottonwood at various age classes

Oregon Grape (Mahonia nervosa, M. aquifolium)

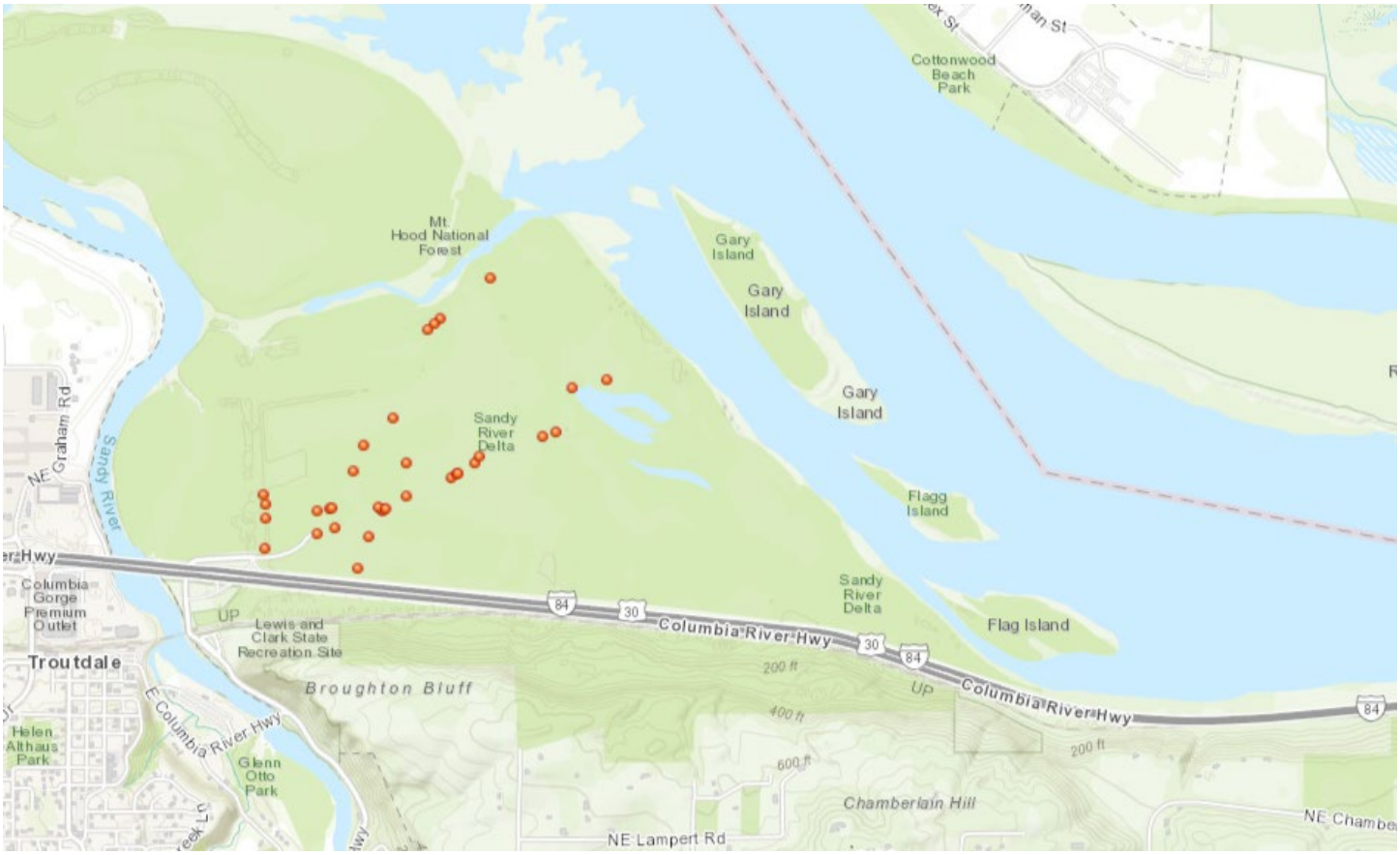

Figure 17 - Oregon Grape sample photo points

Figure 16 - Oregon Grape in restoration area

Oregon Grape is well established at the Sandy River Delta. This is due to natural populations as well as restoration plantings. When you hike the area, you will find the older bushes as well as the younger. The younger berries planted in restoration efforts did get impacted by the summer heat this past year. It would be good to monitor their recovery in future years. They can be found in diverse areas from the forested areas to more open areas. They usually produce quantities of berries.

Figure 15 - Oregon Grape impacted by the scorching summer in restoration area

Indigenous use for the berries varies by tribe. Some will use the berries for food when they are ripe. The berries are usually very tart and less so when ripe. The roots are used for medicinal purposes and for basketry dye. The berries may also be used for dye. The populations are good and should be monitored for natural reproduction are to help in areas where additional restoration is needed, such in heavy non-native blackberry areas.

Red-Osier Dogwood (Cornus stolonifera)

Figure 20 - Red-Osier Dogwood sample photo points

Red-Osier Dogwood is common at the Sandy River Delta. The photo points only represent a sample of the population. The populations are scattered throughout the Delta. There are many older trees. In the old river channels and low areas there are heavy populations. It likes the moist areas and can be in areas where flooding occurs.

Figure 21 - Red-Osier Dogwood leaf

Indigenous uses vary by tribes. Some use it for making bows and others will use it for sweathouse structures. It has many other purposes. The populations should be self-reproducing but could use some management and care. This should be done by Indigenous people who are interested in using it for their specific purposes. Pacific Dogwood (Cornus nuttallii) also occurs at the Delta in smaller populations.

Figure 22 - Red-Osier Dogwood berries

Hawthorn (Crataegus douglasii, etc.)

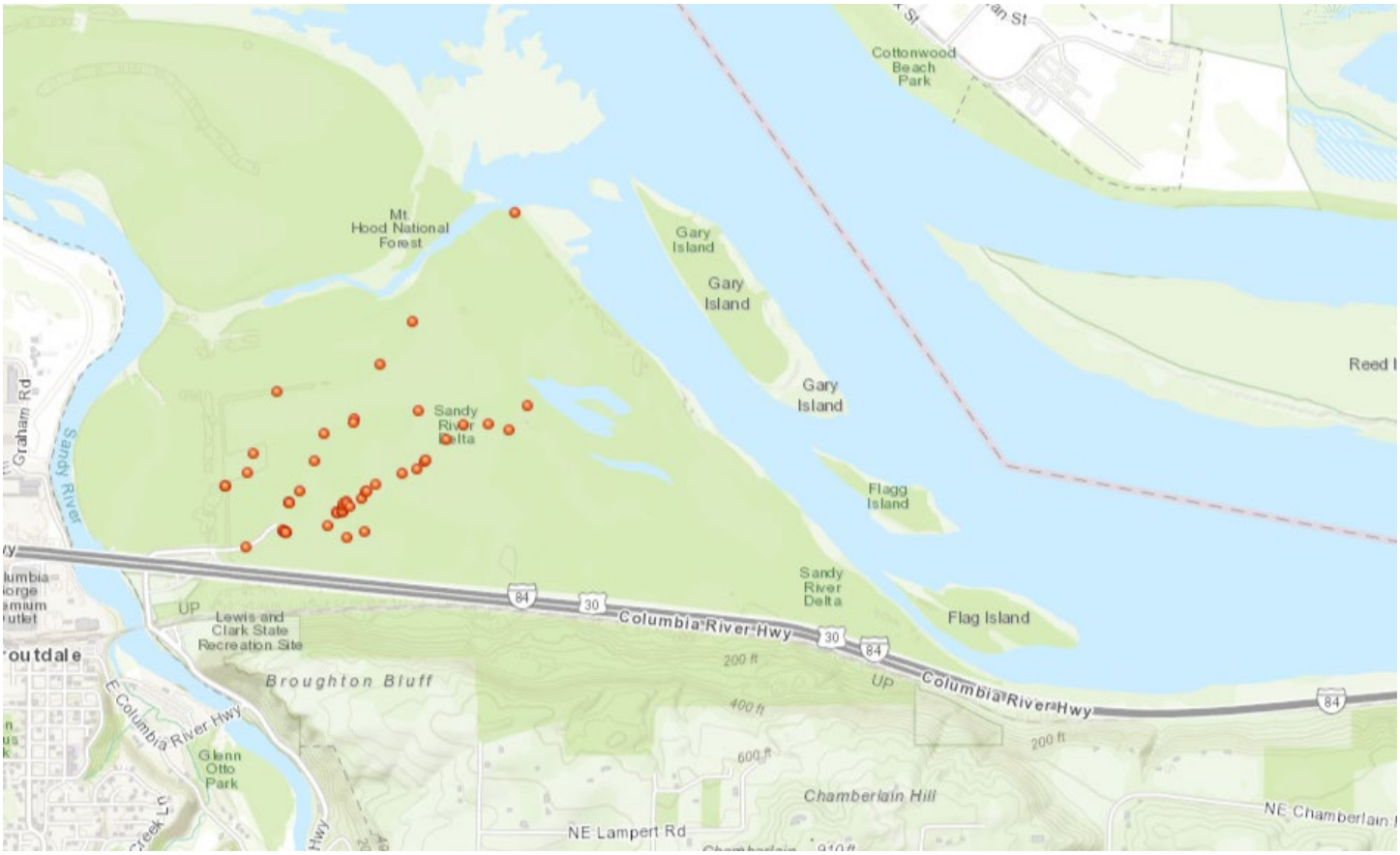

Figure 23 – Hawthorn sample photo points

There are two native species of hawthorn in Oregon. They are the black hawthorn and Columbia hawthorn. Many non-native species occur today. As the map indicates, hawthorn is common at the Sandy River Delta. This includes natural occurring plants as well as those planted for restoration. The hawthorn can tolerate open areas and mixed shade and light areas. They can also spread quite easily.

The berries of the hawthorn are edible, but they are not a common food of the Willamette Valley tribes. Tribes east of the Cascades may use them more regularly. The populations at the Sandy River Delta are heavy and should do well reproducing on their own.

Figure 24 - Hawthorn thorn

Snowberry (Symphoricarpos albus, S. mollis)

Figure 27 - Snowberry sample photo points

Snowberry is common at the Sandy River Delta. It has natural populations, and it is supplemented with restoration plantings. Common and creeping or trailing snowberry can be found in the area. The berries are not considered edible and most Indigenous people of the region do not eat them but leave them for the birds. They are a common species for restoration projects due to their benefits for wildlife. The photo samples shown on the map are where some populations are found, but they are quite common throughout the Delta. They should reproduce well on their own.

Figure 26 - Snowberries

Figure 25 - Snowberries

Roses (Rosa nutkana, R. gymnocarpa, etc.)

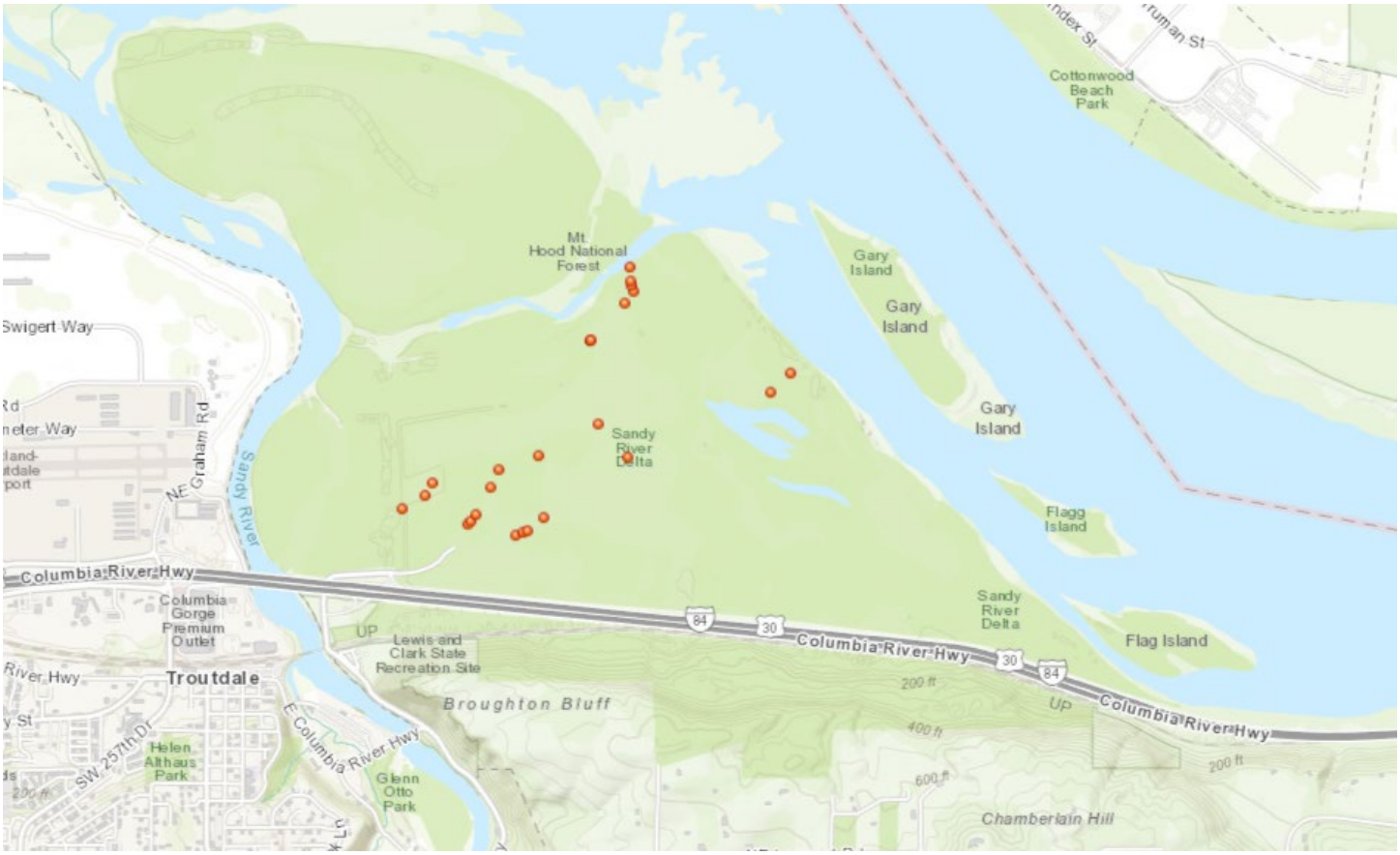

Figure 29 - Rose sample photo points

Rose populations are scattered throughout the Sandy River Delta. The varieties include native and non-native species. Nootka rose is the common native species. There are areas where the rose is getting heavily established and creating thickets. The populations are naturally occurring and some restoration planting. Over time it may be important to manage the thickets as they may expand over much greater areas.

Figure 28 - Rosehips

Indigenous people use the rosehips for a variety of purposes, including medicinal and ceremonial uses. The rosehips are high in natural vitamin C as is well known. They are important for wildlife also. The populations should be self-sustaining with management of areas by Indigenous people who would like access and use of the rose.

Pacific Ninebark (Physocarpus capitatus)

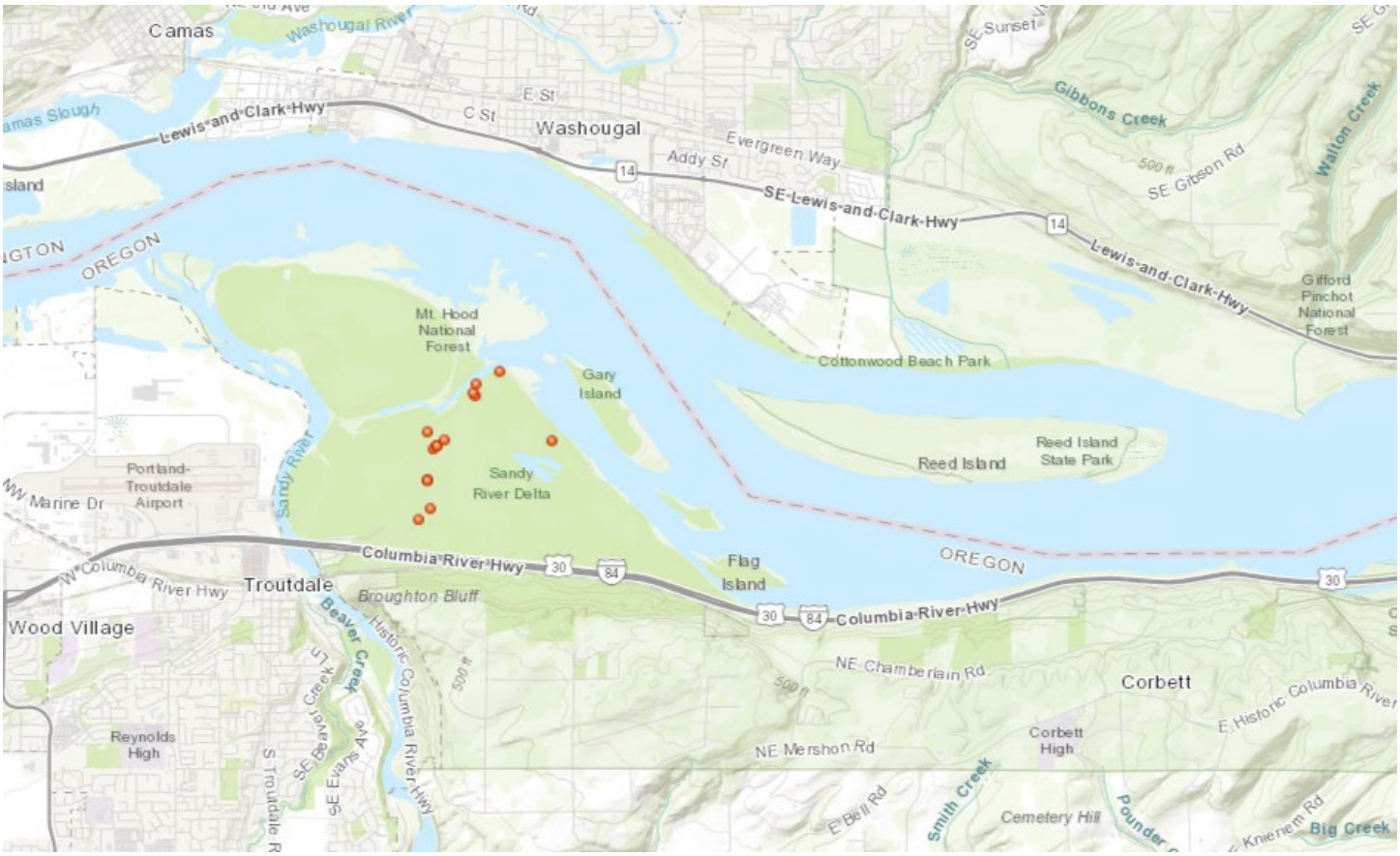

Figure 30- Pacific Ninebark sample photo points.

Pacific Ninebark is scattered throughout the Sandy River Delta. Some of the areas are older, larger bushes of the ninebark and some areas have younger plants. Some of these may have been planted during the early restoration efforts in conjunction with the construction of the Confluence bird blind.

The Pacific Ninebark is used by Indigenous people of the area for bows and arrows, usually for the children as they are developing their skills. Some tribes use the bark for medicinal purposes. Other utility tools can also be made with the Pacific Ninebark. The younger branches can also be peeled from the outer bark and made into string or cordage, but often other plants such as stinging nettle and Indian hemp are used.

Pacific Ninebark is a good plant for restoration plantings. It will need a shaded area with some light usually. Oceanspray is another plant commonly seen with the Pacific Ninebark to plant.

Figure 31 - Pacific Ninebark

Wapato (Sagittaria latifolia)

Figure 33 - Wapato sample photo points.

The wapato population at the Sandy River Delta has increased since the opening of the channel. The slower moving water in the channel resulted in a growing population. However, there has also been some decreases in the

Figure 32 - Wapato along the north channel

same area from year to year. It is not known what is creating the changes. During the past year, the drought conditions may have impacted the wapato population in areas where the water table was lower, or the river lowered more quickly due to the drought and heat conditions. It will be important to monitor the wapato year to year to see how the population survives. Another impact is the recreational use of the area which includes dogs and people. This may have impacted survival rates but is unknown at this time. Wapato has also been documented across the channel.

In other areas, such as Sauvie Island, huge populations have disappeared in sloughs and it is not known what has caused these conditions, as in other areas on Sauvie Island, the populations are holding steady. In other location in Western Oregon, wapato has shown early in the year but extensive weeds or drought have impacted their survival. These could have short or long-term impacts to the wapato.

At the Sandy River Delta, additional populations have been identified at the north end of the Delta in the channels off the Columbia River. As the map above indicates, sample photo points of this population have been gathered. Overall, it will be important to track and monitor the wapato population at the Sandy River Delta. We now have some foundational information collected and can build upon or knowledge with on-going monitoring.

The wapato along the Columbia and Willamette rivers is historic. When Lewis and Clark and other explorers came to the area, they noted the extensive population of wapato and name the region "Wapato Valley." This included the area below the Cascade Rapids to about Kalama, WA on both sides of the Columbia River and on the Lower Willamette River. Oaks Bottom in Portland area was a know gathering place for the Clackamas Chinook. The wapato was a widely traded first food of the Chinookan people of the area.

Today, contamination and pollution, diking of the rivers, and other conditions have impacted wapato and access to this as a first food for Indigenous people. Testing is needed to be sure the tubers are safe to consume. This is needed of the water, soils, and tubers themselves.

Figure 34 - Wapato at the northern area of the Delta

Native Plants Site Recommendations

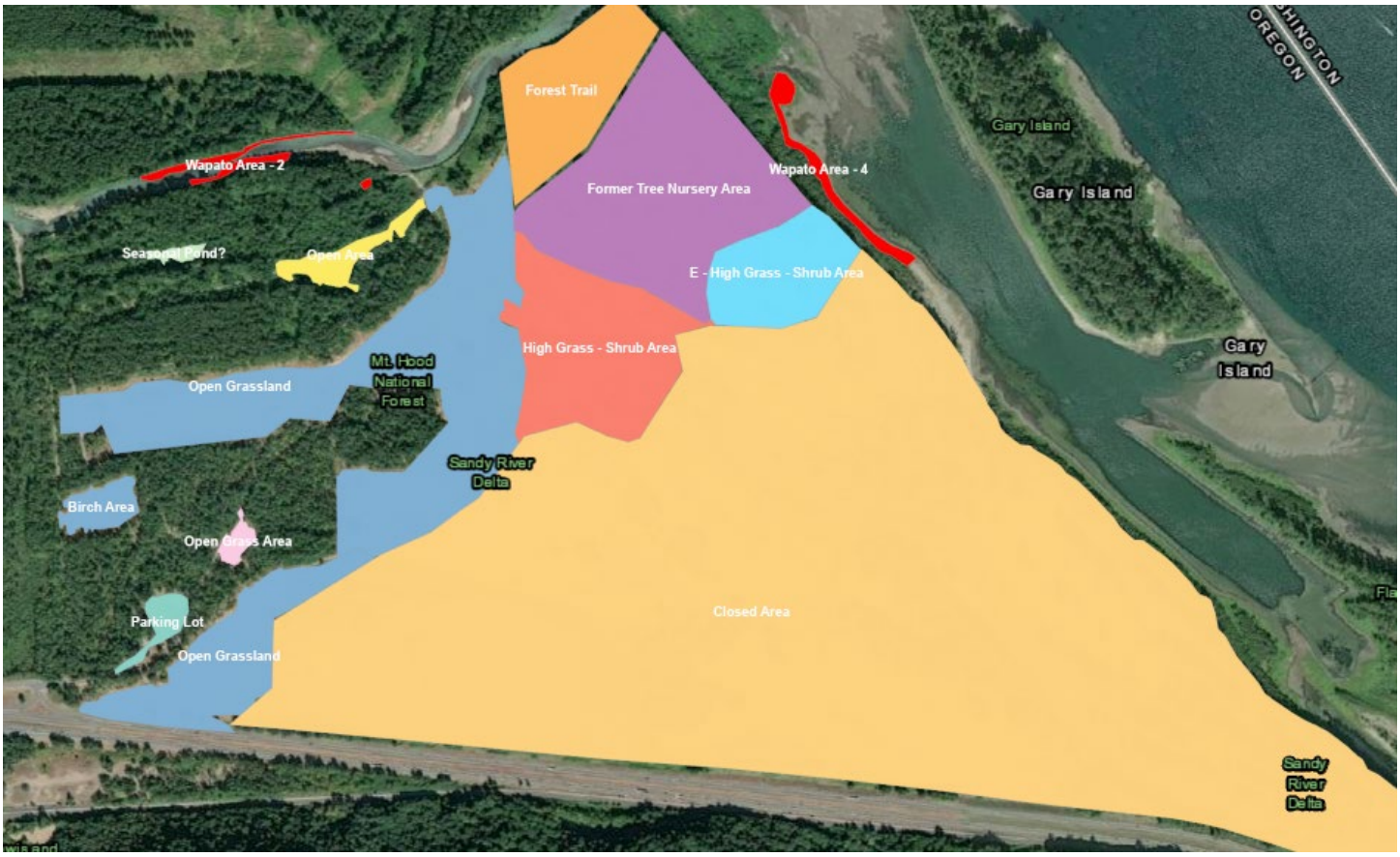

Figure 35 - Landscape for Native Plant Recommendations

The landscape recommendations for future restoration projects are identified below by landscape type. These are some initial ideas, and with more tribal input can be refined for specific and priority projects.

Open areas – (Short grass)

Plants that like open sunlight would be great in these areas. There is a small population of tarweed growing. Additional tarweed restoration could be beneficial. A constraint is the high traffic in these areas. The perimeters would be the best areas for doing the restoration efforts. The ground may need a little work since it is so compacted

E-High Grass – Shrub Area

This area is at the northern end of the Delta. The area used to be where nursery stock was grown for the early restoration activities of the land, and you can still see existing plants in rows. This area has blue elderberry, bitter cherry and cascara growing there now. It would be great to continue enhancing these populations there and a sizable blue elderberry gathering area could be established. The bitter cherry can continue to reproduce but may become thick and may need thinning out. Additional plants to try would be mock orange, crab apple, cascara and beaked hazel for more plant diversity.

Open areas (Tall grass and mixed shrubs)

In these areas, restoration activities will depend on how much work can be done to clear invasive species and manage the tall grasses. The sites do vary with more open areas to areas that are on the fringe of forest areas.

Figure 36 - An open area with young Oregon White Oak

Forest areas

The forest areas are quite thick of shrubs and younger trees. Where there is open areas or where efforts are to reduce the invasive species, restoration could include salmonberry, thimbleberry, native blackberry, currants, beaked hazel, crabapple, red and blue elderberry. Western Red Cedar would also be beneficial.

Wapato Wetland Areas:

The wapato wetland areas are identified on the map. There are four separate sites where the wapato is growing naturally. We hope these areas can continue to reproduce naturally. The areas also include other native plants growing in these areas including tule (Scirpus lacustris) and silverweed (Potentilla anserina ssp. Pacifica).

Forest Trail

This area is the trail going to the bird blind. This area has a diverse population of native plants. There is a good population of elderberry, but not sure if blue or red elderberry or perhaps a mixture. This would be a place to monitor and enhance the existing elderberry populations. Other restoration plants could include salmonberry, thimbleberry, blackcap raspberry, currants, stinging nettle, and trailing blackberries where good openings occur.

Birch Area

The birch area identified on the map is an established population of birch, and this could be maintained as a birch area and let them continue to reproduce naturally.

Elder Use Area

Some of the open areas near the parking lot could be set aside for tribal elder access. This could include diverse landscapes of open and more covered areas. A variety of berries could be established such as blue elderberry, salmonberries, thimbleberries, trailing blackberry, blackcap raspberry, currants, crab apples, choke cherry etc. The planning for specific areas should be in conjunction with community elders.

Figure 37 - Jesse Norton inspects the blue elderberry. Behind him is bitter cherry.