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1.0 Introduction: (Creation Legend)

Long, long ago, it is said by our elders that, in the beginning, the world was covered in water. There was no land. One day, two of the five world makers discovered this landless world. After some collaboration, they decided to drop two disks of soot into the water of this landless planet. The next day the two men dropped two more disks of soot. Land miraculously began to appear out of the water. The next day they dropped their remaining soot disk and observed some wave action. Worried that the newly emerging land may be overtaken by the waves, the two men split a tule mat that they had brought with them and placed these two pieces over the five disks of soot. Unfortunately, to their dismay, the land was still unstable. So, they split a pack basket that they also had carried with them on their journeys and placed it on the sandy beaches that were beginning to form on the land. Finally, the waves subsided and allowed the young men to journey down to examine what they had just created.

Upon further investigation, the two men discovered that there weren’t any trees on this newly developed land. So, they took some eagle feathers and stuck them into the ground. From these feathers grew douglas fir trees as well as all other tree species. The two men also created animals.

Early the next morning, the men returned to explore the world that they had just created. They discovered tracks on the beach and found a person sitting on top of a snag. The person’s face was painted with red ochre, and the person introduced themselves as a medicine person. However, the two men did not like that this man was on their newly formed world and killed the medicine person, spilling his blood in all directions.

Suddenly, one of them had become pregnant. Because this virgin child was unable to be birthed, the two men sent a person out in a canoe to the ocean for assistance. The person returned with help and a girl was born. It is said that all people originate from her.

Now, the young men continued to journey and investigate the world that they created. Everything began to assume its present appearance. And with that, they shot their arrows towards the sky, end to end, and were able to climb up on top of this new world. They looked down on the beautiful earth in which they had just created and found that it was good. Nobody knows what became of the two world makers. Here, the story ends.
1.1 Background:

Since time immemorial, our people, the peoples of the Coos, Lower Umpqua, and Siuslaw, lived along the coasts of the Pacific Ocean as well as the Coos, Umpqua, and Siuslaw estuaries and tributaries. Our expansive homeland stretched from the Pacific Ocean to the forested slopes of the Coastal Mountain range of Oregon and was rich in many resources, which fostered the development of unique cultures. We believed that everything had an ilwechis, or spirit, and should be treated with the utmost reverence and respect. Our people mastered the concept of sustainability and harvested our vast resources with our seventh generation’s needs in the forefront, only taking what was essential for survival. In this way, we not only ensured that our people lived comfortably, but that our future generations would thrive as well.

In 1848, The Organic Act was enacted by President Polk that established the Oregon Territory. The act recognized Tribal land titles throughout Oregon “so long as such rights shall remain unextinguished by treaty between the United States and such Indians.” Before enacting the Oregon Donation Land Act of 1850, commissioners were dispatched to negotiate treaties with the Tribes of Oregon that would facilitate their removal from the most desirable land areas, opening them for Euro-American settlement. In 1855, the Tribes of the Coos, Lower Umpqua, and Siuslaw Indians signed a treaty with the United States government that ceded nearly 1.9 million acres of our ancestral territory in exchange for compensation of ceded lands and a large reservation. Unfortunately, the treaty was never ratified, therefore, it never became a binding document. We were never appropriated a reservation or compensated for our lands. Nevertheless, a majority of our people were rounded up, confined, and then moved over a period of years to the southern end of the Siletz Reservation near Yachats Prairie called the Alsea sub-agency. It is believed that about half of our people lost their lives during these dismal years as a result of disease, starvation, and exposure. In 1875, the Alsea sub-agency of the Siletz Reservation was thrown open for Euro-American settlement despite protests by several of our Chiefs, Headmen, and Tribal delegates. Our people became refugees in their own homeland and were forced to linger in the shadows of our Euro-American neighbors.
1.2 Overview:

Today, the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians possess a small reservation of 6.12 acres near Empire. We currently hold approximately 548 acres of land, 153 acres of which are in held in trust and 363 acres of which are in the process of being transferred into trust status. Our Tribes continually strive to increase our land base in hopes of acquiring a significant amount of our ancestral lands to establish a Tribal forest, where we can invoke our ancestor’s traditions of sustainable harvest. In doing so, we hope to preserve, protect, and enhance our environment, community, and culture.

In order to properly manage our growing land base, the Tribes of the Coos, Lower Umpqua, and Siuslaw Indians have established a Department of Natural Resources (DNR). Our DNR department has been successful in developing government-to-government relations, securing grant funding, and increasing our technical environmental management capacity. The goals of DNR are to protect archaeological resources as well as manage Tribal natural resources for economic and cultural benefit while maintaining and improving Tribal environmental quality.

The purpose of this assessment is to inventory and assess the many environmental issues on the Tribal Reservation and trust lands as well as on land that is in the process of being transferred into trust status that currently or could potentially affect the Tribes’ environment. Additionally, this assessment will also inventory and assess environmental factors which are currently affecting or could potentially affect Tribal health. The first section of this assessment will inventory and assess environmental issues that are affecting our ancestral territory, which extends west twelve miles past the continental shelf in the Pacific Ocean and carries inland to the Coastal Mountain Range of Oregon, from North at Tenmile creek in Lincoln County, Oregon to the South near Whiskey Creek in Coos County, Oregon. The second section will address environmental issues that affect specific tracts currently owned by the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians. The information provided herein is subject to annual review and revision as necessary, but should be revised at least once every five years.
2.0 First Foods and Environmental Issues Affecting First Foods:

Traditional first foods were not only nutritionally important for our people, they were culturally important. Cultivating, gathering, and processing these foods forged a lasting spiritual connection between mother earth and with one another. This bond is what influenced our harvesting methods and taught us to be respectful and indebted to every plant and/or animal that sacrificed their life force so that ours’ may persist. Over time, our people began to prioritize first foods, procuring the most essential resources for survival first and collecting the more indulgent, relatively speaking, resources last. Water was recognized as the most important first food, followed by salmon, game, roots and bulbs, and, finally, berries.

I. Water

“Chii taiyuu.” This phrase means water is life in the Siuslaw Language. Every living creature on the planet depends on water in order to survive to some extent. Our people deeply understood the importance of water and developed specific life ways by which to obtain it and use it ceremoniously and benevolently. They took scrupulous measures to ensure that they didn’t contaminate the waters that they used and that they remained pristine for their two-legged and four-legged brothers and sisters with which they shared it and for future use.

This precious, life-giving resource faces more environmental issues today than in any other time in Earth’s history. The majority of these issues are, unfortunately, human induced. We have allowed industry, agriculture, and natural resource extraction, the very things that have helped to “advance” our societies, to pollute the waters that are vital to our survival. Our waters are being drastically altered and degraded and our ecosystems, communities, and economies are suffering in the name of “Progress”.

Water, in and of itself, is very complex. In order for ecosystems to function properly, water quantity and quality must be at optimum levels with the latter being most critical. Water quality is directly influenced by changes in nutrients, sedimentation, turbidity, temperature, bacteria, pH, salinity/conductivity, and dissolved oxygen. There are several environmental issues that affect these factors. Some of these issues immediately impact the Tribe’s natural and cultural resources, whereas others develop gradually overtime, making it hard to pin point their exact origins. What follows is a list of current environmental issues that are affecting water quality characteristics, in no particular order of importance:

- Non-point source pollution
- Agricultural runoff
- Recreational pollution
- Natural resource extraction pollution
• Industrial pollution
• Energy production pollution
• Air Pollution
• Climate change
• Storm sewer runoff
• Municipal/urban wastewater runoff

A. Non-Point Source Pollution

Non-point source pollution is becoming an ever-increasing issue world-wide as well as on Tribal lands and has been deemed the largest source of water quality problems. Rather than resulting from a specific source from a particular site, non-point source pollution is caused by diffuse sources of pollutants in a watershed, which are typically attributed to agriculture, natural resource extraction, municipalities, and construction sites. Precipitation, atmospheric deposition, runoff, and percolation deposit these pollutants into nearby surface water and ground water. Such pollution immediately begins to alter the chemical, physical, and biological integrity of water.

Sedimentation due to soil erosion is one of the leading water quality issues associated with non-point source pollution, which is facilitated by logging and construction. Certain tillage practices also expedite soil erosion, leading to sedimentation in nearby waterways, thus, further affecting stream hydrology. Turbidity increases with increasing sedimentation and can limit primary productivity, which, in turn, results in low dissolved oxygen levels and can create hypoxic conditions, making it difficult for fish and other aquatic life to breathe. Water temperature tends to rise with increasing sedimentation and turbidity and can lead to increased mortality in cold-water aquatic species, especially salmon and trout. Degraded riparian habitat, typically as a result of logging, road construction, off-road vehicles, and grazing animals, also can increase water temperature due to the lack of riparian shade.

Runoff from agricultural areas can carry solids laced with agrochemicals such as pesticides, insecticides, fungicides, and herbicides as well as nutrients, salts, and pathogens into nearby surface and ground water, altering the pH and salinity/conductivity and causing a countless number of water quality issues. Urban areas can also contribute nutrients along with chemicals from lawn care products. Failing septic systems and leaky sewer lines can leach nutrients and pathogens into nearby surface and ground water, which can contaminate adjacent waterbodies, wells, and aquifers and pose potential health risks. Automobile pollution, particularly oil, grease, and other related fluids, heavy metals, and other toxic chemicals from roadways and construction sites as well as urban areas also negatively impact water quality.

The following table identifies specific tracts owned by the Tribes and the suspected potential sources of pollution associated with each tract. It is important to note that, unlike
other tribes that possess large tracts of contiguous land bases and significant parts of watersheds, The Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians are only minority owners on almost every waterway, with the exception of the Munsel Lake shoreline. The pollution impacts in the table are expressed as they affect miles of stream, estuary shoreline, and acres of lake.

**Table 1. Summary of Non-Point Source Pollution Sources**

<table>
<thead>
<tr>
<th>Tract/Location</th>
<th>Pollutant: Season</th>
<th>Potential Sources</th>
</tr>
</thead>
</table>
| Qaaich (Hatch) / North Fork and Mainstem Siuslaw River | *North Fork Siuslaw River*  
  Temperature: Year-round  
  Sedimentation: Undefined Season  
  *Mainstem Siuslaw River*  
  Dissolved Oxygen: Jun. 1st - Sep. 14th and Sep.15th - May 31st  
  Fecal Coliform: Year-round  
  Temperature: Year-round | Riparian Degradation,  
  Storm-water Runoff,  
  Agricultural Activities,  
  Failing Septic Systems,  
  Urban Development |
| Munsel /Munsel Lake & Creek              | No Listing                                             | N/A                                                                              |
| Miluk Village (Empire Cemetery) / Coos Bay | Fecal Coliform: Year-round  
  pH: Year-round  
  Sedimentation: Undefined Season | Riparian Degradation,  
  Storm-water Runoff,  
  Agricultural Activities,  
  Failing Septic Systems,  
  Urban Development |
| Kentuck / Kentuck Slough                 | Fecal Coliform: Year-round  
  Dissolved Oxygen: Year-round | Riparian Degradation,  
  Storm-water Runoff,  
  Agricultural Activities,  
  Failing Septic Systems,  
  Urban Development |
| Fisher (KCBY) / Coalbank Slough          | Fecal Coliform: Year-round  
  Temperature: Oct.1st – May 31st & Summer | Riparian Degradation,  
  Storm-water Runoff,  
  Agricultural Activities,  
  Failing Septic Systems,  
  Urban Development |
| Sixes River/ Sixes River                 | Temperature: Year-round  
  Dissolved Oxygen: Year-round  
  Biological Criteria: Year-round  
  Fecal Coliform: Year-round | Slope Destabilization,  
  Riparian Degradation,  
  Agricultural Activities |
<table>
<thead>
<tr>
<th>Location</th>
<th>pH:</th>
<th>Fecal Coliform:</th>
<th>Sedimentation:</th>
<th>Storm-water Runoff, Urban Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coos Head/ Coos Bay &amp; Pacific Ocean</td>
<td>Year-round</td>
<td>Year-round</td>
<td>Undefined Season</td>
<td></td>
</tr>
<tr>
<td>Baldich(Chief’s Island) &amp; (Gregory Point)/ Big Creek &amp; Pacific Ocean</td>
<td>Summer</td>
<td></td>
<td></td>
<td>Storm-water Runoff, Urban Development</td>
</tr>
<tr>
<td>Wualach (Flanagan Pioneer Cemetery)/ Coos Bay/Chickses Creek</td>
<td></td>
<td>Year-round</td>
<td></td>
<td>Riparian Degradation, Storm-water Runoff, Agricultural Activities, Failing Septic Systems, Urban Development</td>
</tr>
<tr>
<td>Camp Easter Seals/ TenMile Lake</td>
<td>Summer</td>
<td>Year-round</td>
<td></td>
<td>Storm-water Runoff, Urban Development</td>
</tr>
<tr>
<td>Ocean Dunes/ North Fork of Siuslaw River</td>
<td></td>
<td>Year-round</td>
<td></td>
<td>Riparian Degradation, Storm-water Runoff, Agricultural Activities, Failing Septic Systems, Urban Development</td>
</tr>
<tr>
<td>Brainard (Deadwood)/ Misery Creek</td>
<td></td>
<td>No listing</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>Duman/ Mainstem of Siuslaw River</td>
<td></td>
<td>Year-round</td>
<td></td>
<td>Riparian Degradation, Storm-water Runoff, Agricultural Activities, Failing Septic Systems, Urban Development</td>
</tr>
</tbody>
</table>

**B. Agricultural Runoff**

Agriculture has been an important milestone in the history of early American civilizations. No longer bound by a nomadic lifestyle, hunter and gatherer societies were able to settle in a single locale and grow crops in excess. Bands turned into communities and communities into advanced civilizations and complex cultures. For the people of the Coos, Lower Umpqua, and Siuslaw Indians, however, agriculture was not a necessity compared to
some civilizations of the Americas because our lands were rich and teeming with life all year round. We did however, cultivate tobacco, specifically *Nicotiana quadrivalvis*, because it grew rather sparsely in our homeland. Our people also employed a form of habitat modification. Prescribed burns were used to not only clear plots for growing tobacco, but were also used to create lush meadows to attract elk and deer, thin brush to encourage basket making materials to grow more abundantly and straighter, such as hazel, and revitalize berry production, particularly blackberries.

Today’s agriculture in the America’s is very different from traditional agriculture. Traditionally, many horticulturists throughout the Americas practiced shifting agriculture. Crops would be grown on plots for a limited duration, typically two to five years. After such time, crops would begin to decline as the soil became overworked and lost its vital nutrients. New plots would then be erected to allow the older plots time to recover and replenish nutrients and top soil lost from leaching, erosion, and overuse. Much of today’s agriculture is intensive and industrialized. Crops are being grown year after year on large expansive fields, which is stripping the land of essential nutrients and exhausting the soil. Fertilizers and manure have become necessary to replace lost nutrients and maintain the same crop yield. Agrochemicals have also been introduced to curtail pest infestations, diseases, etc. and to avoid crop losses. Unfortunately, inorganic fertilizers leave large concentrations of nitrates and phosphates when used excessively or improperly. Residues from fertilizers and chemicals as well as salts from irrigated soils eventually make their way into nearby streams, rivers, and lakes, and leach into groundwater.

Water quality is greatly affected by fertilizers and chemicals used for agricultural application. Excessive levels of nutrients, particularly nitrogen and phosphorus, ultimately lead to eutrophication which can affect the biodiversity of the water as well as the survival rates of culturally significant species, such as salmon, sturgeon, lamprey, eulachon, trout, crayfish, and freshwater mussels. Long-term health risks of high nitrates in drinking water are linked to elevated rates of methemoglobinemia in infants, infertility, diabetes, thyroid problems, and cancers. Pesticides, herbicides, insecticides, and fungicides also have deleterious effects on aquatic life and can inhibit growth and can also affect fertility. Some of the long-term health hazards of agrochemicals in humans are tumors, cancers, reproductive problems, and endocrine disruption. Excessive salts can decrease the amount of dissolved oxygen in water, which can affect aquatic biota, negatively alter aquatic ecosystem function, and can affect drinking water.
Livestock production has its own myriad of effects on water quality. Excessive riparian grazing damages vegetation and decreases riparian shade, which inversely affects water temperature. Soil compaction and erosion is also expedited by intense free-range and riparian grazing. Manure left behind by grazing livestock eventually makes its way into nearby streams and introduces nutrients as well as pathogens. Improperly managed feedlots also contribute concentrated forms of manure, further contributing to nutrient and pathogen loads.

C. Recreation
The beautiful land in which the Tribes of the Coos, Lower Umpqua, and Siuslaw Indians have dwelt for millennia is a land that draws people from all walks of life. From the expansive dunes to the breathtaking coastline, our ancestral territory offers a multitude of enriching activities for site seers and recreationists alike. Although tourism and recreation tremendously benefit the local economy, these activities can also negatively impact the environment, especially water quality, if best management practices are not enforced to ensure that our lands remain pristine for the enjoyment of future generations.

Recreation can affect water quality in a multitude of ways. Off-road vehicles and motorized watercraft, such as boats and jet-skis, used for recreational purposes are the most deleterious. Off-road vehicles tend to compact soils, alter terrain, and facilitate erosion, which can lead to increased runoff, sedimentation, and turbidity in nearby waterbodies. Heavy traffic along streams banks and within river beds can greatly affect bank stability and can also expedite erosion and sedimentation, which can alter stream dynamics and river ecology.

Motorized watercraft resuspend settled sediment, which increases turbidity and reintroduces toxins and nutrients back into the water column. Pathogens as well as nutrients are also introduced by means of improperly disposed of sewage from boats and marinas, which poses a health risk for aquatic life as well as humans. Off-road vehicles and motorized watercraft both contribute pollutants in the form of petroleum, particularly oil and unspent fuel, from leaky, malfunctioning motors, which can persist for long periods of time in aquatic ecosystems and also poses a health risk for aquatic life.

Outdoor enthusiasts, including hikers, campers, and the like, can also have an impact on water quality. Heavy foot traffic on established trails closely bordering streams can compact the soil, increase sediment load, and facilitate erosion, but to a lesser extent. Recreationists degrade water quality more so by littering. Some forms of trash, such as plastics and glass, can persist in the environment for hundreds of years before completely breaking down, which can adversely impact the health and safety of wildlife and humans. Chemicals that leach from marine debris, especially cigarette butts, can raise the pH level of waterbodies and can even be lethal to aquatic biota.
D. Natural Resource Extraction Runoff

Natural resource extraction was an essential part of daily life for the Tribes. We harvested timber, particularly cedar as well as Douglas fir, maple, spruce, alder, ash, willow, hazel, and many other species of trees and shrubs, for housing development, canoe making, textiles, archery, tools, basketry, and firewood. We also mined, so to speak, clays, flint for arrows, schist for tools, such as adzes, and other rock materials such as sandstone for mauls, hammers, axe heads, fishing weights, anchors, and other tools. Our people were vigilant during the extraction process and insured that reserves weren’t exhausted and were also extracted in a way that didn’t have detrimental effects to the surrounding environment. We only took what we absolutely needed. In this way, we harvested/mined responsibly and sustainably, insuring that our future generations would also be allowed to use the same rich reserves.

Today, natural resource extraction encompasses more resources than were traditionally extracted and has become big business. The world’s ever increasing population is placing a high demand on timber, minerals, ores, and fossil fuels. Economic pressure and high demand of these materials may not have led to the best management practices in the past, and many companies extracted natural resources in ways that have left lasting pernicious effects on the environment.

Timber has been harvested in various ways over the past two hundred years that may not have been the most sustainable or efficacious. At the turn of the 20th century, clearcutting was the popular logging practice. This harvesting method cleared large tracts of forest in one single operation. Unfortunately, this method of harvesting has had detrimental effects on the landscape and surrounding water bodies. Trees hold soil, recycle and store nutrients, maintain water tables, and recycle gases. Clearcutting alters the ecosystem and upsets the balance that trees provide. Once trees are removed, soil begins to erode, which leads to sedimentation in nearby waterbodies. Less water percolates into the ground without the presence of trees, which not only affects ground water tables but also affects the quantity and quality of water that flows over these areas. Baseflows and stormflows increase after timber harvests and can scour stream channels, expedite soil erosion, and affect stream hydrology through increased sediment deposition.
Thinning is also another method of timber harvest that is used in varying degrees, depending on the health of the stand. The aforementioned process involves felling only a few trees, instead of a whole stand, as in clearcutting. This method of harvesting is used more as a management tool because it is not very economical. Other activities associated with timber harvesting, such as construction and use of skid trails, haul roads, and landings, can affect water quantity and quality and stream hydrology more so than timber harvesting itself. Logging equipment frequently disturbs and compacts the soil, which decreases water infiltration and percolation and increases storm and baseflows. Pollution, such as oil, diesel, and other related fluids, from logging equipment can also affect water quality, but to a lesser extent.

In recent years, best management practices have been implemented to mitigate the effects of timber harvesting and activities associated with timber harvesting. These BMP’s have included replanting trees in harvested areas. Unfortunately, however, some pesticides and nutrients from fertilizers used in the tree replantation process eventually find their way into the watershed, thus, further degrading water quality and negatively affecting aquatic biota. Other BMP’s include leaving riparian buffers along streambanks, which help to maintain water tables, stabilize stream banks, and filter sediments and nutrients from overland runoff, and establishing forest roads in such a way that prevents the least amount of sediment from entering waterways.

Minerals and ores are another important natural resource that is used in multitudinous ways, from housing development and road construction to automobiles and technology. Presently, aggregate materials (crushed stone, gravel, and sand) are major natural resources that are extracted near tribal lands and lands held in trust. These natural resources are mainly used in general construction and road construction. The process of extracting aggregates today differs greatly from traditional extraction methods.

Today, heavy machinery and explosives are used to extract aggregate materials, which significantly impacts the environment. Establishment of pits and quarries to access aggregate materials requires the removal of virtually all vegetation, topsoil, subsoil, and, in some instances, ground water of extraction sites. Pits and quarries invariably disrupt and alter the movement of surface waters and groundwater as well as aquifer recharge rates, which can reduce the quantity and quality of drinking water. Sedimentation of nearby streams also becomes an issue as mining operations extract, crush, wash, and transport the material. Runoff from these areas can contain petroleum and other products used for equipment and maintenance and other trace minerals and metals that are unearthed during excavation and extraction. These pollutants are problematic in that they can persist in the environment for extended periods of time, providing a long-lasting source of contamination. Some of the effects of these toxics on adjacent waterbodies and groundwater include acidification, which can be
nocuous to aquatic life, growth inhibition, reproduction failure, and behavioral alterations in both aquatic biota and humans.

Aggregates, especially gravel, are also extracted from river beds using various techniques. Unfortunately, instream aggregate mining dramatically affects water quality, disrupts channel morphology, and alters stream dynamics. As with any activity involving heavy machinery, compaction and erosion of the surrounding riparian area becomes a major issue and can cause cascading impacts. Bank instability and/or failure, undercutting, and sedimentation are just a few of the ramifications of compaction and erosion. Turbidity and water temperature increase with increasing sedimentation, which stresses aquatic life. Cumulatively, all of the impacts brought upon by instream mining degrade stream beds and alter the biological diversity of aquatic biota.

Coal and natural gas are also natural resources that are heavily utilized today. Although coal and natural gas are not extracted near Tribal lands and lands held in trust by the Tribes currently, it is worth mentioning that coal was extracted near and exported out of Coos Bay beginning in the early 1850’s and lasting until about the 1920’s. Water quality issues associated with historical coal mining and exportation have long since improved. Natural gas is another natural resource that has been extracted historically and was fracked from coal deposits in the Coos Bay Basin. A few gas wells were fracked in 2005 and 2006, but have remained inoperative since the economy collapse of 2008. Nevertheless, there is a future interest in fracking and exporting this high quality source of natural gas. If fracking in the Coos Bay Basin were to be reestablished, ground water quality and quantity issues are likely to arise due to the potential contamination of chemicals used and the amount of groundwater removed from aquifers in the fracking process.

E. Industrial Pollution

Industrialization, much like agriculture, has improved the quality of life for millions of people around the world. While industrialization has brought about technological advancement and has improved the standard of living, it has also significantly impacted our environment. Industry utilizes water in different ways to produce a variety of products and accounts for 53% of all water use (Explore More 1). Industries located within the Tribes’ ancestral territories included Myrtlewood and lumber manufacturing, commercial fishing, photo and printing, pulp and paper manufacturing, and bottling facilities.

Wastewater produced by industrial facilities is required by law to be treated before it is discharged. Some industries have chosen to use local wastewater treatment facilities, whereas others treat their own wastewater. Industries that utilize local wastewater treatment facilities are required to pre-treat their wastewater before discharging it into the municipal sewer system. Facilities that chose to treat their own wastewater are required by the EPA to obtain a
permit and meet water quality standards in order to discharge treated water into contiguous waterbodies. Though strict regulations have been instituted to ensure that effluents from industrial facilities are properly treated before they are discharged, conventional methods of wastewater treatment are sometimes ineffective in removing all toxicants from industry effluents.

Waste streams from industrial facilities can contain a multitude of pollutants, including paints and solvents, chemicals, detergents, dies, dioxins, organic or inorganic pesticides, microbiological contaminants, heavy metals, nutrients, petroleum and other products used for equipment maintenance, and sediments/suspended matter. Although the pollutants in industrial wastewater may differ from one industry to another, water quality issues that arise from these pollutants are, in almost all cases, caused by one or a combination of the following: high Biological Oxygen Demand (BOD), high concentration of Suspended Solids (SS), and toxic substances. Wastewaters containing a high BOD and SS can deplete oxygen concentrations, which affects biological diversity. High SS can also increase water temperature, raise water treatment costs, and affect recreation. Toxicants are more difficult to remove once they have been put into solution, which affects water quality. Toxic chemicals facilitate bioaccumulation, which affects larger predators and humans that consume aquatic organisms. Toxicants have also been known to affect fertility and endocrine function, and have been liked to some cancers.

F. Energy Production Pollution

Water is a cardinal constituent of energy production. Not only is it used in energy-resource extraction, water is also used in, processing, refining, and transportation. Wastewater produced in the extraction, handling, and refining processes can contain salts, organic hydrocarbons, such as oil and grease, additives, and naturally occurring radioactive material (NRDC 1). This wastewater can be toxic, corrosive, and radioactive, which can lower the fitness of affected ecosystems. Spills and leaks from barges and pipelines during transportation of energy resources can also negatively affect water quality as well as ecosystem health.

Hydroelectric and thermoelectric power generation extensively use water and, nationally, use more water than any other industry. Most hydroelectric power is propagated via dams and can greatly affect water quality and biological diversity upstream as well as downstream. Dams can prevent sediments and various food sources from flowing downstream, thus altering the geomorphological characteristics of rivers and streams as well as the biologic productivity of ecosystems downstream. Water temperature is also affected by dams, which can also alter aquatic biota. Biological diversity is also affected by thermal pollution produced by thermoelectric generation plants and can, depending on the season, create lethal conditions.
Thermoelectric power requires a large amount of water for power generation, plant cooling, and boiler blowdown. A majority of the water that is utilized for these purposes evaporates, which reduces the amount of water available for local ecosystems. Wastewater produced through the plant cooling and boiler blowdown processes is not only higher in temperature, it can also contain pollutants, including heavy metals such as nickel, iron, and copper, as well as chemicals that are used to prevent scaling, corrosion, and biological growth. These pollutants can not only affect the biological health of aquatic biota, they can also affect drinking water quality as well as recreational water quality.

G. Air Pollution

“What goes up must come down.” This famous phrase coined by Isaac Newton perfectly describes how pollutants in the air eventually, through the process of atmospheric deposition, return to the surface of land and water bodies. Air pollutants can originate from natural processes, such as volcanic eruptions and forest fires, the combustion of fossil fuels, and other anthropogenic sources (e.g. agricultural, industrial, and other commercial and domestic sources). Nitrogen and sulfur compounds, as well as mercury, pesticides, and other toxics are common pollutants found in waterbodies that usually originate from atmospheric sources.

Nitrogen oxides and sulfur oxides often times react with other air constituents and pollutants to form acid rain. As acid rain falls and flows through a watershed, aluminum leaches from the soils within the watershed into a nearby lake or stream. Acid deposition not only increases aluminum levels of an affected waterbody, but it also lowers the pH. Moreover, increased nitrogen levels in estuaries and near-coastal water bodies due to acid rain and atmospheric nitrogen deposition can facilitate eutrophication. Eutrophication negatively affects water quality because it stimulates excessive algae growth. Consequently, algae aggressively outcompete other plant species, which decreases biodiversity and upsets food web dynamics.

Atmospheric mercury is another air pollutant that makes its way into lakes, streams, estuaries, and other waterbodies via acid rain and atmospheric deposition. Once in surface waters, mercury is converted by microorganisms into a more absorbable form known as methyl mercury. This form of mercury rapidly bioaccumulates in body tissues and can greatly affect the health and survivability of aquatic species, terrestrial species, and humans.

Pesticides and other air toxics can vary greatly in constituents, toxicity, and concentration in waterbodies, but are still a concern because they, like methyl mercury, bioaccumulate in body tissues. Sufficient concentrations of pesticides and other air toxics over time or through the process of biomagnification can decrease fertility and hatching success, and upset endocrine and immune functions in fish, birds, and other wildlife.
H. Climate Change

Climate change has been an issue of controversy over the last few decades. Regardless of whether the earth’s increasing temperatures is attributed to natural processes, greenhouse gases from human activity, or a mixture of the two, the fact still remains: global mean temperatures are on the rise. The rate at which the Earth’s mean temperature is rising is 15 to 40 times faster than “natural” rates following the major ice ages and could far surpass the ability of ecosystems to adapt or migrate (Harper 147). So what does this mean for tribal water resources? Increasing global temperature means increasing water temperature. Water temperature is an important determinant factor in water quality because it influences the rate of chemical and biological processes and regulates the amount of dissolved oxygen in water.

Warmer water temperatures encourage bacteria and fungi growth and also stimulate algae growth. Water quality is negatively affected as a result of these increased growths and poses health risks to aquatic life as well as terrestrial life, including humans that use afflicted waters for drinking, agriculture, commercial fishing, and recreation. Some algal blooms produce toxins that can harm and kill not only aquatic species living within the water, but also terrestrial animals and can severely harm humans that use waters plagued by toxic algal blooms.

Increasing global temperatures will also affect snow packs as well as stream flows. Snow packs have been projected to melt faster and earlier in the season, causing major changes in the timing of runoff and the amount of water available in the watershed. Increased runoff due to faster snow melts could result in increased sedimentation and stream scouring, which can alter stream morphology, increased nutrient runoff, and heightened winter floods. Rising temperatures have already begun to melt glaciers and ice caps at an alarming rate. In the last century, the global sea level has risen by about 4 to 8 inches and is expected to continue to rise. Rising sea levels may hasten salt water intrusion, which will affect our coastal ecosystems, aquifers, and drinking water supplies.

Global warming is predicted to alter rainfall patterns, which could lead to alternating periods of intense storms and droughts, which, in turn, affects the salinity levels of surface water. Winter precipitation has been forecasted to increase, which will more than likely be in the form of rain rather than snow. The resultant decrease in snow accumulations would increase the likelihood of winter floods. Summer precipitation will likely decrease as well, further increasing the probability of droughts.

I. Storm Sewer Runoff

Our coastal climate produces an appreciable amount of precipitation. Rain generally falls and flows into the ground through a process known as infiltration. When the ground becomes fully saturated, excess water runs off of the surface of the land and returns to the nearest waterbody. Urbanization has increased the number and concentration of impervious
surfaces in the form of roads and parking lots on and near Tribal and trust lands, making it harder for water to reach its maximum ground saturation capacity before it begins to run off and complete the hydrologic cycle. Salt-water intrusion is becoming a common issue on the coast as less and less water is able to percolate and recharge groundwater tables and the demand for water increases. Flooding has become a major issue, since less precipitation is able to infiltrate the ground in urban areas.

Storm drains have been constructed in urban areas to combat excess runoff and to curtail flooding during extreme storm events and periods of heavy precipitation. Water that flows through these storm drains is classified as storm sewer runoff. This runoff is another great concern of the Tribes and greatly impacts water quality on and near Tribal and trust lands because it is not treated. Storm sewer runoff often times carries a multitude of pollutants, including but not limited to oil and other automobile pollution, household chemicals, paints and solvents, nutrients and pesticides from lawn care products, debris, sediment, and pathogens. All of these contaminants can affect water quality characteristics, such as salinity, temperature, pH, and turbidity.

J. Municipal/Urban Wastewater

Proper municipal/urban wastewater management is critical to every growing community in order to maintain a healthy ecosystem for not only humans, but other biota that live in close proximity to these municipalities. Wastewater treatment facilities have been established to treat urban sewage and prevent it from contaminating local water resources. On an average day, these facilities can effectively treat sanitary sewage. However, occasional discharges of raw, untreated sewage from sanitary sewers can occur. Causes for these intermittent discharges include but are not limited to: sewer defects and inadequate sewer design that allow stormwater and groundwater to overwhelm the system, aging sewer lines and line breaks, and lapses in operation and maintenance of the sewer system. During storm events, influent flows that enter the sanitary sewer system can exceed the management capacity of wastewater treatment facilities and are often times rerouted to the closest storm outlet to prevent backups and overflows in residential areas.

Unfortunately, this untreated water not only consists of pollutants from storm water, it also comprises pathogens, pharmaceuticals, solvents, personal care products, etc. Synergistically, these contaminants can have greater effects on water quality and can lead to eutrophication, reduced fitness and fertility of aquatic animals, and bioaccumulation. Failing septic tanks and leaking sewer lines also contribute an appreciable amount of nutrients and pathogens, which can leach into and contaminate aquifers and waterbodies. Contaminated aquifers and groundwater pose health risks to humans as well as the whole ecosystem and are very difficult to remedy once contaminated.
II. **Salmon**

Salmon have always been culturally significant to the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians. Salmonids are believed by our Tribes to have been created for the sole purpose of nourishing our people so that we may flourish. These vertebrates were a staple for our people pre-contact and we treated them with the utmost reverence and respect and continue to carry on that obsequiousness to this day. These anadromous fishes are keystone species and are not only vital to the survival of a countless number of aquatic as well as terrestrial species, they are also crucial in ensuring the continuation of our culture.

These magnificent animals provide life-sustaining nourishment as well as nutrients to nutrient deprived areas, such as headwaters. They are also the best indicator of ecosystem health because they are very sensitive to changes in the environment, especially temperature, turbidity, dissolved oxygen, pH, and habitat. Salmon require cool, well-oxygenated water as well as adequate stream flow. Gravel must be free of fine sediment to insure that embryos are adequately aerated and that fry are able to emerge. Structural diversity within the stream channel is essential and must provide adequate cover, pools, and riffles as well as access to and from rearing and spawning areas. Unfortunately, these amazing fishes face multitudinous environmental issues today that greatly affect their resurgence. Environmental issues that greatly impact salmon survival rates are:

- Overharvesting
- Habitat Deterioration/ Loss
- Sedimentation
- Obstacles to Migration
- Hatcheries
- Invasive Non-Native Species and Predators
- Contaminants
- Air Pollution
- Climate Change

A. **Overharvesting**

Populations of salmon abounded around the time of European contact. Historically, it has been said that these creatures were so abundant that when they traveled upriver to spawn,
one could cross the river on the backs of these amazing creatures.Shortly after European settlers and entrepreneurs began to arrive and settle in the Tribes’ ancestral territory, they began to speculate the economic profits of this seemingly copious resource. The emergence of canning technology in the 1860’s allowed for the establishment of large-sale commercial fisheries and canneries.

Like many early natural resource harvesting practices, best management practices were not instituted by the first commercial salmon fisheries. During the next few decades, fisheries did not harvest salmon sustainably, and by the 1890’s, salmon populations reached a historic low. At the turn of the 20th century, conservationists recognized the downward trend of salmonid returns and pushed to mitigate the issues that were expediting their decline. However, remediation efforts were erroneously contrived because scientists did not fully understand the complex life histories of these fishes as well as the environmental issues affecting their survival. As a result, many populations became extinct while many others became endangered.

**B. Habitat Deterioration/Loss**

Over the last few hundred years, the advancements of man have greatly improved our quality of life. Unfortunately, our environment has endured great degradation in the name of “technological advancement.” Alterations to the ecosphere were not always executed respectfully or tenably. This apathy for Mother Nature’s limitations has caused lasting, detrimental impairment that has negatively impacted the flora and fauna living within areas that have been affected, especially salmon.

The degradation/loss of habitat, especially freshwater habitat, is perhaps the most paramount contributing factor to declining salmon populations second to overharvesting. Some of the activities that have synergistically resulted in the deterioration of salmon habitat are: natural resource extraction, dams, and urbanization. Natural resource extraction has allowed us to advance and enhance our standard of living. However, it has been one of the most devastating activities to salmon habitat. Logging and mining are two activities associated with natural resource extraction that can be the most deleterious. Timber harvesting often times removes riparian vegetation, which can facilitate bank erosion; increase sedimentation resulting in the loss of channel complexity, pool habitat, and felicitous gravel substrate for spawning and rearing; and increase water temperature. Logging also increases stormflows and peakflows, which, can prevent fish from migrating, inhibit growth of developing juveniles, and even remove eggs from gravel.

Mining can also be very debilitating to salmon habitat. The repercussions of mining are erosion and sedimentation, which, again, can alter channel morphology and increase turbidity resulting in higher water temperatures and reduced fitness of fish. Instream gravel mining is the
most destructive form of mining because it decreases the amount of suitable spawning and rearing habitat and degrades the remaining substrate through disruption and fine material deposition.

Dams are another technological advancement that have been tremendously beneficial to man. These modern marvels were initially constructed to store water as a means to produce hydroelectricity, control flooding, divert water for irrigation, and allow easier conveyance. These impoundments fragmented the riverine ecosystem into two new ecosystems: the reservoir ecosystem upstream of the dam and the riverine ecosystem downstream of the dam. Unfortunately, primal salmon spawning and rearing habitats were inundated in order to convert free-flowing river systems into large expansive reservoirs. These new reservoir ecosystems differed tremendously physically and chemically from the riverine ecosystems, and greatly impacted the survival and productivity of salmon and other aquatic biota. By slowing and modifying the natural flow of water, sediments, nutrients, and biota, dams also altered riverine habitat downstream. Unable to adapt to the abrupt habitat changes brought upon by dams, salmon populations rapidly dwindled.

Since the beginning of time, man has been drawn to rivers and streams for both utilitarian purposes as well as aesthetic purposes. A close proximity to a clean, reliable source of water was essential to man’s survival, which is why almost every large tributary in the world was settled or inhabited. Today, major tributaries and rivers are still colonized and are becoming ever increasingly encroached as the human population grows and expands. Stream diversion, wetland deportation, and vegetation removal have been necessary in order to expand urban areas into riparian corridors for residential, agricultural, and recreational purposes. Flow regimes have been tremendously altered due to increases in impervious surfaces as a result of urbanization, which not only facilitates erosion, channel incision and widening, and the exportation of suitable gravel, but also negatively affects stream morphology, water quality, and biological diversity. Unfortunately, the ramifications of modifying riparian habitat to suit human needs have been calamitous to the resurgence of salmonids.

C. Sedimentation

Because salmonids are very sensitive fishes, they require relatively clean water in order to thrive, especially during their larval stages. Eggs are laid within permeable gravel nests, or redds, and require a steady flow of water to deliver oxygen as well as remove waste metabolites. After 6 to 12 weeks of incubation, depending on the species, the eggs hatch into alevins. Alevins remain within the gravel substrate until they absorb their yolk sacks and emerge from the redd as fry; at which time, they move onto the interstitial spaces between cobbles and boulders within the streambed to avoid predation and feed. When excess sediment enters the stream, sedimentation increases as well as turbidity and can greatly affect the productivity and viability of salmon.
Fine silt deposition is one of the leading causes of larval and juvenile salmon mortality. Fine sediment clogs the interstitial spaces between cobbles and boulders within the redd, suffocating larval salmonids and inhibiting fry emergence. Fry's that do survive and emerge are usually smaller and are of poorer quality due to exposure to low dissolved oxygen concentrations. Increased siltation also disrupts juvenile invertebrate food sources and cover, which, in turn, affects juvenile growth and survival rates. Turbidity increases with increased sedimentation and can obstruct vision and impede feeding, thus affecting the growth, vigor, behavior, and migration of juveniles as well as adults. Excessive amounts of suspended sediment are also deleterious to salmon in that they can abrade the gills and excoriate the protective slime coating of these fishes, making them more susceptible to bacterial and fungal infections.

**D. Obstacles to Migration**

The migration of salmon and other anadromous fishes is one of Mother Nature’s most exciting dramas, with every overcome danger and obstacle adding to the suspense. The most formidable and, perhaps, the most decimating of all the obstacles that salmon must surmount is, regrettably, one of the most beneficial technological advancements to man: dams. Dams have not only revamped salmon spawning and rearing habitat, modified flow regimes and altered thermal conditions, they have also impeded salmon migration to and from spawning and rearing habitat.

The first impoundments, unfortunately, were constructed without considering ecosystem functions and processes or Tribal resources. Unable to complete their life cycle, salmon instantaneously began to decline. As scientists and conservationists quickly realized that this barrier was decimating salmon populations, fish passages, such as fish ladders and navigation channels, were installed to reestablish migration. These fish passages, however, have had major impacts on the survivorship of juveniles and adults, especially iteroparous species, due to mortality in the turbines and spillways, increased water temperatures, predation, super saturation, and other adverse environmental effects.

**E. Hatcheries**

Hatcheries were initially instituted to maintain dwindling salmon populations as a result of overexploitation, habitat degradation, and dams and to enhance fishery production. Today, hatcheries have been successful in stabilizing salmon populations for societal purposes. However, hatcheries have failed to discern the decline of wild populations and, in some instances, may have exacerbated this decline. Hatchery fish, unfortunately, have created biological issues, including river and stream carrying capacity exceedances, which has led to the decimation of both hatchery and wild stocks. Hatchery fish are also more susceptible to disease, which heightens the risk of disease transmission to wild populations. Interbreeding or hybridization of hatchery fish and wild salmon is another biological problem that dilutes local adaptations, producing less hardy offspring that are more vulnerable to parasites and disease.
Finally, predation of hatchery fish upon wild stocks has also been recognized as a factor affecting the revitalization of wild salmon populations.

**F. Invasive Non-native Species and Predators**

The introduction of non-native species for recreational purposes as well as the expansion of native invaders have greatly contributed to the decline of salmon and other native species. Anthropogenic habitat alterations, especially the construction of reservoirs, have facilitated the expansion of native invaders as well as the spread and establishment of nonindigenous species. Once established, non-native species often times outcompete native biota, upset predator-prey relationships, and alter ecosystem functions. Predation by native invaders and nonindigenous species has increased considerably as a result of anthropogenic habitat alteration and has had a significant impact on juvenile salmon populations. Mortality rates of juveniles attributed to predation are comparable to that associated with juvenile passage through dams (Preusch 1). Therefore, non-native species can be considered a major threat to the survival and productivity of salmon and other native biota.

**G. Contaminants**

The health and viability of salmon and other culturally significant aquatic species are remarkably affected by pesticides and toxicants produced by agriculture, industry, and urban areas through the processes of bioconcentration and bioaccumulation. Certain pesticides and heavy metals can inhibit the growth of juveniles as well as interfere with the parr-smolt transformation (PST) by injuring their gills and retarding their ability to physiologically adapt to saline environments, which can delay or impede migration. Toxicants can suppress immune, endocrine, nervous, and reproductive functions, which reduces salmon fitness and increases disease susceptibility, alters behavior, and decreases reproductive success. The process of biomagnification further affects salmon survival and productivity and can be the most lethal.

**H. Air Pollution**

Air pollution not only impacts water quality, but it also affects the health and survivability of salmon and other aquatic organisms. Among the many pollutants in waterbodies that originate from atmospheric sources, nitrogen and sulfur compounds as well as mercury and other toxics are the most deleterious. Nitrogen and sulfur oxides find their way into lakes, rivers, estuaries, and near-coastal water bodies through acid rain as well as atmospheric deposition. Low pH levels and elevated aluminum levels caused by acid rain are highly toxic to fish and can inhibit physiological development, reduce egg production and embryo survival, increase mortality, and decrease biodiversity. Acid rain can also promote eutrophication. Eutrophication, or nutrient enrichment, markedly depletes dissolved oxygen as algae bloom, die, and decompose, which can create hypoxic conditions and further stress fish and other aquatic species.

Mercury, particularly methyl mercury, is another pollutant that is deadly to aquatic organisms as well as terrestrial creatures at high concentrations. Because methyl mercury is so
readily absorbed and stored in the body tissues of organisms, concentrations of mercury in salmon and other species higher up the food chain usually greatly exceed concentrations in their aqueous environment. Organisms that are exposed to high levels of mercury may experience growth inhibition, endocrine disruption, reduced fertility or reproductive failure, adrenal and intestinal damage/failure, DNA alternation, and even mortality.

I. Climate Change

Global warming over the past fifty years has rapidly shifted the global climate. The observed changes of average climatic conditions have been accompanied by increasing trends in heavy precipitation, flow events, and extremes of heat and decreases in snow packs and extremes of cold. The recent shift from a snowfall dominated climate to a rainfall dominated climate has increased the frequency and severity of flooding during winter, which considerably impacts the survivability of salmon eggs and overwintering juveniles. Summer flows have also severely decreased resulting in increased water temperatures and persistent droughts, which reduces spawning and rearing habitat, stresses migrating and spawning adults, increasing their vulnerability to predators, parasites and disease, and affects the growth and downstream migration timing of juveniles.

Moreover, anthropogenic gases, particularly carbon dioxide, that have been associated with global warming have also been linked to ocean acidification. Unfortunately, ocean acidification affects the calcareous shell formation of many invertebrates preyed upon by salmon, thus, impacting the survival of not only mollusks, but of species that depend on them. Reductions in freshwater flows due to climatic shifts have resulted in decreased ocean productivity, which dramatically affects the health and viability of growing juvenile and adult salmon. Most importantly, warming oceanic temperatures and shifting currents are inciting a northward shift in the range of some salmonid species as well as other species, which inevitably leads to local extinctions of certain populations and devastating alterations in ecosystem functions.

Other Culturally Significant Aquatic Species

Salmon are not the only anadromous fishes that are being affected by environmental issues. Lamprey, sturgeon, and eulachon (smelt) are also culturally important species of the Tribes that are on the decline resulting from many of the same environmental issues that affect salmon, including migration barriers, habitat alteration and degradation, predation of non-native species, contaminants, sedimentation, and climate change. Sturgeon also suffer additional issues, including a reduction in food sources, particularly lamprey and eulachon, increases in predation, especially by expanding sea lion populations, and poaching.

Anadromous fishes are not the only culturally significant species in our ancestral waterbodies. Our people also regularly harvested mussels, oysters, clams, crabs, chitons,
limpets, abalone, snails, herring and herring roe, seals, sea lions, and whales from the beaches, bays, and estuaries. Crawdads, freshwater mussels, and trout were gathered from rivers and streams. Each of these species’ health and survivability is greatly affected by many of the same issues affecting salmon and other anadromous fishes, but in differing degrees.

III. **Game**

Game, particularly elk and deer, are greatly revered by the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians and have also been an intrinsic part of our culture. Cervids were harvested not only for subsistence purposes, but they were also highly valued for the textiles, tools, utensils, and ceremonial products that they provided. Elk and deer are not only important to our people, they also play an important role in the life cycle of the forest by clearing understory vegetation, which allows colonization by other plant and animal species and increases biological diversity. Environmental issues that affect elk and deer populations are:

- Hunting
- Habitat Fragmentation/Degradation
- Water Pollution
- Domestic Livestock
- Non-native Invasive Plant Species
- Air Pollution
- Climate Change
- Game/Cervid Ranching

**A. Hunting**

Unregulated hunting by European settlers for subsistence as well as “market hunting” during the 19th century prompted the collapse and eventual extirpation of elk and deer populations throughout our ancestral territory. By the 1880’s, reports of elk and deer scarcity were commonplace. In 1899, the Oregon legislature outlawed the commercial sale of all game animals and prohibited elk hunting from 1909 to 1932. Fortunately, elk and deer populations convalesced via the process of repatriation. Today, hunting is strictly regulated and no longer poses a threat to cervid populations. However, disturbances associated with human activities, including, but not limited to, hunting, hiking, and motorized recreational activities, stress game and trigger increased vigilance, which decreases foraging and, thusly, affects the health and viability of game species.
**B. Habitat Fragmentation/Degradation**

Elk and deer were quite numerous and widely distributed throughout the Tribes’ ancestral territory before the arrival of European settlers. Unfortunately, urbanization and timber harvesting have drastically reduced much of their historical range, which has affected their survival. Agricultural development and human expansion have dramatically altered and fragmented elk and deer habitat. Most large, expansive meadows and grasslands that provided essential foodstuffs for ungulates, such as forbs, shrubs, and grasses, were revamped for agricultural purposes. Timber harvesting, an expanding network of forest roads, and increased recreational traffic has further displaced elk and deer, since most elk and deer avoid logging activities and roads. Fragmentation due to logging can cause genetic bottlenecking resulting in minimal genetic variation, which reduces fitness and increases vulnerability to diseases. Furthermore, game habitat is being degraded by forest management practices that do not reduce overstory canopy cover while maintaining old growth stands that allow growth of essential elk and deer foodstuffs and provide shelter and protection from predators, including humans.

**C. Water Pollution**

Good water quality is essential to the health and survivability of elk and deer as well as other terrestrial species. Cervids acquire a great deal of their water requirements from the foodstuffs they consume. Water is also obtained from wetland ponds, lakes, rivers, streams, and springs when available. Unfortunately, most of these water sources are afflicted by pollutants, contaminants, and toxins from an array of sources, including runoff from agricultural, recreational, and natural resource extraction sites along with industrial pollution and municipal runoff. Some of the toxins that are found within these drinking water sources can have immunosuppressive effects, which can weaken disease resistance. Bioaccumulation of particular toxins can affect developmental and reproductive systems. Waters utilized by cervids can also be contaminated with excreta, which can contain pathogens that cause waterborne diseases, such as giardia and rotavirus.

**D. Domestic Livestock**

Domestic livestock negatively impact elk and deer in several ways. The mere presence of livestock triggers behavioral changes in elk, which can affect foraging productivity. Also, because
the diets of wild ungulates overlap with domestic rangeland livestock, competition for foodstuffs arises, which can affect growth and reproductive performance and increase mortality, especially of juveniles. Transmission of diseases between domestic livestock and elk and deer, such as brucellosis, hoof and mouth disease, and bovine tuberculosis, are also heightened when cervids and domestics are in close proximity to one another.

E. Non-native Invasive Plant Species

The introduction and spread of nonnative, invasive plant species remarkably alters vegetative composition and can displace native diversity and cover. Unpalatable exotics, especially forbs and grass species such as knapweed, gorse, and thistle, often times out compete and reduce preferred foraging of ungulates and, conversely, forces elk and deer to expend more energy to search for better quality foodstuffs elsewhere. Nonnative plant species also alter ecological processes, such as hydrologic and nutrient cycles, and can change fire and other disturbance regimes.

F. Air Pollution

The burning of fossil fuels as well as emissions from other anthropogenic sources, including but not limited to agriculture, timber harvesting, domestic, and industrial, electrical, and natural gas refining facilities, have given rise to an array of chemical air pollutants, such as O$_3$, CO, SO$_x$, NO$_x$, Pb, particulates, and air toxics. These air pollutants not only affect water quality and aquatic species, but they also greatly impact the health and survivability of elk and deer as well as other culturally significant terrestrial species directly and indirectly.

Tropospheric ozone, which is created through the chemical reactions between nitrogen oxides, volatile organic compounds (VOCs) and sunlight, has been deemed the most damaging air pollutant. Inhaling ozone can prompt throat irritation, coughing, congestion, and chest pain. Ground level O$_3$ can also reduce lung function and cause inflammation of lung tissue. Prolonged exposure can permanently scar lung tissue and impair immune function, making cervids and other terrestrial species more susceptible to respiratory illnesses.

Carbon Monoxide (CO) is an odorless, colorless gas that is formed by the incomplete combustion of carbon and occurs primarily from fossil fuel emissions. CO is particularly dangerous because, upon inhalation, it binds to hemoglobin, reducing the O$_2$ carrying capacity of the blood, which can impair the functions of oxygen dependent organs and tissues, including the brain, heart, and muscles. Exposure to high levels of CO can affect vision, decrease mental alertness, and affect physical performance, which can make elk and deer more susceptible to predation. Extremely high levels of CO are lethal.

Sulfur Dioxide (SO$_2$), one of the forms of SO$_x$, is a colorless, pungent gas that, upon inhalation, causes bronchial constriction, resulting in coughing and breathing difficulties, increased pulse and respiration, and changes in metabolism. SO$_2$ sometimes reacts with other
air pollutants to form sulfuric acid. Sulfuric acid exposure is of greater concern compared to \( \text{SO}_2 \) because it binds to the surface of fine particulates and can lodge itself deeply into the lungs, causing an increase in mucous production and, in turn, increases the susceptibility to more severe respiratory infections, such as pneumonia.

Nitrogen Dioxide (\( \text{NO}_2 \)) is a reddish brown gas that belongs to a family of highly reactive gases called nitrous oxides (\( \text{NO}_x \)) and forms during the combustion of fossil fuels at high temperatures. Acute \( \text{NO}_2 \) exposure inflames the lining of the lungs, causing coughing, wheezing, and reduced lung function. Chronic exposure can reduce immunity to lung infections, such as bronchitis.

Lead (\( \text{Pb} \)) is a heavy metal that can be harmful upon inhalation. Historically, major sources of \( \text{Pb} \) particles were via emissions from leaded gasoline. Today, industrial processes, such as ore and metal processing, utility and lead-acid battery manufacturing, and waste incineration, are a major source of air-borne lead. Lead particles in the ambient air can attach to fine particulates. Upon inhalation, lead is rapidly absorbed and accumulates in the soft tissue and bones. Lead exposure or lead poisoning is associated with several health effects and can cause serious neurological, kidney, immune, developmental, and cardiovascular system damage.

Particulates are a mixture of solid and liquid airborne particles less than 10 micrometers. Coarse particulates, which are larger than 2.5 micrometers, originate from various sources, including windblown dust from agricultural and natural resource extraction areas. Fine particulates, which are less than 2.5 micrometers, stem from forest fires and fuel combustion. Particulates, especially fine particulates, are of particular concern because they can be inherently toxic as a result of their chemistry and are also easily inhaled into the deepest recesses of the lungs, causing mechanical damage to cervid respiratory systems. Health effects associated with excessive or prolonged exposure to particulates include coughing or painful breathing, decreased lung function, bronchitis, increased morbidity, and even premature death.

Air toxics are hazardous air pollutants (HAP’s) that arise from both natural and anthropogenic sources. HAP’s are of particular concern because they are known or suspected to cause serious health problems, including reproductive and developmental effects and cancer. HAP’s include volatile organic chemicals, pesticides, herbicides, and radionuclides. There are 189 known air toxics regulated by the Environmental Protection Agency, 16 of which are modeled at levels more than 10 times the federally determined safe level within the Tribes’ ancestral territory.

**G. Climate Change**

Because weather considerably affects ungulate population dynamics, global climate change may potentially affect elk and deer populations. The estimated effects of climate
change on elk and deer vary. Changes in precipitation patterns are anticipated as a result of an increasing global temperature, which could induce severe winter storms as well as summer droughts. Variations in winter severity could negatively affect ungulate survival, especially calves. Summer droughts will decrease forage, which, in turn, will reduce fat accumulations and increase susceptibility to harsh winter conditions. Other projections suggest that predicted warmer winters will reduce snow accumulations, which could allow elk and deer to browse woody plants in winter areas that would not otherwise be accessible and could boost ungulate populations. Unfortunately, increases in winter foraging would decrease deciduous trees and habitat of other wintering species, such as songbirds.

**H. Game/Cervid Ranching**

Although cervid ranches do not directly affect current elk and deer populations within the Tribes’ ancestral territory, it is worth noting that escapees from cervid ranches have the potential to affect wild ungulate populations. Disease transmission from escapees to wild ungulates is the greatest concern, especially chronic wasting disease (CWD). CWD is a fatal neurodegenerative disease of cervids that is caused by prions, or mutated proteins, and is easily transmissible, presumably through body fluids. Once present in the environment, these mutated proteins are very difficult to deactivate and can remain viable for many years. Fortunately, there are no known reports in or near our Tribes’ ancestral territory of this debilitating disease, but the potential for future introductions remains a valid concern.

**Other Culturally Significant Terrestrial Species**

Elk and deer were not the only terrestrial species in which we hunted. Our Tribes also harvested ducks, geese, and bird eggs. Birds are affected by many of the same environmental issues that impact cervids and in much the same way. Birds, however, appear to be more susceptible to water and air pollution. Some predators, such as bear and mountain lion were also harvested, but no very often.

**IV. Roots, Bulbs, and Berries**

Our ancestors traditionally gathered a multitude of roots, bulbs, nuts, seeds, berries, and other plants for subsistence as well as shelter, textiles, medicine, and ceremony. Bracken ferns, cattails, skunk cabbage, springbank clover, shore lupine, chocolate lily, wapato, Pacific silverweed, and camas are but a few of the roots and bulbs that were traditionally harvested for subsistence and textiles. Salmon berries, red huckleberries, strawberries, black caps, red and blue elderberries, blueberries, thimbleberries, currants and goose berries were usually just eaten fresh while they were in season. Some berries were gathered specifically for drying, such as blackberries, black huckleberries, crab apples, and salal so they could be consumed during colder months when highly nutritious foods were scarce.
Through the employment of special techniques, such as pruning, weeding, burning, and soil aeration, we were able to enhance the productivity of traditional wild foodstuffs. We recognized and honored every biota’s distinctiveness and importance and acknowledged that we were but mere stewards of the land with which we resided. Our people took care of plants that took care of them. Unfortunately, since colonial expansion, our ancestral territory has not been managed properly and many plant species important to the Tribes’, such as wapato, camas, chocolate lily, western lily, cobra lily, ocean spray, Port Orford cedar, bear grass, and yew, have dramatically declined.

Environmental issues that impact traditional flora diversity and longevity today are:

- Water Pollution
- Habitat Degradation and Fragmentation
- Non-native Invasive Species
- Pests and Diseases
- Air Pollution
- Climate Change

**A. Water Pollution**

Water is an invaluable commodity. Every living organism is dependent on water for survival, especially plants. H₂O is crucial to photosynthesis, regulates the stomata, therefore, regulating transpiration, and functions as a solvent for mineral uptake as well as carbohydrate transport within the plant. Because water is one of the environmental limiting factors in plant growth and survivability, water availability and quality is a great concern of the Tribes. Water quantity is greatly influenced by weather patterns and climate change, which will be discussed in further detail, as well as urbanization and agriculture.

Water quality is equally as important as water availability. Roots and vegetables need a balanced amount of salts and pH in order to thrive. Unfortunately, contaminants, fertilizers, and chemicals from natural resource extraction runoff as well as runoff from agricultural and urban areas often times upset the balance of salts and pH, thus, degrading water quality. Contaminants from these sources, such as mercury, can cause phytoxicity, which not only
affects the growth and longevity of plants, but it can also affect other species that feed upon contaminated plants through the processes of bioaccumulation and biomagnification.

**B. Habitat Degradation and Fragmentation**

Much of the Tribes’ traditional food landscapes have been decimated due to a number of factors. The process of harvesting timber and the associated habitat modifications have markedly dwindled and isolated various populations of traditional plants and foodstuffs. Agriculture, recreation, and urban expansion and development have also fragmented and degraded habitat in which our traditional foodstuffs flourished. As a result of habitat degradation, fragmentation, and genetic isolation, many culturally significant plants have become more vulnerable to disease and extirpation, which has accelerated their decline along with the decline of the stories, songs, and language linked to them.

**C. Non-native Invasive Species**

Since European expansion, non-native plant species have been introduced for a countless number of reasons. Many settlers designedly introduced certain plant species because of their familiarity. Other plants were introduced for ornamental purposes. Although not all non-native plant species pose a threat to native populations, some species, unfortunately have greatly impacted and continue to affect traditional foodstuffs as well as culturally significant plant species.

Non-native species often times become invasive because their natural enemies are absent in new ecosystems. Invasive non-native species also owe their success in colonizing new areas to their ability to grow and reproduce rather speedily and tolerate diverse environs. Unfortunately, once invasive species colonize a new area, they voraciously outcompete and displace native species, altering biodiversity and ecosystem processes. Disease introduction by non-native species has historically reduced and even eliminated some native plant populations and continues to pose a threat. Introduced non-native invasive species in the form of predators, such as bacteria, viruses, fungi, insects, and mammalian herbivores, have also had and continue to have devastating effects on traditional foodstuffs and culturally significant plant species.

**D. Pests and Diseases**

Plants are plagued by a myriad of insects, bacteria, and viruses, all of which can greatly impact plant growth, yield, and survivability singularly as well as cumulatively. Habitat degradation, fragmentation, and urban expansion has significantly decreased the range of most of the Tribes’ traditional foodstuffs resulting in genetic isolation, which has created less hardy populations that are more susceptible to pests and diseases. Introduced non-native species have especially expedited the spread of pests and diseases against which native populations have no immunity. Port-Orford cedar wood rot disease, or *Phytophthora* *lateralis*, is a prime example of an introduced pathogen that has had devastating effects on populations of
culturally significant species. This particular disease, which also affects pacific yew, but to a lesser extent, is believed to have originated from eastern Asia and was initially discovered in ornamental cedar near Seattle, WA in 1923. *Phytophthora lateral* is of particular concern because this pathogen causes extensive mortality. Plants can also harbor fungi and pathogens, such as listeria, E. coli, and salmonella, to which they are resistance; however, animals and humans that ingest plants contaminated with pathogenic species of fungi and bacteria with which they are vulnerable, can suffer tremendously. Effects from ingesting contaminated foodstuffs can range from gastric distress to organ failure and mortality.

**E. Air Pollution**

Many of the air pollutants that effect cervids and other culturally significant terrestrial species, including O₃, PAN, SO₂, NOₓ, and hydrocarbons, can also have devastating effects on traditional foodstuffs and culturally significant plant species. Tropospheric ozone has been deemed the most damaging air pollutant and symptoms of exposure can range from foliar damage to necrosis. Prolonged exposure can lead to tissue collapse, chlorosis, or insufficient chlorophyll production, and increased susceptibility to disease and damage from insects.

Peroxyacetyl nitrate, which is also formed by nitrous oxides, VOC's, and sunlight, is also very deleterious to plants. PAN collapses leaf tissue on the lower leaf surface resulting in premature senescence of affected leaves, further restraining plant growth.

Sulfur dioxide and its by-product sulfuric acid can be very harmful to plants. Symptoms vary depending on concentration levels. High concentrations of SO₂ can lead to foliar necrosis, whereas low prolonged concentrations increase senescence and inhibit growth and yield of plants. H₂SO₄ is particularly damaging because it dissolves calcium, which is an essential mineral for plants, from leaf tissue as well from the soil. Once calcium is dissolved, it is washed away along with other essential vitamins and minerals within the soil, causing nutrient deficiency. Sulfuric acid can also release toxic substances from the soil, such as aluminum, which can be very harmful to both flora and fauna.

The greatest ecological effect of nitrogen oxides is nitrogen deposition, which can chemically alter the soil and disrupt nutrient cycling. Because nitrogen is normally a limiting nutrient in most ecosystems along with phosphorous, excessive nitrogen can over stimulate the growth of some plants and hinder the growth of others, resulting in a change in plant species composition and abundance. Nitrogen deposition can also lead to saturation and can overwhelm the carrying capacity, causing soil and ecosystem degradation.

Hydrocarbons or volatile organic compounds (VOC’s) are a large family of compounds that are composed primarily of hydrogen and carbon and are naturally found in petroleum products, natural gas, and pesticides. Aldehyde and ethylene are but a few of the many
hydrocarbons produced by the combustion or chemical breakdown of these substances and can cause chlorosis, foliage necrosis, and plant growth inhibition.

Air pollution also consists of particulate matter, which varies in its constituents resulting in differing plant responses. Particulates can block the stomata, lower the conductance of CO₂, and impede photosynthesis. Foliar damage and necrosis can also result from PM exposure. Plants exposed to particulate matter containing high concentrations of heavy metals and trace elements can cause phytotoxicity and further injure other animals and humans through direct ingestion and/or the processes of bioaccumulation and biomagnification.

F. Climate Change

Because plants are heavily dependent on specific environmental factors, such as temperature, water, and light, increasing temperatures and changes in precipitation induced by climate change will greatly affect plant communities’ distribution and diversity. Subsequently, wildlife will also be affected since they depend on flora not only for subsistence but also for habitat. As the global temperature continues to rise, plant species that are unable to adapt to the changing climatic conditions will gradually shift toward northern latitudes and/or higher elevations in search of ideal environmental conditions. Plant species that are incapable of migrating, so to speak, especially those that disperse slowly or have long life cycles, will be particularly susceptible to extirpation. Rare, threatened, and endangered traditional foodstuffs and culturally significant plant species are even more vulnerable to extinction because of their small population sizes and limited habitat requirements.
2.1 Environmental Issues Affecting Human Health:

Just like our two and four-legged brothers and sisters, we too are susceptible to environmental issues, most notably water pollution, air pollution, food contamination, and climate change.

A. Water Pollution

The water in which most of the Tribes’ members consume originates from local municipal water sources or wells. Municipal water comes from local lakes, rivers, reservoirs, or wells and is treated by local water treatment facilities before it is piped to residential homes and industries for consumption. “Disinfection of municipal drinking water is one of the major public health advances of the 20th century” (IBWA 1). It has essentially eliminated most water-borne diseases, including adenovirus, cholera, giardia, and typhoid. However, the chemicals used to disinfect municipal water sources, such as fluoride, copper, aluminum and chlorine, can form byproducts that pose health risks. As a result, municipal water suppliers are challenged with balancing microbial pathogens with disinfectant byproducts. As with every system, failures do occur and municipal water can become contaminated with toxic metals, such as lead and arsenic, toxic chemicals, pharmaceuticals, and even excreta. Wells and groundwater aquifers that are utilized for drinking water can also be contaminated with toxic metals, toxic chemicals, and excreta along with other pesticides, nutrients, and organic pollutants.

B. Air Pollution

Air pollutants, such as \( \text{O}_3 \), CO, \( \text{SO}_x \), \( \text{NO}_x \), Pb, particulates, and air toxics, affect our people in much the same way that it impacts game and other terrestrial species residing in our ancestral territory. Tribal members living in urban areas are sometimes even more exposed to certain air pollutants, especially tropospheric ozone, carbon monoxide, lead, particulates, and volatile organic compounds, compared to our ungulate brothers and sisters, which has made Tribal members more susceptible and prone to respiratory illnesses.

Tropospheric ozone is a major constituent of urban smog and can reach unhealthy levels, particularly on hot, sunny days in urban settings. Breathing ozone inflames and damages a person’s airways, inducing shortness of breath, throat irritation, coughing, and wheezing. Continuous exposure to ground level ozone increases the susceptibility to pulmonary inflammation and can exasperate lung diseases such as bronchitis, emphysema, and asthma.

Carbon monoxide is a by-product of the combustion of fossil fuels and is heavily concentrated in urban environments, much like ozone. Inhaling CO induces headaches, dizziness, vomiting, and nausea. Prolonged exposure can cause disorientation, weakness, blurry vision, and hearing loss. Exposure to high levels of CO can prompt unconsciousness and even death.
Lead particulates are universally higher in industrial areas and urban areas that are in close proximity to areas that emit lead particulates, such as ore and metal processing plants and waste incineration facilities. Acute exposure to air-borne lead particles can cause abdominal pain, nausea, vomiting, muscle weakness, and encephalitis. Chronic exposure can suppress the immune system and impair the neurological, hematological, and reproductive systems. Seizures, coma, and death can result from the inhalation of high levels of lead particulates.

The concentration of particulate matter in urban environments is also prevalingly higher compared to any other environment as a result of dust from ongoing construction, agricultural and industrial activities, and roads as well as smoke from industrial and residential areas. Because particulates can absorb other toxins, particulate matter is not only mechanically damaging, it can be inherently toxic because of its chemistry. Inhalation of particulate matter can damage lung tissue, which can decrease lung function and aggravate asthma and other respiratory illnesses. Nonfatal heart attacks, irregular heartbeat, and premature death have been associated with chronic exposure to particulate matter.

Volatile organic compounds are emitted by a multitude of products (e.g., paints, solvents, cleaners). Levels of VOC’s are not only higher in urban areas, but they are even higher indoors. Initial exposure to certain volatile organic compounds can incite eye, nose, and throat irritation, loss of coordination, and nausea. Prolonged exposure can damage the liver, kidney, and central nervous system of some individuals.

C. Food Contamination

A few of our Tribal members continue to gather, harvest, hunt, and consume much of the same traditional foodstuffs that our ancestors gathered, harvested, hunted, and consumed. Unfortunately, most native foods today suffer from an array of environmental toxins and contaminants that were not present in the not so distant past. We too are impacted by the same toxins and contaminants that affect our traditional first foods, and, in some instances, through the processes of bioaccumulation and biomagnification, at much higher levels than in our surrounding environment. Toxins that have been consciously or unintentionally introduced to mother earth have contaminated much of our wild foodstuffs, which has inhibited our people from harvesting and consuming many of our traditional foods. The ramifications of this are monumental. No longer being able to gather, harvest, and hunt our native foods has disconnected us from the land and from one another, resulting in the loss of a way of perceiving life, mother earth, and traditional foodstuffs as well as a loss of cultural traditions.

D. Climate Change

Increasing CO₂ levels, changing weather patterns, and rising sea levels as a result of global warming and climate change will greatly influence tribal health as well as modify the geographic
distribution and prevalence of many of our traditional native foods. Increasing global temperatures could elevate ozone levels, which, in turn, will increase the prevalence of respiratory illnesses, as well as expedite algal, bacterial, and fungal growth, which will degrade water quality and increase the occurrence of water-borne illnesses. Forecasted changes in precipitation patterns along with rising sea levels could also affect water quality and quantity. Increasing carbon dioxide levels along with warming temperatures could give rise to an increase in allergens due to a longer and more intense pollen season. Heat extremes and incidences of severe weather will also escalate with increasing global temperatures and could increase heat-related illnesses and deaths as well as injuries and fatalities because of extreme weather events.
3.0 Tracts and Their Associated Environmental Issues:

This section addresses current and potential environmental issues that affect tracts and parcels owned by the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians. The following table lists current tracts owned by the Tribes. However, not all of the properties owned by the Tribes are included in this assessment. The tracts included in this assessment are those Tribal properties where significant natural resources, known or suspected environmental impacts, or current natural resource management or extraction/harvesting activities are occurring.

Table 2. Summary of Tribal Tracts

<table>
<thead>
<tr>
<th>Tract Name</th>
<th>County</th>
<th>Acres</th>
<th>Adjacent Water Body</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOTT</td>
<td>LANE</td>
<td>0.29</td>
<td>N/A</td>
</tr>
<tr>
<td>BRAINARD (DEADWOOD)</td>
<td>LANE</td>
<td>35.59</td>
<td>MISERY CREEK</td>
</tr>
<tr>
<td>MUNSEL LAKE</td>
<td>LANE</td>
<td>120.00</td>
<td>MUNSEL LAKE; MUNSEL CREEK</td>
</tr>
<tr>
<td>OCEAN DUNES</td>
<td>LANE</td>
<td>135.70</td>
<td>NORTHFORK SIUSLAWS RIVER</td>
</tr>
<tr>
<td>PETERMAN</td>
<td>LANE</td>
<td>0.06</td>
<td>N/A</td>
</tr>
<tr>
<td>RETAINING PONDS</td>
<td>LANE</td>
<td>7.05</td>
<td>N/A</td>
</tr>
<tr>
<td>HATCH (QAAICH)</td>
<td>LANE</td>
<td>104.62</td>
<td>MAINSTEM &amp; NORTHFORK SIUSLAWS RIVER</td>
</tr>
<tr>
<td>SEVERY</td>
<td>LANE</td>
<td>0.56</td>
<td>NORTHFORK SIUSLAWS RIVER</td>
</tr>
<tr>
<td>DUMAN</td>
<td>LANE</td>
<td>2.02</td>
<td>MAINSTEM SIUSLAWS RIVER</td>
</tr>
<tr>
<td>MUNSEL LAKE VILLAGE</td>
<td>LANE</td>
<td>2.02</td>
<td>N/A</td>
</tr>
<tr>
<td>WINDWARD</td>
<td>LANE</td>
<td>2.03</td>
<td>N/A</td>
</tr>
<tr>
<td>CAMP EASTER SEALS</td>
<td>COOS</td>
<td>14.00</td>
<td>TENMILE LAKE</td>
</tr>
<tr>
<td>KENTUCK SLOUGH</td>
<td>COOS</td>
<td>0.02</td>
<td>KENTUCK SLOUGH</td>
</tr>
<tr>
<td>FISHER (KCBY)</td>
<td>COOS</td>
<td>2.24</td>
<td>COALBANK SLOUGH</td>
</tr>
<tr>
<td>ALISHANEE</td>
<td>COOS</td>
<td>1.43</td>
<td>N/A</td>
</tr>
<tr>
<td>CONNETICUT AVE (QAXAS)</td>
<td>COOS</td>
<td>3.50</td>
<td>N/A</td>
</tr>
<tr>
<td>CALIFORNIA AVE (QAXAS)</td>
<td>COOS</td>
<td>0.50</td>
<td>N/A</td>
</tr>
<tr>
<td>FLANAGAN PIONEER CEMETERY (WUALACH) COMPLEX</td>
<td>COOS</td>
<td>3.32</td>
<td>COOS BAY; CHICKSES CREEK</td>
</tr>
<tr>
<td>EICHLER</td>
<td>COOS</td>
<td>0.33</td>
<td>N/A</td>
</tr>
<tr>
<td>WALLACE/OCEAN</td>
<td>COOS</td>
<td>0.24</td>
<td>N/A</td>
</tr>
<tr>
<td>PULLIS</td>
<td>COOS</td>
<td>0.09</td>
<td>N/A</td>
</tr>
<tr>
<td>1415 OCEAN BLVD</td>
<td>COOS</td>
<td>0.32</td>
<td>N/A</td>
</tr>
<tr>
<td>1351 OCEAN BLVD</td>
<td>COOS</td>
<td>0.66</td>
<td>N/A</td>
</tr>
<tr>
<td>OCEAN BLVD</td>
<td>COOS</td>
<td>0.66</td>
<td>N/A</td>
</tr>
<tr>
<td>EMPIRE (TRIBAL HALL)</td>
<td>COOS</td>
<td>6.07</td>
<td>N/A</td>
</tr>
<tr>
<td>Property Name</td>
<td>County</td>
<td>Acres</td>
<td>Notes</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>--------</td>
<td>-------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>1308 NEESE</td>
<td>COOS</td>
<td>0.21</td>
<td>N/A</td>
</tr>
<tr>
<td>MELVILLE</td>
<td>COOS</td>
<td>1.83</td>
<td>N/A</td>
</tr>
<tr>
<td>1325 NEESE</td>
<td>COOS</td>
<td>0.23</td>
<td>N/A</td>
</tr>
<tr>
<td>ELKS</td>
<td>COOS</td>
<td>3.31</td>
<td>N/A</td>
</tr>
<tr>
<td>FULTON</td>
<td>COOS</td>
<td>9.77</td>
<td>N/A</td>
</tr>
<tr>
<td>909 FLANAGAN</td>
<td>COOS</td>
<td>0.16</td>
<td>N/A</td>
</tr>
<tr>
<td>MILUK VILLAGE (FOSSIL POINT)</td>
<td>COOS</td>
<td>3.75</td>
<td>COOS BAY</td>
</tr>
<tr>
<td>TABERNIG</td>
<td>COOS</td>
<td>0.12</td>
<td>N/A</td>
</tr>
<tr>
<td>EASON</td>
<td>COOS</td>
<td>18.80</td>
<td>N/A</td>
</tr>
<tr>
<td>COOS HEAD</td>
<td>COOS</td>
<td>43.38</td>
<td>COOS BAY; PACIFIC OCEAN</td>
</tr>
<tr>
<td>GREGORY POINT/CHIEF’S ISLAND</td>
<td>COOS</td>
<td>24.00</td>
<td>BIG CREEK; PACIFIC OCEAN</td>
</tr>
<tr>
<td>SIXES RIVER</td>
<td>CURRY</td>
<td>1.25</td>
<td>SIXES RIVER</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>548.11</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Brainard (Deadwood) Tract:**

![Map of Brainard (Deadwood) Tract]

This data is for display purposes only. No liability is assumed as to the data delineated herein.
**Tract Description, History, and Background**

The Brainard Tract is a 35.59 acre parcel located in Lane county about 5 miles northwest of Deadwood, OR. This property was previously owned by the Brainard family and donated to the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians for the purposes of expanding our landbase and providing an area that is rich in several culturally significant species. The site comprises a mostly mixed stand of red alder and big leaf maple trees with Misery Creek flowing through the southern portion of the property. The surrounding woodlands also contain a mixed stand of second growth Douglas fir, cedar, and a few western hemlock trees. A vacant two story single family residential home and a shed that is in need of renovation and repair lies in the middle, southern quadrant of the property. In the past, the site was used as a residential property and has hosted several Tribal culture camps.

**Current Land Use(s)**

This property is vacant at this time.

**Adjacent Land Use(s)**

Immediately to the northwest of the property lies another homestead that is used for residential purposes. The remaining adjacent land is owned by the federal government and is presumably used for mostly logging purposes.

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenian Blackberry <em>(Rubus armeniacus)</em></td>
<td>Occasional</td>
<td>Widely scattered throughout the parcel; especially bordering the meadow</td>
</tr>
<tr>
<td>Bull Thistle <em>(Cirsium vulgare)</em></td>
<td>Infrequent</td>
<td>Found in several locations in meadow</td>
</tr>
<tr>
<td>Curly Dock <em>(Rumex crispus)</em></td>
<td>Infrequent</td>
<td>Found scattered throughout meadow</td>
</tr>
<tr>
<td>English Laurel <em>(Prunus laurocerasus)</em></td>
<td>Rare</td>
<td>Planted as an ornamental near house</td>
</tr>
<tr>
<td>English Holly <em>(Ilex aquifolium)</em></td>
<td>Rare</td>
<td>Difficult to find and limited to a few localities</td>
</tr>
<tr>
<td>Fox Glove <em>(Digitalis spp)</em></td>
<td>Occasional</td>
<td>Widely scattered throughout the parcel; mostly in meadow and disturbed areas</td>
</tr>
<tr>
<td>Herb Robert <em>(Geranium robertianum)</em></td>
<td>Infrequent</td>
<td>Found mostly in disturbed areas of the</td>
</tr>
</tbody>
</table>
Knotweed is present on adjacent properties and poses a potential problem if it ever were to establish itself on this tract.
<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big Leaf Maple</td>
<td>Abundant</td>
<td>Found mostly on outlying sections of the property</td>
</tr>
<tr>
<td>Evergreen Huckleberry</td>
<td>Infrequent</td>
<td>Found in several locations</td>
</tr>
<tr>
<td>Bracken Fern</td>
<td>Occasional</td>
<td>Found throughout the property</td>
</tr>
<tr>
<td>Cascara Buckthorn</td>
<td>Rare</td>
<td>Found bordering meadow</td>
</tr>
<tr>
<td>Cedar</td>
<td>Occasional</td>
<td>Found mostly on outlying sections of the property</td>
</tr>
<tr>
<td>Bitter Cherry</td>
<td>Rare</td>
<td>Found mostly on outlying sections of the property</td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>Frequent</td>
<td>Found mostly on outlying sections of property</td>
</tr>
<tr>
<td>Hazel</td>
<td>Rare</td>
<td>Found bordering meadow</td>
</tr>
<tr>
<td>Lady Fern</td>
<td>Infrequent</td>
<td>Found mostly in riparian area</td>
</tr>
<tr>
<td>Licorice Fern</td>
<td>Infrequent</td>
<td>Found growing on large trees</td>
</tr>
<tr>
<td>Minor’s Lettuce</td>
<td>Rare</td>
<td>Found alongside graveled entrance</td>
</tr>
<tr>
<td>Native Blackberry</td>
<td>Infrequent</td>
<td>Found scattered along the meadow’s edge and in the riparian area of Misery Creek</td>
</tr>
<tr>
<td>Plum?</td>
<td>Rare</td>
<td>Found near riparian area</td>
</tr>
<tr>
<td>Red Alder</td>
<td>Abundant</td>
<td>Found throughout the property; especially in the riparian area of Misery Creek</td>
</tr>
<tr>
<td>Red Elderberry</td>
<td>Occasional</td>
<td>Found throughout the property</td>
</tr>
<tr>
<td>Red Huckleberry</td>
<td>Infrequent</td>
<td>Found in several locations</td>
</tr>
<tr>
<td>Salal</td>
<td>Frequent</td>
<td>Found in several locations</td>
</tr>
<tr>
<td>Salmon Berry</td>
<td>Abundant</td>
<td>Found bordering meadow and in riparian area of Misery Creek</td>
</tr>
<tr>
<td>Sedge</td>
<td>Infrequent</td>
<td>Found scattered throughout the meadow</td>
</tr>
<tr>
<td>Skunk Cabbage</td>
<td>Occasional</td>
<td>Mostly found in the emerging freshwater wetlands on the property</td>
</tr>
</tbody>
</table>
**Surface Water and Wetlands**

Surface water that is not absorbed by the soil appears to runoff into Misery Creek.

This property, according to the National Wetland Inventory (NWI), contains freshwater emergent wetlands of approximately 4.25 acres, freshwater forested/shrub wetlands of approximately 2 acres, and riverine wetlands of approximately 4.5 acres.

**Environmental Issues Associated With This Tract**

Minor amounts of trash and old equipment were discovered on the property and are a potential source of non-point source pollution that is contributing to water quality degradation of Misery Creek. Because this property lies in a valley, future logging endeavors could greatly expedite soil erosion and cause sedimentation, which could also degrade water quality as well as affect the hydrology of Misery Creek.

**Recommendations**

1. Invasive and culturally significant species surveys should be done at least once a year but preferably twice a year to capture species that are more visible when in different stages of growth for plant species or during periods of higher activity for culturally significant animal species, such as elk and deer.
2. Develop and implement an invasive species management plan.
3. Collect semi-annual surface water samples for the analysis of nutrients and bacteria as well as macroinvertebrate samples.
4. Collect semi-annual measurements of physical water quality parameters.
5. Launch a hobo water temp pro to monitor the temperature of the creek continuously.
Munsel Lake Tract:

Tract Description, History, and Background

The Munsel Lake Tract is a 120 acre parcel located in Lane County along the eastern shore of Munsel Lake. Munsel Lake is located three miles north and 1 mile east of the city of Florence, Oregon. The Munsel Lake sub watershed in which this tract is located is dominated by sand dunes and other dune lakes, along with forest and residential development. Forests in this watershed consist of second growth conifer and hardwood species. Munsel Lake itself covers 10% of this watershed and is the last lake in a chain of four Oregon coast lakes that lie on the North Florence dunal aquifer. The headwaters for the Munsel Lake watershed originate in Collard Lake, flow south through Clear and Ackerly Lakes, and into Munsel Lake via Clear Creek.

While 48% of this tract is submerged, 40% of the terrestrial portion of the CTCLUSI’s Munsel Lake Tract is characterized by hillsides that range in percent slope of between 50 to 75%. The soil surface in undeveloped areas of Munsel Lake similar to this tract is covered with thin mats of grass, sedges, needles, and twigs. The Lane County Regional Land Information Database lists soils
on this tract as being those composed of the Preacher-Bohannon-Slickrock complex. Tribal lake water resources of this tract are supplied with water from both the aquifer and surface runoff. Both the PSU Center for Lakes and Reservoirs (CLR) and the City of Florence Stormwater Management Plan state that Munsel Lake covers nearly 100 acres and with depths of up to 29.3 meters, is deeper than most coastal lakes.

**Current Land Use(s)**

The Confederated Tribes’ Munsel Lake Tract is by deed restriction and Tribal Council Resolution to be maintained in a “pristine” condition and will remain so.

**Adjacent Land Use(s)**

A mixture of forest, sand dunes, and residential areas with concentrated roads lies to the west of Munsel lake. A few residential properties align the shore to the north along with forest covered foothills, followed by Ackerley Lake. The southern and eastern portions of this parcel are composed of more forest covered foothills. A cattle ranch also lies about 0.5 mile east of the lake.

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Brasenia schreberi</em></td>
<td>Occasional</td>
<td>Mostly found in the shallow north and south portions of the lake</td>
</tr>
<tr>
<td><em>Chara spp</em></td>
<td></td>
<td>Submergent</td>
</tr>
<tr>
<td>Fragrant Water Lily (<em>Nymphaea odorata</em>)</td>
<td>Occasional</td>
<td>Mostly found in the shallow north and south portions of the lake</td>
</tr>
<tr>
<td>Gorse (<em>Ulex spp</em>)</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td><em>Isoetes spp</em></td>
<td>?</td>
<td>Submergent</td>
</tr>
<tr>
<td>Largeleaf Pondweed (<em>Potomogeton amplifolius</em>)</td>
<td>Occasional</td>
<td>Mostly found in the shallow north and south portions of the lake</td>
</tr>
<tr>
<td><em>Najas spp</em></td>
<td>?</td>
<td>Submergent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Bracken Fern</em></td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td><em>Cascara Buckthorn</em></td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td><em>Cedar</em></td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td><em>Labrador Tea</em></td>
<td>Abundant</td>
<td>?</td>
</tr>
<tr>
<td><em>Licorice Fern</em></td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td><em>Rhododendron</em></td>
<td>?</td>
<td>?</td>
</tr>
</tbody>
</table>
This site was unable to be environmentally assessed at the time this assessment was performed; therefore, this site will need to be assessed for invasive/nuisance species as well as culturally significant species.

**Surface Water and Wetlands**

Surface water that is not absorbed by the soil appears to runoff into Munsel Lake.

This tract is characterized by an NWI lake wetland type.

**Environmental Issues Associated With This Tract**

There are no known environmental issues that are affecting this tract at this time. However, an increase in nutrients loads could lead to eutrophication and water quality degradation if the lake were to become more populated in the future.

**Recommendations**

1. Invasive and culturally significant species surveys should be done at least once a year but preferably twice a year to capture species that are more visible when in different stages of growth for plant species or during periods of higher activity for culturally significant animal species.

2. Develop and implement an invasive species management plan.

3. Collect semi-annual surface water samples for the analysis of nutrients and bacteria.

4. Collect semi-annual measurements of physical water quality parameters.

5. Launch a hobo water temp pro to monitor the temperature of the lake continuously.
Three Rivers Casino Florence Complex: Ocean Dunes, Peterman, Retaining Ponds, Hatch, Severy, and Duman Tracts:
Tract Description, History, and Background

The Three River’s Casino Florence Complex is located in Lane County approximately 2 miles east of the City of Florence, OR and is comprised of 6 tracts: the Ocean Dunes tract, Peterman tract, Retaining Ponds, Hatch tract, Severy tract, and Duman tract.

The Ocean Dunes tract is home to the Ocean Dunes Golf Course and is comprised of 135.70 acres. Hatch tract is located due south. Peterman lies southwest of the Ocean Dunes Tract.

The Peterman tract is comprised of 0.06 acres and serves as a byway for the Ocean Dunes tract, Hatch tract, and the adjacent property. There is a small unmarked cemetery east of the tract.

The Retaining Ponds tract is composed of 4 separate parcels that total 7.05 acres. A small freshwater pond shared by the Hatch tract, which lies east of this tract, lies in the southern most parcels of the Retaining ponds tract and comprises about half of the tract. The rest of the tract is composed of sand dunes.
The Hatch tract is a 104.62 acre parcel that is located directly south of the Ocean Dunes Tract at the confluence of the Siuslaw North Fork River and the mainstem of the Siuslaw River. This tract contains Three Rivers Casino and Hotel, a wastewater treatment plant, drinking water distribution, source water protection; wastewater irrigation; and multi-family residential housing, According to the Lane County Regional Land information Database, 57% of this tract is dune land, with slopes ranging between 0 to 30%. Hatch tract is characterized by “hummocky topography” as a result of sand dune deposition and deflation of the sand. A dune ridge extends from the northeastern property corner south toward Highway 126 and then westward in the southern portion of the property. A narrower, lower, and dissected dune ridge extends northward from the southwest property corner approximately two thirds of the way to the eastern terminus of Coastal Highlands Drive. A small freshwater pond lies in the eastern portion of this tract and is comprised of mostly Labrador tea, willow, and spatter dock. In addition to being a traditional village site, the Hatch Tract was the site of a bridge crossing and a lumber mill during the middle 20th century.

The Severy tract is a small parcel comprised of a ½ acre. It is located between North Fork Road and the northeast corner of Hatch Tract and is composed of a mixed stand of conifers and low-lying shrubs.

The Duman tract is a small parcel comprised of 2.02 acres located between Highway 126 and the southwest portion of Hatch tract. This parcel was previously owned by a small construction company and is a former LUST site and, as such, has certain institutional controls associated with the implementation of any ground disturbing activities at the site.

The Hatch, Duman, and Severy tracts in years past drew water directly from an EPA designated sole source aquifer. Unfortunately, groundwater contaminant remediation efforts failed, forcing these properties to make the switch to municipal water. Water and wastewater distribution at the Hatch Tract, however, is still managed and maintained by the Tribes. The majority of the Tribes’ water and wastewater distribution activities at the site are those associated with the Tribes’ Three Rivers Casino (TRC) and Hotel located on the Hatch Tract.

Adjacent Land Use(s)

Directly west of Three River’s Casino Florence Complex lies a mixture of sand dunes and residential homes along with concentrated roads. East of the complex lies a power distribution station as well as a few residential homes and forested woodlands followed by North Fork Siuslaw River. South of the tract, beyond Highway 126, flows the mainstem of the Siuslaw River. North of the complex lies more forested woodlands.

Current Land Use(s)
The Three River’s Casino Florence Complex is currently home to Ocean Dunes Golf Course, Three Rivers Casino and Hotel, a wastewater treatment plant, drinking water distribution, source water protection; wastewater irrigation; and multi-family residential housing.

**Ocean Dunes:**

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenian Blackberry (<em>Rubus armeniacus</em>)</td>
<td>Occasional</td>
<td>Found bordering greens near wetlands</td>
</tr>
<tr>
<td>English Holly (<em>Ilex aquifolium</em>)</td>
<td>Infrequent</td>
<td>Found intermittingly</td>
</tr>
<tr>
<td>Fox Glove (<em>Digitalis spp</em>)</td>
<td>Infrequent</td>
<td>Found intermittingly near greens</td>
</tr>
<tr>
<td>European Beach grass (<em>Ammophila arenaria</em>)</td>
<td>Occasional</td>
<td>Found in outlying dunes</td>
</tr>
<tr>
<td>Gorse (<em>Ulex spp</em>)</td>
<td>Frequent</td>
<td>Found throughout the property with the exception of the greens</td>
</tr>
<tr>
<td>English Ivy (<em>Hedera helix</em>)</td>
<td>Infrequent</td>
<td>Found on nearby trees</td>
</tr>
<tr>
<td>Jubata Grass (<em>Cortaderia jubata</em>)</td>
<td>Rare</td>
<td>Found a few individuals</td>
</tr>
<tr>
<td>Scotch Broom (<em>Cytisus scoparius</em>)</td>
<td>Frequent</td>
<td>Found throughout the property with the exception of the greens</td>
</tr>
</tbody>
</table>

**Peterman:**

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scotch Broom (<em>Cytisus scoparius</em>)</td>
<td>Rare</td>
<td>Found a few individuals</td>
</tr>
</tbody>
</table>

**Retaining Ponds:**

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Beach Grass (<em>Ammophila arenaria</em>)</td>
<td>Abundant</td>
<td>Found scattered throughout, especially on outlying sections</td>
</tr>
<tr>
<td>Scotch Broom (<em>Cytisus scoparius</em>)</td>
<td>Abundant</td>
<td>Found scattered throughout</td>
</tr>
</tbody>
</table>

**Hatch:**

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant Name</td>
<td>Relative Abundance</td>
<td>Location</td>
</tr>
<tr>
<td>----------------------------</td>
<td>--------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Armenian Blackberry</td>
<td>Occasional</td>
<td>Found bordering the southernmost freshwater pond</td>
</tr>
<tr>
<td>English Ivy</td>
<td>Frequent</td>
<td>Mostly found on trees and bordering the southernmost freshwater pond</td>
</tr>
<tr>
<td>European Beach Grass</td>
<td>Abundant</td>
<td>Found throughout the dune ridges (Intentionally planted for sand stabilization)</td>
</tr>
<tr>
<td>Fox Glove</td>
<td>Infrequent</td>
<td>Found near the southernmost freshwater pond</td>
</tr>
<tr>
<td>Gorse</td>
<td>Rare</td>
<td>Found in one location</td>
</tr>
<tr>
<td>Scotch Broom</td>
<td>Occasional</td>
<td>Found scattered around property edge</td>
</tr>
<tr>
<td>Shining Geranium</td>
<td>Occasional</td>
<td>Found bordering the southernmost freshwater pond</td>
</tr>
</tbody>
</table>

**Severy:**

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotoneaster</td>
<td>Infrequent</td>
<td>Found on the eastern side of the tract bordering N. Fork Rd.</td>
</tr>
<tr>
<td>Scotch Broom</td>
<td>Occasional</td>
<td>Found intermittently</td>
</tr>
</tbody>
</table>

**Duman:**

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenian Blackberry</td>
<td>Dominant</td>
<td>Found bordering property</td>
</tr>
<tr>
<td>European Beach Grass</td>
<td>Dominant</td>
<td>Found bordering property</td>
</tr>
<tr>
<td>Scotch Broom</td>
<td>Dominant</td>
<td>Found bordering property</td>
</tr>
</tbody>
</table>

**Ocean Dunes:**
<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracken Fern</td>
<td>Occasional</td>
<td>Found mostly in or near the freshwater forested/shrub wetland areas of the property</td>
</tr>
<tr>
<td>Cascara Buckthorn</td>
<td>Infrequent</td>
<td>Found sparsely throughout the property</td>
</tr>
<tr>
<td>Cedar</td>
<td>Occasional</td>
<td>Found bordering greens</td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>Abundant</td>
<td>Found throughout the property with the exception of the greens</td>
</tr>
<tr>
<td>Evergreen Huckleberry</td>
<td>Frequent</td>
<td>Found throughout the property with the exception of the greens</td>
</tr>
<tr>
<td>Labrador Tea</td>
<td>Rare</td>
<td>Only found one individual</td>
</tr>
<tr>
<td>Manzanita</td>
<td>Rare</td>
<td>Only found in a few localities</td>
</tr>
<tr>
<td>Rhododendron</td>
<td>Infrequent</td>
<td>Found sparsely throughout the property</td>
</tr>
<tr>
<td>Salal</td>
<td>Abundant</td>
<td>Found throughout the property with the exception of the greens</td>
</tr>
<tr>
<td>Salmonberry</td>
<td>Frequent</td>
<td>Found mostly in or near the freshwater forested/shrub wetland areas of the property</td>
</tr>
<tr>
<td>Sedge</td>
<td>Infrequent</td>
<td>Found near and on greens</td>
</tr>
<tr>
<td>Shore Pine</td>
<td>Abundant</td>
<td>Found throughout the property with the exception of the greens</td>
</tr>
<tr>
<td>Sitka Spruce</td>
<td>Infrequent</td>
<td>Found bordering greens</td>
</tr>
<tr>
<td>Skunk Cabbage</td>
<td>Infrequent</td>
<td>Found mostly in or near the freshwater forested/shrub wetland areas of the property</td>
</tr>
<tr>
<td>Sphagnum Moss</td>
<td>Infrequent</td>
<td>Found near greens in moist, shady areas</td>
</tr>
<tr>
<td>Sword Fern</td>
<td>Occasional</td>
<td>Found mostly in or near the freshwater forested/shrub wetland areas of the property</td>
</tr>
<tr>
<td>Red Alder</td>
<td>Occasional</td>
<td>Found mostly in or near the freshwater forested/shrub wetland areas of the property</td>
</tr>
<tr>
<td>Western Hemlock</td>
<td>Infrequent</td>
<td>Found bordering greens with</td>
</tr>
<tr>
<td>Wild Strawberry</td>
<td>Rare</td>
<td>Found a few individuals on southern end of the property near dunes</td>
</tr>
<tr>
<td>Willow</td>
<td>Frequent</td>
<td>Found mostly in or near the freshwater</td>
</tr>
</tbody>
</table>
### Culturally Significant Species

<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cascara Buckthorn</td>
<td>Occasional</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>Occasional</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Evergreen Huckleberry</td>
<td>Frequent</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Rhododendron</td>
<td>Occasional</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Salal</td>
<td>Abundant</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Salmonberry</td>
<td>Occasional</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Shore Pine</td>
<td>Abundant</td>
<td>Found on east side of tract</td>
</tr>
<tr>
<td>Western Hemlock</td>
<td>Infrequent</td>
<td>Found throughout the tract</td>
</tr>
</tbody>
</table>

### Retaining Ponds

<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lupine</td>
<td>Infrequent</td>
<td>Found in outlying areas</td>
</tr>
<tr>
<td>Sedge</td>
<td>Infrequent</td>
<td>Found in freshwater pond</td>
</tr>
<tr>
<td>Shore Pine</td>
<td>Dominant</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Willow</td>
<td>Infrequent</td>
<td>Found in or bordering freshwater pond</td>
</tr>
</tbody>
</table>

### Hatch Tract

<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cascara Buckthorn</td>
<td>Occasional</td>
<td>Found near the southernmost freshwater pond</td>
</tr>
<tr>
<td>Cedar</td>
<td>Infrequent</td>
<td>Found sparsely throughout the property</td>
</tr>
<tr>
<td>Cattails</td>
<td>Rare</td>
<td>Found in the southernmost freshwater pond</td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>Occasional</td>
<td>Scattered throughout the property</td>
</tr>
<tr>
<td>Plant Name</td>
<td>Frequency</td>
<td>Location</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Evergreen Huckleberry</td>
<td>Occasional</td>
<td>Found scattered throughout property</td>
</tr>
<tr>
<td>Labrador Tea</td>
<td>Infrequent</td>
<td>Found in southernmost freshwater pond</td>
</tr>
<tr>
<td>Manzanita</td>
<td>Infrequent Rare</td>
<td>Only found a few individuals</td>
</tr>
<tr>
<td>Native Blackberry</td>
<td></td>
<td>Found bordering southernmost freshwater pond</td>
</tr>
<tr>
<td>Red Alder</td>
<td>Infrequent</td>
<td>Found near southernmost freshwater pond</td>
</tr>
<tr>
<td>Red Elderberry</td>
<td>Infrequent</td>
<td>Found near southernmost freshwater pond</td>
</tr>
<tr>
<td>Rhododendron</td>
<td>Infrequent</td>
<td>Found scattered throughout</td>
</tr>
<tr>
<td>Salal</td>
<td>Occasional</td>
<td>Found scattered throughout</td>
</tr>
<tr>
<td>Salmonberry</td>
<td>Infrequent</td>
<td>Found bordering southernmost freshwater pond</td>
</tr>
<tr>
<td>Sedge</td>
<td>Rare</td>
<td>Found near southernmost freshwater pond</td>
</tr>
<tr>
<td>Seashore Lupine</td>
<td>Infrequent</td>
<td>Found in dunes of tract</td>
</tr>
<tr>
<td>Shore Pine</td>
<td>Abundant</td>
<td>Found scattered throughout tract</td>
</tr>
<tr>
<td>Sitka Spruce</td>
<td>Occasional</td>
<td>Found scattered throughout tract</td>
</tr>
<tr>
<td>Spatter Dock</td>
<td>Infrequent</td>
<td>Found in southernmost freshwater pond</td>
</tr>
<tr>
<td>Sword Fern</td>
<td>Infrequent</td>
<td>Found near southernmost freshwater pond</td>
</tr>
<tr>
<td>Thimbleberry</td>
<td>Infrequent</td>
<td>Found bordering southernmost freshwater pond</td>
</tr>
<tr>
<td>Wild Cucumber</td>
<td>Rare</td>
<td>Found bordering southernmost freshwater pond</td>
</tr>
<tr>
<td>Wild Strawberry</td>
<td>Infrequent</td>
<td>Found in dunes</td>
</tr>
<tr>
<td>Culturally Significant Species</td>
<td>Relative Abundance</td>
<td>Location</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Willow</td>
<td>Infrequent</td>
<td>Found in or bordering southernmost freshwater pond</td>
</tr>
</tbody>
</table>

**Severy:**

<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracken Fern</td>
<td>Occasional</td>
<td>Found intermittently; especially in outlying areas</td>
</tr>
<tr>
<td>Cascara Buckthorn</td>
<td>Rare</td>
<td>Only found a few individuals</td>
</tr>
<tr>
<td>Cedar</td>
<td>Rare</td>
<td>Only found a few individuals</td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>Frequent</td>
<td>Found scattered throughout</td>
</tr>
<tr>
<td>Evergreen Huckleberry</td>
<td>Frequent</td>
<td>Found scattered throughout</td>
</tr>
<tr>
<td>Licorice Fern</td>
<td>Rare</td>
<td>Found growing on conifers</td>
</tr>
<tr>
<td>Manzanita</td>
<td>Infrequent</td>
<td>Found scattered throughout</td>
</tr>
<tr>
<td>Rhododendron</td>
<td>Occasional</td>
<td>Found scattered throughout</td>
</tr>
<tr>
<td>Salal</td>
<td>Frequent</td>
<td>Found scattered throughout</td>
</tr>
<tr>
<td>Shore Pine</td>
<td>Occasional</td>
<td>Found scattered throughout</td>
</tr>
<tr>
<td>Western Hemlock</td>
<td>Abundant</td>
<td>Found scattered throughout</td>
</tr>
</tbody>
</table>

**Duman:**

<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Blackberry</td>
<td>Infrequent</td>
<td>Found bordering parking lot</td>
</tr>
<tr>
<td>Shore Pine</td>
<td>Frequent</td>
<td>Found bordering parking lot</td>
</tr>
</tbody>
</table>

**Surface Water and Wetlands**

The Three River’s Casino Florence Complex is located over a sole source aquifer. According to the February 22, 2004 GeoScience, Inc. report titled *Dunal Aquifer Hydrogeology* prepared for the Tribes, “The site hydrology can be characterized as a dunal aquifer system which is recharged by precipitation and which discharges to surface water.” A portion of the City of Florence’s municipal wells is located on the Three River’s Casino Florence Complex and are reported to each yield 325 to 450 gallons per minute, or 468,000 to 648,000 gpd (gallons per day). Surface water that is not absorbed by the soil appears to runoff into the North fork and the main stem of the Siuslaw River.

Summer irrigation of the Ocean Dunes Golf Course utilizes 400,000 gpd. The Tribes’ Three Rivers Casino currently uses approximately 10,000 gallons per day. Future development of the site is
not expected to use more than 70,000 to 200,000 gpd, based on other Tribal developments of this nature in western Oregon.

This complex is immediately adjacent to the Siuslaw River Estuary, which contains estuarine and marine deepwater as well as estuarine and marine wetlands. This estuary is classified by the Oregon Department of Land Conservation and Development (DLCD) as a Shallow Draft Development estuary and as such, is managed for navigation and other public needs consistent with overall estuary management rules.

Ocean Dunes tract contains 2 wetland types: Freshwater forested/shrub wetland of approximately 4 acres and a freshwater pond of approximately 1 acre.

The Retaining Ponds tract and the Hatch tract share a freshwater pond comprised of 2.59 acres. Hatch tract also contains another freshwater pond comprising 1.46 acres.

**Environmental Issues Associated With This Tract**

**Potential Impacts to Source Water**

According to the Florence Source Water Assessment Report, the North Florence Dunal Aquifer is considered to be highly sensitive and susceptible to contamination from viral contaminant sources located within the two-year time-of-travel zone for the city’s drinking water protection area (e.g. sewer lines and residential housing). A portion of the City of Florence’s Drinking Water Protection Area lies under the Tribe’s Ocean Dunes Golf Course. Due to the close proximity of the complex to the City of Florence’s Drinking Water Protection Area, the potential contaminant sources for the complex’s source water are similar to those identified by the City of Florence Source Water Assessment Report. The delineated drinking water protection area for the wells located within the Florence drinking water protection area is primarily dominated by residential and municipal land use. However, four potential contaminant sources were identified in the two-year time-of-travel zone of the Florence drinking water protection area: a golf course; high density housing; a drinking water treatment plant; and city sewer lines. These findings were confirmed by our own GIS analysis and pose the same threat to Tribal source water resources at the Three River’s casino Florence Complex.

Onsite wastewater irrigation has been implemented for the disposal of treated wastewater generated by the Tribes’ Hatch Tract wastewater management facility. Additional potential on site contaminant sources identified by the Tribes’ Department of Natural Resources Staff (DNR) during site surveys and reviews of Hatch Tract construction plans are: pesticide/fertilizer/petroleum/ storage (above ground storage tanks – ASTs), handling, mixing and cleaning areas; stormwater outfalls; potential impacts to groundwater associated with cone of depression well interference or well head cone of depression induced recharge from the North Fork River or wetland located below the Hatch Tract’s drain field; and percolation of reclaimed
water irrigation used for dune stabilization on the site. The wastewater irrigation site is located immediately downgradient of two source water wells that supply drinking water to site facilities. However, the elevation of the irrigation field is higher than those of the source water wells.

**Duman Soil and Groundwater Contamination**

Interviews with the previous owner of this tract, historical records review, and a site inspection during a Phase 1 Environmental Site Assessment did not reveal evidence of any underground fuel storage tanks on the parcel. During excavation for subsurface utilities on Duman, however, the contractor discovered a 1000-gallon underground storage tank and an associated release of petroleum hydrocarbons. The tank contained approximately 460 gallons of a gasoline and water
mixture. The tank and contaminated soil in the immediate vicinity of the tank were removed from the site.

The following assumptions and recommendations apply to any ground disturbing activities implemented at the site.

1. An area of hydrocarbon contaminated soil of unknown extent and magnitude remains in place near the former tank excavation. The impacted soil is located at a minimum depth of approximately 5 feet below the surface.
2. A plume of impacted groundwater of unknown extent and magnitude underlies the site. The migration of the plume appears to be toward the south, southeast under Highway 126.
3. Chlorinated solvents were identified in groundwater downgradient from the former UST, which are above EPA’s Preliminary Remediation Goals for drinking water.
4. Gasoline range hydrocarbons were identified in groundwater, downgradient from the former UST, which exceeds ODEQ Occupational and Excavation Worker pathways.
5. Due to concentrations of gasoline range hydrocarbons and chlorinated solvents, identified on the southwest portion of the site, that exceed ODEQ Risk Based Concentrations (RBCs) and EPA’s Preliminary Remediation Goals, special precautions should be taken if any excavations in the vicinity of the former UST should occur that would encounter groundwater. A Health and Safety Plan should be administered and proper personal protective equipment should be used.

Other Environmental Issues

Minor amounts of trash from illegal dumping or camping were discovered on the Severy tract, which could be a source of non-point source pollution that is contributing to water quality degradation of the North Fork of the Siuslaw River as well as ground water located on the Three River’s Casino Florence Complex.

Recommendations

1. Certify and implement the development of a Drinking Water Protection Plan.
2. Develop a contingency plan to address the potential loss of the drinking water supply.
3. Delineate the area that serves as the source of the public water supply (Drinking Water Protection Area-DWPA).
4. Inventory the potential risks or sources of contamination within the DWPA.
5. Invasive and culturally significant species surveys should be done at least once a year but preferably twice a year to capture species that are more visible when in different stages of growth for plant species or during periods of higher activity for culturally significant animal species.
6. Develop and implement a wetland management plan.
7. Develop and implement an invasive species management plan.
8. Certify and implement a Site Characterization and Risk Assessment of the impacted Duman Property to define the extent of any potentially remaining soil and groundwater contamination and estimate the potential liability for purposes of either submitting a fee-to-trust application or developing a remediation plan.
9. Implement the Tribes’ Integrated Waste Management Plan to ensure environmental protection through proper disposal of municipal waste, construction and demolition wastes, and other special wastes, such as household hazardous waste, industrial waste, asbestos, appliances, electronic equipment, tires, motor oil, etc.

Munsel Lake Village:
**Tract Description, History, and Background**

Munsel Lake Village is a 2.02 acre parcel located in Florence, Oregon that previously housed a two story commercial/specialty retail building in the northeast portion of the complex. The building, however, was removed before the Tribes’ purchased the property.

**Current Land Use(s)**

This site was initially acquired with the intentions of building an affordable housing development for Tribal families. This tract is currently an undeveloped vacant lot, which is partially covered with sand and sparse vegetation. There are no structures on the site.

**Adjacent Land Use(s)**

Directly south of the Munsel Lake Village Tract lies a large shopping center, which includes a department store (Fred Meyer) and a gas pump. Northeast of the lot lies Munsel Lake Plaza, which houses Planned Parenthood, Emergence, and Florence Regional Art Alliance Art Center. One of the vacant offices previously housed the Tribes Florence Outreach Center. Directly north of the property lies a boat and auto upholstery shop followed by a few other commercial shops. To the east lies a forested sandy area comprised of a mixed stand of mostly shore pine, Douglas fir, and possibly western hemlock. Directly to the west is an encroaching sand dune, which is currently partially covering the lot.

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Beach Grass (<em>Ammophila arenaria</em>)</td>
<td>Dominant</td>
<td>Found scattered throughout the property</td>
</tr>
<tr>
<td>Goat Weed?</td>
<td>Infrequent</td>
<td>Found scattered throughout the property</td>
</tr>
<tr>
<td>Scotch Broom (<em>Cytisus scoparius</em>)</td>
<td>Dominant</td>
<td>Found scattered throughout the property</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horsetail</td>
<td>Infrequent</td>
<td>Found mostly on the outskirts of the property</td>
</tr>
</tbody>
</table>

**Surface Water and Wetlands**

There is no surface water on this track. However, surface water resulting from storm events generally percolates into the ground or flows into storm drains near the tract.
There are no NWI or LWI wetlands located on this property. (Research Bidwell Lake; was found near property on National Wetlands Inventory. However, no further information could be divulged.)

**Environmental Issues Associated With This Tract**

There are no environmental issues associated with this tract at this time. One UST and two AST registered sites were discovered adjacent to the tract. Nine leaking underground storage tank sites were also determined to be within one mile. These LUST facilities are of sufficient distance from this tract, so releases from these tanks shouldn’t affect the site. The encroaching sand dune to the west, however, could pose a potential problem if the property were to be developed in the future.

**Recommendations**

This is a highly disturbed, urban property. As such, there are no environmental management recommendations for this property.
Windward Inn Tract:

Tract Description, History, and Background

The Windward Inn Tract is a 2.03 acre parcel located in a mixed residential and commercial area of Florence, Oregon. Prior to the Tribes’ ownership of this property, a residence was located on the northern portion of the site in the 1930s and 1940’s. The residence was razed prior to 1952 and that portion of the site has not been redeveloped. The single building on the site previously served as a restaurant from approximately 1930 – 1995. Currently, this building houses the Tribes’ Florence Outreach Office.

In addition to the above previous land uses, a gas pump operated on this site in the 1930s and 1940s. A garage was located just south of the restaurant building. From aerial photos, it appears that the gas pump was located under what is now the northern portion of the Tribes’ Florence Outreach Office. The garage and the residence on the northern portion of the property were razed by 1952.
**Current Land Use(s)**

The Tribes’ Florence Outreach office is housed within the single building located on this site.

**Adjacent Land Use(s)**

Property use in the site’s vicinity is characterized as commercial and residential use. Highway 101 and 37th Street abut the eastern and southern property lines. A RV park is located opposite Highway 101 and an Auto and RV commercial glass shop is located opposite 37th Street. Single family residential homes lie due west of the property and an Economy Inn is located north of the site.

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fox Glove (<em>Digitalis spp</em>)</td>
<td>Rare</td>
<td>Found near camas</td>
</tr>
<tr>
<td>Scotch Broom (<em>Cytisus scoparius</em>)</td>
<td>Occasional</td>
<td>Found on outlying portions of property</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camas</td>
<td>Rare</td>
<td>Planted alongside building</td>
</tr>
<tr>
<td>Rhododendron</td>
<td>Frequent</td>
<td>Found behind building</td>
</tr>
<tr>
<td>Shore Pine</td>
<td>Abundant</td>
<td>Found behind building</td>
</tr>
</tbody>
</table>

**Surface Water and Wetlands**

There is no surface water on this tract. However, surface water resulting from storm events generally percolates into the ground where pavement is absent or flows into storm drains on or near the tract.

There are no wetlands located on this property.

**Environmental Issues Associated With This Tract**

A gas pump was located under what is now the northern end of the Tribes’ Florence Outreach Office under the rear delivery door. Since there is no documentation that the storage tank was removed, the Tribes’ assumed that the use of the site as a pump station in the 1930s and 1940s may have impacted native soil and groundwater. The Tribes contracted a limited subsurface investigation to investigate soil and groundwater in proximity to the former pump station. All soil and groundwater samples were analyzed using Method NWTPH-HCID. This analysis qualitatively identifies the type of hydrocarbon (Gasoline, Mineral Spirits, Kerosene, Diesel, Lube Oil) present in the soil. Results of the soil and groundwater analysis did not identify petroleum-based hydrocarbons in the soil. All of the groundwater and soil samples were identified as Non-Detect.
A Non-Detect result indicates no detectable concentrations of hydrocarbons were present in the soil samples at the laboratory method detection limit. The consultants responsible for conducting the limited subsurface investigation issued an opinion that no further action was required at the site.

**Recommendations**

1. Develop and implement a site specific invasive species management plan.
2. Implement the Tribes’ Integrated Waste Management Plan to ensure environmental protection through proper disposal of municipal waste, construction and demolition wastes, and other special wastes, such as household hazardous waste, industrial waste, asbestos, appliances, electronic equipment, tires, motor oil, etc.

**Camp Easter Seals Tract:**
Tract Description, History, and Background

The Camp Easter Seals tract is a 14 acre parcel that borders North Ten Mile Creek in Coos County, OR. A mixed stand of western hemlock, Douglas fir, and cedar are found throughout the site and also form a barrier along the south side of the lake. The topography of the site is hilly with most of the improvements built on a 4 acre bench area on the west side. The areas that are mainly north and east of the camp are mostly steep hillside with a few hiking trails that are in need of maintenance.

This property was formerly owned by Easter Seals Disability Services and served as a day and residential camp. The site includes the original residence, which was built in 1948, along with a lodge, 5 cabins, staff and guest facilities, 2 boat dock buildings, storage and workshop buildings, a pavilion, and a small barn. Most of the buildings were constructed in the 1970’s and the boat houses were built in 2006. Some buildings are still in the process of being remodeled and are incomplete.

This tract is solely reliant on well water for consumptive purposes. Presently, there are 3 wells with capacities of 10, 7, and 3 gallons per minute. The well that flows 10 gallons per minute has been determined to be the best well and has been dug in the ridge line near the gated entrance to the property. The well that flows 7 gallons per minute flow is considered to be average and is positioned downgradient of the first well. The third well is poor and is no longer in service. It is unknown, but questionable, whether the three wells represent three different aquifers. There is also a permit for lake water, which is limited to 4.0 gallons per minute for domestic use for one family, including irrigation not to exceed ½ acre lawn and non-commercial garden and domestic campground use.

Current Land Use(s)

This site is in need of renovation and repair and is vacant at this time. As soon as repairs and renovations are performed on the property, it will serve as a Tribal culture camp and family camp.

Adjacent Land Use(s)

Most of the adjacent properties are residential properties. Native Iris, Elder Berry, and Oregon Grape were found along roadside prior to property entrance.

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Egregia densa</em></td>
<td></td>
<td>Submergent</td>
</tr>
<tr>
<td>English Holly (<em>Ilex aquifolium</em>)</td>
<td>Occasional</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>English Ivy (<em>Hedera helix</em>)</td>
<td>Occasional</td>
<td>Found growing on large trees</td>
</tr>
<tr>
<td>Culturally Significant Species</td>
<td>Relative Abundance</td>
<td>Location</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>--------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Bitter Cherry</td>
<td>Rare</td>
<td>Only found a few individuals</td>
</tr>
<tr>
<td>Black Huckleberry</td>
<td>Frequent</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Bracken Fern</td>
<td>Frequent</td>
<td>Found in southern portion of the tract</td>
</tr>
<tr>
<td>Cascara Buckthorn</td>
<td>Occasional</td>
<td>Scattered throughout tract</td>
</tr>
<tr>
<td>Cattails</td>
<td>Occasional</td>
<td>Found bordering tract in lake</td>
</tr>
<tr>
<td>Cedar</td>
<td>Frequent</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>Frequent</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Evergreen Huckleberry</td>
<td>Frequent</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Grand Fir</td>
<td>Occasional</td>
<td>Scattered throughout tract</td>
</tr>
<tr>
<td>Horsetail</td>
<td>Frequent</td>
<td>Found in moist areas of the tract</td>
</tr>
<tr>
<td>Juncus Rush</td>
<td>Rare</td>
<td>Found bordering tract in lake</td>
</tr>
<tr>
<td>Lady Fern</td>
<td>Infrequent</td>
<td>Found in moist areas of the tract</td>
</tr>
<tr>
<td>Madrone</td>
<td>Rare</td>
<td>Found bordering lake near boat houses</td>
</tr>
<tr>
<td>Native Blackberry</td>
<td>Occasional</td>
<td>Scattered throughout the tract</td>
</tr>
<tr>
<td>Prickly Currant</td>
<td>Rare</td>
<td>Found one specimen alongside driveway entrance on the right near powerline junction</td>
</tr>
<tr>
<td>Red Alder</td>
<td>Frequent</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Red Huckleberry</td>
<td>Frequent</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Rhododendron</td>
<td>Frequent</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Salal</td>
<td>Dominant</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Salmon Berry</td>
<td>Frequent</td>
<td>Found throughout the tract; especially bordering lake</td>
</tr>
<tr>
<td>Sedge</td>
<td>Frequent</td>
<td>Found bordering lake</td>
</tr>
<tr>
<td>Plant Name</td>
<td>Frequency</td>
<td>Location</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Silver Weed</td>
<td>Infrequent</td>
<td>Found bordering lake</td>
</tr>
<tr>
<td>Skunk Cabbage</td>
<td>Infrequent</td>
<td>Found in moist areas of the tract</td>
</tr>
<tr>
<td>Sword Fern</td>
<td>Frequent</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Thimbleberry</td>
<td>Occasional</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Tule</td>
<td>Rare</td>
<td>Found in lake near swimming area</td>
</tr>
<tr>
<td>Unidentifiable Lily</td>
<td>Rare</td>
<td>Found in lake near boat houses</td>
</tr>
<tr>
<td>Western Hemlock</td>
<td>Dominant</td>
<td>Found throughout the tract</td>
</tr>
<tr>
<td>Woodland Sorrel</td>
<td>Occasional</td>
<td>Found in moist areas of the tract</td>
</tr>
</tbody>
</table>

Note: Chinese Chesnutt found along trails bordering lake.

**Surface Water and Wetlands**

Any surface water that is not absorbed by the soil runs off into North Ten Mile Lake.

0.09 acres of freshwater emergent NWI wetland and 846.64 acres of NWI lake wetland are located immediately adjacent to this tract.

**Environmental Issues Associated With This Tract**

Heavy nutrient loading from farms and septic tanks from residential homes is contributing to eutrophication and toxic algal blooms, which could pose a potential health hazard to aquatic life and Tribal members that swim in Tenmile Lake during the height of algal blooms. Also, oil and fuel that leaks from boats that traverse the lake could pose a potential health hazard to aquatic and terrestrial life.

**Recommendations**

1. Invasive and culturally significant species surveys should be done at least once a year but preferably twice a year to capture species that are more visible when in different stages of growth for plant species or during periods of higher activity for culturally significant animal species, such as elk and deer.
2. Develop and implement a site specific invasive species management plan.
3. Collect monthly water samples for the analysis of bacteria.
5. Collect semi-annual measurements of physical water quality parameters.
6. Launch 2 hobo water temp pros to monitor the temperature of the lake continuously.

Kentuck Slough:

Tract Description, History, and Background

The Kentuck Slough Tract is a 0.02 acre parcel in Coos County north and east of North Bend, OR on Kentuck Slough, which is a tributary that flows into the Upper Coos Bay Subsystem. Upstream of the tract are Mettman Creek and Kentuck Creek. Historically, salmon used to run up the Kentuck Slough and are believed to have spawned in Kentuck Creek.

Current Landuse(s)
There is no current land use on this parcel.

**Adjacent Landuse(s)**

81% of land use in this watershed is private industrial mostly associated with logging. In addition, two rock quarries are located upstream of this tract on Kentuck Creek.

<table>
<thead>
<tr>
<th><strong>Invasive/Nuisance Species</strong></th>
<th><strong>Relative Abundance</strong></th>
<th><strong>Location</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenian Blackberry (<em>Rubus armeniacus</em>)</td>
<td>Occasional</td>
<td>Bordering slough</td>
</tr>
<tr>
<td>Common Laburnum (<em>Laburnum anagyroides</em>)</td>
<td>Rare</td>
<td>Only found two individuals bordering Kentuck Way on opposite side of street</td>
</tr>
<tr>
<td>English Ivy (<em>Hedera helix</em>)</td>
<td>Abundant</td>
<td>Bordering Kentuck Way on opposite side of street</td>
</tr>
<tr>
<td>Introduced snails (<em>Assiminea parasitological</em>)</td>
<td>?</td>
<td>Bordering slough</td>
</tr>
<tr>
<td>New Zealand Mud Snail (<em>Potamopyrgus antipodarum</em>)</td>
<td>?</td>
<td>Bordering slough</td>
</tr>
<tr>
<td>Reed Canary Grass (<em>Phalaris arundinacea</em>)</td>
<td>Abundant</td>
<td>Bordering slough</td>
</tr>
<tr>
<td>Thistle</td>
<td>Infrequent</td>
<td>Bordering slough and across Kentuck Way</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Culturally Significant Species</strong></th>
<th><strong>Relative Abundance</strong></th>
<th><strong>Location</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Douglas Fir</td>
<td>Infrequent</td>
<td>Bordering Kentuck Way on opposite side of street</td>
</tr>
<tr>
<td>Evergreen Huckleberry</td>
<td>Occasional</td>
<td>Bordering Kentuck Way on opposite side of street</td>
</tr>
<tr>
<td>Horsetail</td>
<td>Infrequent</td>
<td>Bordering Slough</td>
</tr>
<tr>
<td>Red Alder</td>
<td>Rare</td>
<td>Only one individual found bordering Kentuck Way on opposite side of street</td>
</tr>
<tr>
<td>Ocean Spray</td>
<td>Rare</td>
<td>Only one individual found bordering Kentuck Way on opposite side of street</td>
</tr>
<tr>
<td>Rhododendron</td>
<td>Infrequent</td>
<td>Bordering Kentuck Way on opposite side of street</td>
</tr>
</tbody>
</table>
Surface Water and Wetlands

The Kentuck Slough tract is located within the lower tidal mainstem reach of Kentuck Slough, which is a lowland tributary that is part of the large estuarine channel process group of Coos Bay. Freshwater emergent and riverine NWI wetland types are located on and immediately adjacent to this tract.

Environmental Issues Associated With This Tract

An Oregon Department of Fish and Wildlife (ODFW) report on Kentuck Slough from 1950 cites “two rock quarries and one sawmill on Kentuck Slough [as] dumping muddy water into the Creek. Residents report[ed] that the creek runs muddy all year round and that this keeps the salmon out of the creek” (Rulifson, 6). These operations were/are located upstream of the Tribes’ Kentuck Slough tract. Anecdotal information cited in the report also states that “[t]here (was) considerable difference of opinion on the part of local residents as to the size of salmon runs in former years... [However, they] attribute[d] the lack of salmon to the two gravel quarries...and)...reported that salmon runs seemed to disappear after installations of the tidal gates” (Rulifson, 1).

A 1986 ODFW memorandum documents the continued impact to sediment loading associated with the rock quarry located upstream from CTCLUSI’s Kentuck Slough tract. “During February of 1986 a sluice – out (landslide) occurred in the Kentuck Creek Drainage on property owned by Main Rock Products, Inc. A large amount of overburden material from quarry operations was involved in the landslide. Material moved downslope across the county road and entered Kentuck Creek about 5 miles upstream from where Kentuck Creek enters Coos Bay through a tidegate” (Bender,1). Though the landslide occurred in February, turbidity samples taken in April of that year were still in violation of water quality standards. According to the memo, at least 5 miles of Kentuck Creek was in nearly continuous violation of water quality standards after the landslide. “Because of constant high levels of turbidity and extreme sedimentation in Kentuck Creek, salmonid production in the lower 5 miles of stream [was] severely curtailed or eliminated in 1986” (Bender, 3).

Because tidegates cause freshwater stagnation and restrict tidal inflow, a tidegate located downstream of this tract could increase water temperatures and microbiological loading, which
could potentially impact water quality and to a lesser extent channel morphology at this site. This same tidegate can also affect channel morphology immediately as well as adjacent to the tidal gate, and water quality upstream at the Tribe’s Kentuck Slough Tract. Upstream scour at the tide gate can result in the formation of an inlet pool, and water draining from the gate through the downstream side can form a deep scour pool at the outlet side of the gate.

Consumptive water use within this system may be impacted by the diversion of creek or stream water via adjacent landowners for irrigation, domestic use, or the filling of ponds. Increases in consumptive use could also greatly affect water levels, which could further exasperate the return of salmonid populations to this particular water system. No water is actively consumed by the Tribe from this tract.

Recommendations

1. Invasive and culturally significant species surveys should be done at least once a year but preferably twice a year to capture species that are more visible when in different stages of growth for plant species or during periods of higher activity for culturally significant animal species.
2. Develop and implement a site specific invasive species management plan.
3. Develop and implement a wetlands restoration/enhancement plan.
4. Develop and implement a coho salmon restoration plan.
5. Collect semi-annual surface water samples for the analysis of nutrients and bacteria.
6. Collect semi-annual measurements of physical water quality parameters.
Fisher (KCBY) Tract:

Tract Description, History, and Background

The Fisher (KCBY) Tract is a 2.24 acre parcel in Coos County located southeast of Coalbank Slough and approximately 3000ft south of the southern end of Coos Bay. This tract is comprised of two relatively level areas separated by a berm in a sediment filled valley adjacent to the bay. Soil at the site has been mapped as Udorthents. This soil is characteristic of flood plains, marshes, and tidal flats among major streams, bays, and estuaries. Udothents soil is also found in areas on the tract that have been filled and leveled for commercial and industrial uses. The building located on this site previously housed the local KCBY news station.

Current Landuse(s)

The original building located on this tract is used as a storage facility for the Tribe’s canoes and other various supplies.

Adjacent Landuse(s)
Adjacent land use consists of residential and industrial/commercial land uses. A portion of Coalbank Marsh is located immediately north of the tract. Further north lies the City of Coos Bay’s Public Disposal and Recycling Center. A small reach of Coalbank Slough is located west of the tract followed by marshland and land south of the tract also consists of marshland. A residential wooded hillside is located east of this tract.

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenian Blackberry (<em>Rubus armeniacus</em>)</td>
<td>Occasional</td>
<td>Bordering marsh on either side of building and parking area</td>
</tr>
<tr>
<td>Cotoneaster (<em>Cotoneaster spp</em>)</td>
<td>Frequent</td>
<td>Bordering marsh on either side of building and parking area</td>
</tr>
<tr>
<td><em>Berberis Darwinii</em></td>
<td>Rare</td>
<td>Only one individual found on southern end of parcel bordering marsh</td>
</tr>
<tr>
<td>English Holly (<em>Ilex aquifolium</em>)</td>
<td>Frequent</td>
<td>Bordering marsh on either side of building and parking area</td>
</tr>
<tr>
<td>English Ivy (<em>Hedera helix</em>)</td>
<td>Abundant</td>
<td>Bordering marsh and parking area</td>
</tr>
<tr>
<td>English Laurel (<em>Prunus laurocerasus</em>)</td>
<td>Infrequent</td>
<td>Found on southern end of property near road</td>
</tr>
<tr>
<td>French Broom (<em>Genista monspessulana</em>)</td>
<td>Infrequent</td>
<td>Found on northern end of property near road</td>
</tr>
<tr>
<td>Hawthorn (<em>Crataegus spp</em>)</td>
<td>Infrequent</td>
<td>Found on southern end of property near road</td>
</tr>
<tr>
<td>Scotch Broom (<em>Cytisus scoparius</em>)</td>
<td>Frequent</td>
<td>Bordering marsh on either side of building and parking area</td>
</tr>
</tbody>
</table>

Fennel was observed across Coal Bank Ln bordering Coal Bank Slough.

<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracken fern</td>
<td>Occasional</td>
<td>Bordering marsh on either side of building and parking area</td>
</tr>
<tr>
<td>Plant Name</td>
<td>Frequency</td>
<td>Location</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>Infrequent</td>
<td>Bordering marsh on either side of building and parking area</td>
</tr>
<tr>
<td>Evergreen Huckleberry</td>
<td>Rare</td>
<td>Only a few individuals found on north side of property bordering marsh</td>
</tr>
<tr>
<td>Horsetail</td>
<td>Occasional</td>
<td>Bordering marsh on either side of building and parking area</td>
</tr>
<tr>
<td>Juncus Sp.</td>
<td>Frequent</td>
<td>Found in marsh</td>
</tr>
<tr>
<td>Madrone</td>
<td>Rare</td>
<td>Only found a few individuals bordering marsh on either side of building and parking area</td>
</tr>
<tr>
<td>Red Alder</td>
<td>Rare</td>
<td>Only found a few individuals in southeastern end of property</td>
</tr>
<tr>
<td>Skunk Cabbage</td>
<td>Rare</td>
<td>Found a few individuals bordering parking lot on southeastern end of parking lot</td>
</tr>
<tr>
<td>Slough Sedge</td>
<td>Occasional</td>
<td>Found in marsh</td>
</tr>
<tr>
<td>Silverweed</td>
<td>Frequent</td>
<td>Found in marsh</td>
</tr>
<tr>
<td>Sword Fern</td>
<td>Infrequent</td>
<td>Bordering marsh on either side of building and parking area</td>
</tr>
<tr>
<td>Western Hemlock</td>
<td>Rare</td>
<td>Only found one individual on north side of property bordering marsh</td>
</tr>
<tr>
<td>Willow</td>
<td>Occasional</td>
<td>Found on southern end of property bordering marsh</td>
</tr>
</tbody>
</table>

Three species were found on the property that were unable to be identified.

*Surface Water and Wetlands*
Surface water on the northern portion of this tract flows into three storm drains that discharge into the southern portion of the tract and into Coalbank Slough. Surface water on the southern portion of the site also flows into Coalbank Slough via natural drainages.

This site is not only comprised of a lower elevation saltmarsh, but is also located within the 100 year floodplain of Coalbank Slough (Phase 1 Coalbank Lane Property ESA, 4). City services are available for this tract, however no surface or ground water is actively consumed by Tribes.

Over 50% of this tract consists of NWI and LWI mapped estuarine and marine wetland types, including 3.62 acres of estuarine and marine wetland type.

**Environmental Issues Associated With This Tract**

Five potential environmental conditions were identified during the Phase 1 ESA conducted for the Fee to Trust process of this tract. They were an abandoned concrete tank and vault, a petroleum release from an above ground storage tank, a petroleum release from fuel lines, and a creosote release from a power pole. These potential environmental conditions were assessed by observation and/or sampling. From these observations and samplings it was determined that there is no reasonable basis for suspecting the disposal or release of hazardous substances or petroleum products at any of these structures. A phase II ESA was conducted to verify and eliminate these potential environmental conditions. Based on the Phase II ESA, no further investigation of the potential environmental conditions is necessary at this site.

Because Coos Bay’s Public Disposal and Recycling Center lies adjacent to Coalbank slough, there is a high potential for non-point source pollutants from this center to leach into the slough and onto the KCBY tract, which could affect the growth and survivability of several culturally significant species that are growing in the marshlands of this tract.

This site lies within the 100 year floodplain and seasonal flooding of the property and building continues to be an ongoing issue.

**Recommendations**

1. Invasive and culturally significant species surveys should be done at least once a year but preferably twice a year to capture species that are more visible when in different stages of growth for plant species or during periods of higher activity for culturally significant animal species.

2. Develop and implement a site specific invasive species management plan.

3. Develop and implement a wetland restoration/enhancement and management plan.
**Tract Description, History, and Background**

The Allishanee Tract is a 1.43 acre parcel located northwest of the intersection of North 6th Street and Kingwood Avenue in Coos Bay, Oregon. It is located west of North 6th St. and between Kingwood and Myrtle Avenues. The site is two blocks west of North Bayshore Drive (US Highway 101), the primary north-south thoroughfare on the northeast side of Coos Bay, in the downtown/bayfront area.

There appears to have been some fill placed on the site; small pieces of concrete and asphalt were observed in the surficial soils covering the site. A low mound of soil can be seen in the southwest quadrant of the site. There are no sanitary sewer connections or electrical power connections to the site, although they are available at the property lines.

**Current Land Use(s)**
This site was initially acquired with the intentions of building a bowling center/family recreation center and Native American mall. This tract is currently an undeveloped vacant lot, which is partially covered with vegetation. There are no structures on the site.

**Adjacent Land Use(s)**

Adjacent land use consists of industrial-commercial land uses. South of this property lies Michelin Tire Factory and a vacant warehouse that is up for sale. To the east lies a vacant motel that is also up for sale, and Allstate Insurance Group, followed by the Coos Bay estuary. To the North lies Ferguson Plumbing and Walt’s Pourhouse and to the northeast is Bayshore Auto and RV Repair. West of this property lies Pape’ Machinery and Northwest Natural Gas Operations.

<table>
<thead>
<tr>
<th><strong>Invasive/Nuisance Species</strong></th>
<th><strong>Relative Abundance</strong></th>
<th><strong>Location</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenian Blackberry <em>(Rubus armeniacus)</em></td>
<td>Occasional</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Bull Thistle <em>(Cirsium vulgare)</em></td>
<td>Infrequent</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Cotoneaster (cotoneaster spp)</td>
<td>Rare</td>
<td>Only found one individual</td>
</tr>
<tr>
<td>Curly Dock <em>(Rumex crispus)</em></td>
<td>Infrequent</td>
<td>Throughout property</td>
</tr>
<tr>
<td>English Holly <em>(Ilex aquifolium)</em></td>
<td>Infrequent</td>
<td>Found on the west side of the property</td>
</tr>
<tr>
<td>French Broom <em>(Genista monspessulana)</em></td>
<td>Rare</td>
<td>Only a few individuals on north side of property</td>
</tr>
<tr>
<td>Gorse <em>(Ulex spp)</em></td>
<td>Infrequent</td>
<td>Found a few individuals on northwestern side of property</td>
</tr>
<tr>
<td>Hawkweed <em>(Hieracium spp)</em></td>
<td>Occasional</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Onionweed <em>(Allium triquetrum)</em></td>
<td>Infrequent</td>
<td>Southwest side of property</td>
</tr>
<tr>
<td>Rattlesnake Grass <em>(Briza maxima)</em></td>
<td>Abundant</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>Scotch Broom <em>(Cytisus scoparius)</em></td>
<td>Occasional</td>
<td>Mostly on western side of property</td>
</tr>
<tr>
<td>Yellow Parentucellia</td>
<td>Occasional</td>
<td>Mostly on western side of property</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Culturally Significant Species</strong></th>
<th><strong>Relative Abundance</strong></th>
<th><strong>Location</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattails</td>
<td>Infrequent</td>
<td>Westside of property</td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>Rare</td>
<td>Only two individuals on west side of property</td>
</tr>
<tr>
<td>Plant</td>
<td>Presence</td>
<td>Location Note</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td>Horsetail</td>
<td>Occasional</td>
<td>Throughout property; especially along outskirts</td>
</tr>
<tr>
<td>Native Blackberry</td>
<td>Occasional</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Red Alder</td>
<td>Rare</td>
<td>Found one individual on west side of property</td>
</tr>
<tr>
<td>Sedge</td>
<td>Occasional</td>
<td>Found throughout property</td>
</tr>
<tr>
<td>Western Hemlock</td>
<td>Rare</td>
<td>Found one individual on west side of property</td>
</tr>
<tr>
<td>Willow</td>
<td>Frequent</td>
<td>Found on west and south sides of property</td>
</tr>
</tbody>
</table>

**Surface Water and Wetlands**

The surface water on the site generally drains to the east towards North 6th Street. Local depressions or ruts on the site may restrict drainage or route runoff to the south. There are ten storm drains in the area. Infiltration at the site would not be large due to available drainage and the nature of the soils. Stormwater could run onto the site and stormwater may also run onto the site from the northwest. The depth to the uppermost groundwater aquifer at the site is anticipated to be less than 10 Feet below ground surface and may be assumed to be brackish.

There are no NWI or LWI wetlands located on this property.

**Environmental Issues Associated With This Tract**

A portion of the tract lies within the 100 year floodplain; therefore, flooding was identified as the only environmental issue at the time this assessment was performed.

**Recommendations**

This is a highly disturbed and urban property. As such, there are no environmental management recommendations for this property, except to:

1. Develop and implement a site specific invasive species management plan.
Flanagan Pioneer Cemetery (Wualach) Complex:

Tract Description, History, and Background

The 3.32 acre Wualach Complex is located immediately adjacent to lower Coos Bay estuary tidelands on vegetatively stabilized sand dunes overlying an uplifted marine terrace. The Wualach Complex is named for the Hanis Coos village which formerly occupied this site. During the 1850’s, Tribal members were forcefully removed from their homes at gunpoint and detained by the US Military in fear that they may join in the Rogue River Indian War. The property and cultural resources were seized and the cultural village was converted into a pioneer cemetery years later. Gravestone transcriptions indicate that pioneers began using part of the tract as a cemetery in 1862. The Tribes were able to reacquire the properties in the late 1980s and early 1990s in two separate parcels of land.

Current Landuse(s)
Today, Wualach Complex contains the remains of a tribal village and an early Euro American cemetery. The complex has been reserved for use as a cultural site and historical cemetery and so will not be developed.

**Adjacent Landuse(s)**

North and west of the complex lies the lower Coos bay estuary. Land use east and south of the complex consists of mostly rural-residential housing. Chickses Creek, which drains Empire Lakes, is located immediately to the east of Wualach.

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenian Blackberry <em>(Rubus armeniacus)</em></td>
<td>Infrequent</td>
<td>Found on southern end of northern parcel, and northern end of southern parcel</td>
</tr>
<tr>
<td>Cotoneaster <em>(Cotoneaster spp)</em></td>
<td>Occasional</td>
<td>Found on southern end of northern parcel, and northern end of southern parcel</td>
</tr>
<tr>
<td>English Ivy <em>(Hedera helix)</em></td>
<td>Occasional</td>
<td>Found on southern end of northern parcel, and northern end of southern parcel</td>
</tr>
<tr>
<td>Rattlesnake Grass <em>(Briza maxima)</em></td>
<td>Infrequent</td>
<td>Found on southern end of northern parcel</td>
</tr>
<tr>
<td>Scotch Broom <em>(Cytisus scoparius)</em></td>
<td>Occasional</td>
<td>Found on southern end of northern parcel</td>
</tr>
</tbody>
</table>

French broom and butterfly bush were observed on adjacent properties east of the northern parcel of the complex.

<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracken Fern</td>
<td>Infrequent</td>
<td>Found on both parcels</td>
</tr>
<tr>
<td>Cedar</td>
<td>Frequent</td>
<td>Throughout both parcels</td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>Occasional</td>
<td>Found on both parcels</td>
</tr>
<tr>
<td>Evergreen Huckleberry</td>
<td>Abundant</td>
<td>Found on both parcels</td>
</tr>
<tr>
<td>Madrone</td>
<td>Rare</td>
<td>Found on southern end of southern parcel</td>
</tr>
<tr>
<td>Native Blackberry</td>
<td>Infrequent</td>
<td>Found southern end of northern parcel</td>
</tr>
<tr>
<td>Ocean Spray</td>
<td>Infrequent</td>
<td>Found southern end of northern parcel</td>
</tr>
<tr>
<td>Red Alder</td>
<td>Infrequent</td>
<td>Found on southern parcel</td>
</tr>
<tr>
<td>Plant Type</td>
<td>Frequency</td>
<td>Location</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Rhododendron</td>
<td>Frequent</td>
<td>Found on both parcels</td>
</tr>
<tr>
<td>Salal</td>
<td>Abundant</td>
<td>Found on both parcels</td>
</tr>
<tr>
<td>Sphagnum Moss</td>
<td>Infrequent</td>
<td>Found on northern end of southern parcel near Shore Pine</td>
</tr>
<tr>
<td>Shore Pine</td>
<td>Rare</td>
<td>Only a few individuals found on both parcels</td>
</tr>
<tr>
<td>Thimbleberry</td>
<td>Rare</td>
<td>Found on southern parcel</td>
</tr>
<tr>
<td>Western Hemlock</td>
<td>Occasional</td>
<td>Found on northern parcel</td>
</tr>
</tbody>
</table>

Rattlesnake orchid, a rare orchid, was discovered on the southern end of the southern parcel of the complex near John Day Rd.

The property was inaccessible at the time this assessment was performed, therefore, the northern parcel of the Wualach Complex will need to be more thoroughly accessed for invasive/nuisance species and culturally significant species.

**Surface Water and Wetlands**

No surface water drains through Wualach. However, a small spring has been observed on the site. Chickses Creek, which drains Empire Lakes, is located east of the property, and flows into the bay.

No NWI or LWI wetlands are located on this tract.

**Environmental Issues Associated With This Tract**

Due to prehistoric changes in the drainage pattern of Coos Bay, sand is no longer replenishing this dune sheet, which is causing the coastline to recede. Potential environmental impacts to tidelands associated with this site are those associated with the overall estuarine habitat of Coos Bay. Also, this complex lies within the 100 year floodplain.

Minor amounts of trash were found on the southern portion of the complex and are contributing minor amounts of non-point source pollution into Chickses Creek.

Some graves and gravestones located on the northern parcel of the complex have been documented to have sloughed off/eroded into the bay. Because of the geography of this area, this will, unfortunately, remain an environmental issue.

**Recommendations**

1. Invasive and culturally significant species surveys should be done at least once a year but preferably twice a year to capture species that are more visible when in different stages of growth for plant species or during periods of higher activity for culturally significant animal species.
2. Develop and implement a site specific invasive species management plan.
Three River’s Casino Coos Bay Complex: Eichler, Wallace/Ocean, Pullis, Neese, and Ocean Blvd Parcels:

Tract Description, History, and Background

The Three River’s Casino Coos Bay Complex is located approximately 2 miles west of the downtown area of Coos Bay and Highway 101 and composed of 8 separate parcels: 1297 Ocean Blvd NW, 1351 Ocean Blvd NW, 233 Wallace/Ocean, Pullis, Eichler, 1415 Ocean Blvd NW, 1308 Neese St, and 1325 Neese St.

1297 Ocean Blvd NW is a 0.66 acre lot that formerly housed the Jim Vick Car Lot. The building that sat atop the property has recently been demolished and replaced with the Three River’s Casino Coos Bay parking lot.

1351 Ocean Blvd NW is comprised of 2 parcels totally 0.66 acres. The property used to be leased by Y-Marina for storage and sales of used boats. The approximate 1,600 ft² building that was
located on this property was believed to have been constructed in 1963 and formerly used to store boat accessories by the Y-Marina. The building has since been demolished and replaced with the Three River’s Casino Coos Bay parking lot.

233 Wallace/Ocean is comprised of 2 parcels that total 0.24 acres. The smaller parcel is comprised of a single family, 2 bedroom home. The larger parcel is currently undeveloped. An environmental assessment is only being performed on the undeveloped parcel.

Pullis is a residential lot comprised of a single family, 1 bedroom home that was constructed circa 1950 on a 0.09 acre lot. Because this parcel is a residential property, it will not be environmentally assessed.

Eichler is a 0.33 acre parcel that previously housed a small, single family home with an adjoining garage and storage shed that was believed to have been built circa 1950. In 1998, the buildings on this property were demolished by the Coos Bay Fire Department.

1415 Ocean Blvd is a 0.32 acre parcel that previously housed a single family home that was built in 1939. Upon acquisition, the home was demolished.

1308 Neese St is a 0.21 acre parcel that formerly housed a single family residential home. In 1998, the buildings on this property were demolished by the Coos Bay Fire Department.

1325 Neese St is a residential property comprised of a single family, 3 bedroom home on a 0.23 acre lot with an attached 2 car garage. The home was believed to have been constructed in 1978. Because this property is a residential property, it will not be environmentally assessed.

**Current Land Use(s)**

1297 Ocean Blvd NW and 1351 Ocean Blvd NW currently serve as the entrance and parking lot of the Three River’s Casino Coos Bay. Pullis is a residential lot comprised of a single family home. 233 Wallace/Ocean is a residential lot comprised of two parcels; one parcel is comprised of a single family home, and the other parcel is undeveloped. Eichler and 1415 Ocean Blvd NW are also undeveloped vacant lots. A modular building has been moved from the Tribes’ Tribal Hall property to 1308 Neese St. and currently houses the Tribes’ housing department. 1325 Neese St is a residential property comprised of a single family home.

**Adjacent Land Use(s)**

Honda World, Y Marina, and Verger Chrysler, Jeep, Dodge lie in the north. Directly west lies Coos Bay Marine, Cascade Telecommunications, and EZ mini storage. To the east lies an electrical charging station and to the south lies a property owned by the Coquille Tribe, followed by the Tribal Hall Complex.

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
<td>Relative Abundance</td>
<td>Location</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------</td>
<td>----------------------------------------------------</td>
</tr>
<tr>
<td>Armenian Blackberry (<em>Rubus armeniacus</em>)</td>
<td>Occasional</td>
<td>Eichler, 1411 Ocean Blvd NW, and 233 Wallace/Ocean</td>
</tr>
<tr>
<td>Bamboo</td>
<td>Infrequent</td>
<td>Found a patch of individuals on Eichler parcel</td>
</tr>
<tr>
<td>Bull Thistle (<em>Cirsium vulgare</em>)</td>
<td>Infrequent</td>
<td>Eichler, 1411 Ocean Blvd NW, and 233 Wallace/Ocean</td>
</tr>
<tr>
<td>Butterfly Bush (<em>Buddleja davidii</em>)</td>
<td>Rare</td>
<td>Found one individual on Eichler parcel</td>
</tr>
<tr>
<td>Cotoneaster (<em>Cotoneaster spp</em>)</td>
<td>Frequent</td>
<td>Eichler, 1411 Ocean Blvd NW, and 233 Wallace/Ocean</td>
</tr>
<tr>
<td>English Holly (<em>Ilex aquifolium</em>)</td>
<td>Infrequent</td>
<td>Eichler and 1411 Ocean Blvd NW</td>
</tr>
<tr>
<td>English Ivy (<em>Hedera helix</em>)</td>
<td>Frequent</td>
<td>Eichler, 1411 Ocean Blvd NW, and 233 Wallace/Ocean</td>
</tr>
<tr>
<td>English Laurel (<em>Prunus laurocerasus</em>)</td>
<td>Occasional</td>
<td>Eichler and 233 Wallace/Ocean</td>
</tr>
<tr>
<td>Ornamental Rose</td>
<td>Rare</td>
<td>Only a few individuals found on Eichler</td>
</tr>
<tr>
<td>Scotch Broom (<em>Cytisus scoparius</em>)</td>
<td>Infrequent</td>
<td>Eichler, 1411 Ocean Blvd NW, and 233 Wallace/Ocean</td>
</tr>
</tbody>
</table>

### Culturally Significant Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracken Fern</td>
<td>Infrequent</td>
<td>Eichler</td>
</tr>
<tr>
<td>Cedar</td>
<td>Infrequent</td>
<td>Eichler, 1411 Ocean Blvd NW, and 233 Wallace/Ocean</td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>Infrequent</td>
<td>Eichler, 1411 Ocean Blvd NW, and 233 Wallace/Ocean</td>
</tr>
<tr>
<td>Evergreen Huckleberry</td>
<td>Occasional</td>
<td>Eichler and 1411 Ocean Blvd NW,</td>
</tr>
<tr>
<td>Horsetail</td>
<td>Occasional</td>
<td>Eichler, 1411 Ocean Blvd NW, and 233 Wallace/Ocean; especially in disturbed areas of parcels</td>
</tr>
<tr>
<td>Kinnikinnick</td>
<td>Infrequent</td>
<td>Eichler and 1411 Ocean Blvd NW,</td>
</tr>
<tr>
<td>Native Blackberry</td>
<td>Infrequent</td>
<td>Eichler, 1411 Ocean Blvd NW, and 233 Wallace/Ocean</td>
</tr>
<tr>
<td>Plant</td>
<td>Frequency</td>
<td>Location</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------</td>
<td>------------------------------------------------------</td>
</tr>
<tr>
<td>Red Alder</td>
<td>Rare</td>
<td>Only a few individuals on 233 Wallace/Ocean</td>
</tr>
<tr>
<td>Rhododendron</td>
<td>Rare</td>
<td>One individual found on 1415 Ocean Blvd NW</td>
</tr>
<tr>
<td>Salmonberry</td>
<td>Infrequent</td>
<td>Eichler, 1411 Ocean Blvd NW, 233 Wallace/Ocean</td>
</tr>
<tr>
<td>Sword Fern</td>
<td>Infrequent</td>
<td>1415 Ocean Blvd NW</td>
</tr>
<tr>
<td>Thimbleberry</td>
<td>Rare</td>
<td>Only a few individuals found on Eichler</td>
</tr>
<tr>
<td>Western Hemlock</td>
<td>Infrequent</td>
<td>1415 Ocean Blvd NW</td>
</tr>
<tr>
<td>Willow</td>
<td>Infrequent</td>
<td>Eichler and 233 Wallace/Ocean</td>
</tr>
</tbody>
</table>

**Surface Water and Wetlands**

There is no surface water on this complex. However, surface water resulting from storm events generally flows into storm drains located throughout the complex.

No NWI or LWI wetlands are located on this tract.

**Environmental Issues Associated With This Tract**

At the time that this assessment was performed, there were no known environmental issues associated with the Three River’s Casino Coos Bay Complex.

**Recommendations**

1. Develop and implement a site specific invasive species management plan.
2. Implement the Tribes’ Integrated Waste Management Plan to ensure environmental protection through proper disposal of municipal waste, construction and demolition wastes, and other special wastes, such as household hazardous waste, industrial waste, asbestos, appliances, electronic equipment, tires, motor oil, etc.
The Tribal Hall Complex is located in the Empire section of Coos Bay, OR and comprises almost 8 acres. The Empire Tract was previously clear-cut by Robertson Timber Co. before it was gifted as reservation land to the Tribes by the Federal Government in 1940. Construction of an Indian community center (Tribal Hall) began in that year and dedication ceremonies were conducted on October 5, 1941.

In 1954, the Western Oregon Termination Act was enacted and terminated all tribes in western Oregon. In 1956, the BIA placed Tribal Hall and the 6.12 acres comprising the Empire Parcel in the trusteeship of the City of Empire (now Coos Bay) for the Tribes. Unfortunately, to the Tribe’s dismay, the City of Empire leased the building to the US Naval Reserves.

Two additions were made to Tribal Hall, entry points changed, and a pump house removed; however, no maintenance was performed on the building while under the US Naval Reserves occupation. A few undeterred tribal members still continued to gather at Tribal Hall once a month.
despite the Reserves occupancy. In 1968, the Coos, Lower Umpqua, and Siuslaw Indian Tribes formed a corporation. As a corporation, the Tribes were able to challenge the city’s status of the trusteeship of Tribal Hall, and in 1973 the Tribes were named trustees of Tribal Hall as well as the 6.12 acre parcel on which it sat.

Shortly after regaining occupancy of Tribal Hall, the Tribes were able to establish a Tribal trading post and sold groceries at cost to low-income families. A small portion of Tribal Hall was used as a Native American research center. Tribal members also gathered here to receive employment training under the Comprehensive Employment Training Act (CETA) grant as well as renew cultural traditions. Unfortunately, over the next few years, Tribal Hall continued to drastically deteriorate. In 1980, Tribal Hall was in such dire need of repairs that the roof began to leak, forcing museum exhibits and Tribal offices to be moved to a private home. Tribal Hall would remain vacant over the next seven years.

Finally, on October 17, 1984, the Tribes were restored to full recognition, and in 1987, the Empire tract was “re-accepted” into reservation status for the Tribes. In 1988, with the assistance of the Department of Housing and Urban Development community development block grant, the Tribes were able to repair and upgrade Tribal Hall. Over the next few years, Tribal hall would be renovated and serve many purposes, including a health clinic and school. Today, Tribal Hall continues to serve the Tribes as a gathering place for Tribal meetings and cultural practices/events.

The Melville Tract was acquired in 1991 and helped expand the Tribes’ land base. A plank house and sweat lodge were constructed on this tract for ceremonial purposes.

**Current Land Use(s)**

Currently, the Tribal Hall Complex houses Tribal Hall, the Tribes’ community center, plank house, play area, sweat lodge, community garden, and the newly built Three River’s Casino Coos Bay. At the time of this assessment, a camping area for Tribal members was in the process of being constructed.

**Adjacent Land Use(s)**

Northeast of the Tribal Hall Complex lies more properties owned by the Tribes’, including Eichler, Wallace/Ocean, Pullis, Neese, and Ocean Blvd parcels. Land use to the west and south of this complex consists of primarily rural-residential housing. To the east lies more residential housing as well as an electrical charging station.

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenian Blackberry (<em>Rubus armeniacus</em>)</td>
<td>Infrequent</td>
<td>Throughout woodlands of property</td>
</tr>
<tr>
<td>Species</td>
<td>Relative Abundance</td>
<td>Location</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Berberis Darwinii</strong></td>
<td>Rare</td>
<td>Only two individuals identified on left of the trail to the plank house</td>
</tr>
<tr>
<td>Butterfly Bush (<em>Buddleja davidii</em>)</td>
<td>Rare</td>
<td>Found on right hand side of community center</td>
</tr>
<tr>
<td>Cotoneaster (<em>Cotoneaster spp</em>)</td>
<td>Frequent</td>
<td>Throughout woodlands of property</td>
</tr>
<tr>
<td>Crocosmia (<em>Crocosmia spp</em>)</td>
<td>Frequent</td>
<td>Mostly near creek and culvert in front of Tribal Hall</td>
</tr>
<tr>
<td>English Holly (<em>Ilex aquifolium</em>)</td>
<td>Occasional</td>
<td>Throughout woodlands of property</td>
</tr>
<tr>
<td>English Ivy (<em>Hedera helix</em>)</td>
<td>Frequent</td>
<td>Throughout woodlands of property</td>
</tr>
<tr>
<td>English Laurel (<em>Prunus laurocerasus</em>)</td>
<td>Occasional</td>
<td>Throughout woodlands of property</td>
</tr>
<tr>
<td>Fox Glove (<em>Digitalis spp</em>)</td>
<td>Rare</td>
<td>On left of trail leading to plank house</td>
</tr>
<tr>
<td>Ornamental Rose</td>
<td>Rare</td>
<td>Only a few individuals were found on the right of the plank house</td>
</tr>
<tr>
<td>Scotch Broom (<em>Cytisus scoparius</em>)</td>
<td>Occasional</td>
<td>Throughout woodlands of property</td>
</tr>
<tr>
<td>Tansy Ragwort (<em>Senecio jacobaea</em>)</td>
<td>Rare</td>
<td>Only found a few individuals on right side of community center</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracken Fern</td>
<td>Infrequent</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>California Bay Laurel</td>
<td>Rare</td>
<td>Only found a few individuals Behind community center on eastside of property</td>
</tr>
<tr>
<td>Cascara Buckthorn</td>
<td>Infrequent</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>Cedar</td>
<td>Occasional</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>Frequent</td>
<td>Dispersed throughout property; heavily concentrated on south side of property</td>
</tr>
<tr>
<td>Plant Name</td>
<td>Abundance</td>
<td>Location</td>
</tr>
<tr>
<td>----------------------------</td>
<td>------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Evergreen Huckleberry</td>
<td>Abundant</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>Horsetail</td>
<td>Occasional</td>
<td>Throughout the property; especially in disturbed areas of property</td>
</tr>
<tr>
<td>Kinnikinnick</td>
<td>Rare</td>
<td>Alongside Tribal Hall and parking area</td>
</tr>
<tr>
<td>Madrone</td>
<td>Rare</td>
<td>Found one individual near parking lot of tribal hall</td>
</tr>
<tr>
<td>Manzanita</td>
<td>Rare</td>
<td>Found one individual near plank house trail</td>
</tr>
<tr>
<td>Native Blackberry</td>
<td>Infrequent</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>Ocean Spray</td>
<td>Infrequent</td>
<td>To be planted throughout property</td>
</tr>
<tr>
<td>Red Alder</td>
<td>Occasional</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>Red Huckleberry</td>
<td>Rare</td>
<td>Only a few individuals were found near the creek and community center</td>
</tr>
<tr>
<td>Rhododendron</td>
<td>Infrequent</td>
<td>To be planted throughout property</td>
</tr>
<tr>
<td>Salal</td>
<td>Abundant</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>Seashore Lupine</td>
<td>Rare</td>
<td>Found on south side of Tribal Hall parking lot</td>
</tr>
<tr>
<td>Sedge</td>
<td>Infrequent</td>
<td>Found in creek on property</td>
</tr>
<tr>
<td>Sitka Spruce</td>
<td>Infrequent</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>Skunk Cabbage</td>
<td>Infrequent</td>
<td>Found in creek on property</td>
</tr>
<tr>
<td>Shore Pine</td>
<td>Occasional</td>
<td>Found on western and southern ends of property</td>
</tr>
<tr>
<td>Thimbleberry</td>
<td>Infrequent</td>
<td>Found throughout woodlands of property</td>
</tr>
<tr>
<td>Trillium</td>
<td>Rare</td>
<td>Found near play area</td>
</tr>
<tr>
<td>Tule</td>
<td>Infrequent</td>
<td>Found growing in the lower stretch of the creek near the entrance</td>
</tr>
<tr>
<td>Wapato</td>
<td>Infrequent</td>
<td>Found growing in creek near sweat lodge as well in the lower stretches near entrance</td>
</tr>
</tbody>
</table>
### Western Hemlock

- **Infrequent**
- **Behind community center**

### Willow

- **Infrequent**
- **Found bordering creek and also on south side of property**

---

**Surface Water and Wetlands**

A creek flows from the southern end of the Melville Tract, down through the easternmost portion of the Tribal Hall tract, and into a culvert that runs under Neese Rd. Other surface water resulting from storm events generally flows into storm drains. However, some surface water does flow into the creek and, at times, contains non-point source pollution from the surrounding properties.

In the upper northwest corner of the property lies a freshwater forested/shrub wetland type of approx. 0.30 acres. However, recent development of the Three River’s Casino to the east of this wetland area may have altered its ecology.

**Environmental Issues Associated With This Tract**

Pesticides and lawn care products used on adjacent properties as well as automobile pollution from the nearby road and parking areas are contributing minor amounts of non-point source pollution into the creek, which could affect the growth and survivability of traditional foods, such as wapato, and other creatures growing in/inhabiting the creek. Illegal camping and dumping on adjacent properties could also contribute minor amounts of non-point source pollution into the creek. Failing septic systems and leaky sewer lines on adjacent properties could potentially leach nutrients and pathogens into the creek flowing through the Tribal Hall Complex, which could contaminate the creek.

**Recommendations**

1. Invasive and culturally significant species surveys should be done at least once a year but preferably twice a year to capture species that are more visible when in different stages of growth for plant species or during periods of higher activity for culturally significant animal species.
2. Develop and implement a site specific invasive species management plan.
3. Develop and implement a groundwater protection plan.
5. Implement the Tribes' Integrated Waste Management Plan to ensure environmental protection through proper disposal of municipal waste, construction and demolition wastes, and other special wastes, such as household hazardous waste, industrial waste, asbestos, appliances, electronic equipment, tires, motor oil, etc.
Elks and Fulton Tracts:

Tract Description, History, and Background

The Elk and Fulton Tracts are located on Radar Hill within the Empire section of Coos Bay, OR and, combined, comprise about 13 acres. The Elks tract, which was formerly owned by Elks USA, previously housed an Elk’s Lodge. Currently, this tract contains a 14,975 square foot building that houses the Tribes’ administrative offices and dental clinic, maintenance shop, modular building, air station, and parking lot. The Fulton Tract has been previously logged, but has since recovered.

Current Land Use(s)

The Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indian Tribes’ administrative services, family services, and maintenance are housed within the buildings located on these two tracts. Two other modular buildings are in the process of being constructed on the Fulton Tract to house a cultural center, lab, and the department of natural resources’ offices.

Adjacent Land Use(s)
Land use adjacent to this tract consists of primarily rural-residential housing to the north and west. Second growth forests lie to the south and east of these two tracts and remain undeveloped at the time of this assessment.

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenian Blackberry (<em>Rubus armeniacus)</em></td>
<td>Occasional</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>Bull Thistle (<em>Cirsium vulgare</em>)</td>
<td>Infrequent</td>
<td>Mostly found in disturbed areas of the property</td>
</tr>
<tr>
<td>Cotoneaster (<em>Cotoneaster spp</em>)</td>
<td>Occasional</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>Crocosmia (<em>Crocosmia spp</em>)</td>
<td>Occasional</td>
<td>Found near excavation piles</td>
</tr>
<tr>
<td>Dovefoot Geranium (<em>Geranium molle</em>)</td>
<td>Infrequent</td>
<td>West side of administration building in grassy area</td>
</tr>
<tr>
<td>English Holly (<em>Ilex aquifolium</em>)</td>
<td>Rare</td>
<td>Found in middle of property</td>
</tr>
<tr>
<td>Tansy Ragwort (<em>Senecio jacobaea</em>)</td>
<td>Rare</td>
<td>Mostly found in disturbed areas of the property</td>
</tr>
<tr>
<td>Tenacious Ornamental (<em>Acanthus mullis</em>)</td>
<td>Rare</td>
<td>Found near excavation piles</td>
</tr>
<tr>
<td>Scotch Broom (<em>Cytisus scoparius</em>)</td>
<td>Occasional</td>
<td>Throughout the property</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracken Fern</td>
<td>Occasional</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>Cascara Buckthorn</td>
<td>Occasional</td>
<td>Throughout the property; especially in moist areas</td>
</tr>
<tr>
<td>Cedar</td>
<td>Occasional</td>
<td>Scattered intermittingly throughout the property</td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>Frequent</td>
<td>Scattered intermittingly throughout the property</td>
</tr>
<tr>
<td>Evergreen Huckleberry</td>
<td>Abundant</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>Horsetail</td>
<td>Infrequent</td>
<td>Scattered intermittingly throughout the property; especially in moist areas</td>
</tr>
<tr>
<td>Kinnikinnick</td>
<td>Rare</td>
<td>Bordering the dental office of the administration building</td>
</tr>
<tr>
<td>Red Alder</td>
<td>Occasional</td>
<td>Throughout the property; concentrated near stream as well</td>
</tr>
<tr>
<td>Plant</td>
<td>Frequency</td>
<td>Location</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>Red Elderberry</td>
<td>Infrequent</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>Red Huckleberry</td>
<td>Infrequent</td>
<td>Throughout the property; mostly in understory</td>
</tr>
<tr>
<td>Rhododendron</td>
<td>Occasional</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>Salal</td>
<td>Abundant</td>
<td>Throughout the property; mostly in understory</td>
</tr>
<tr>
<td>Silverweed</td>
<td>Infrequent</td>
<td>Found south of maintenance shop in wet area</td>
</tr>
<tr>
<td>Sitka Spruce</td>
<td>Infrequent</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>Slough Sedge</td>
<td>Infrequent</td>
<td>Found south of maintenance shop in wet area along with silverweed</td>
</tr>
<tr>
<td>Sword Fern</td>
<td>Occasional</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>Thimbleberry</td>
<td>Occasional</td>
<td>Throughout the property</td>
</tr>
<tr>
<td>Western Hemlock</td>
<td>Occasional</td>
<td>Throughout the property</td>
</tr>
</tbody>
</table>

**Surface Water and Wetlands**

In 2000, an informal survey of the Fulton Tract was performed and a small stream was discovered. The stream is believed to have been a feeder stream to an original boundary stream known as the Ntillii stream. Historically, there was a village at the head of the stream, and there is a high probability that the village was an incorporated village of both Hanis and Milluk Coosans as described by J.P. Harrington (1942). The 1856 map by Harvey Gordon also supports this location claim. The stream is located southern end of the Fulton Tract near a patch of red alder trees. The upper section of the stream was found to be non-functioning and will need some remediation in order to restore/rehabilitate this stream to functioning order.

Surface water resulting from storm events generally flows down Radar Hill or into the storms drains that are located throughout the property.

No NWI or LWI wetlands are located on this tract.

**Environmental Issues Associated With This Tract**

Non-native invasive species are being introduced via lawn clippings and excavation dumping from nearby Tribally owned tracts, such as the Tribal Hall and Melville parcels. Also, illegal camps and illegal dumping are contributing minor amounts of non-point source pollution.

**Recommendations**
1. Invasive and culturally significant species surveys should be done at least once a year but preferably twice a year to capture species that are more visible when in different stages of growth for plant species or during periods of higher activity for culturally significant animal species.
2. Develop and implement a site specific invasive species management plan.
3. Propose, develop, and implement a riparian restoration plan for the Ntilii stream.
4. Implement the Tribes’ Integrated Waste Management Plan to ensure environmental protection through proper disposal of municipal waste, construction and demolition wastes, and other special wastes, such as household hazardous waste, industrial waste, asbestos, appliances, electronic equipment, tires, motor oil, etc.

Miluk Village Tract:

Tract Description, History, and Background

The 1.69 acre Miluk Village Tract is located northeast of Charleston, Oregon along Cape Arago
Highway and the eastern shoreline of the Coos Bay estuary and directly east of the Pacific Ocean inlet to Coos Bay. An intertidal fossil-rich marine terrace deposit of the Empire Formation is found in the intertidal areas and contains fossils of marine mollusks and mammals. Fossil Point is located just southwest of the tract.

This tract previously housed Charleston Sanitary District’s old pump station 3 up until May of 2010. The operation consisted of a wastewater pump, emergency power generator, and associated plumbing, including an above ground tank for diesel fuel utilized during power failures. The only structure that remains on the property is the old pump house, which measures approximately 256 square feet.

**Current Land Use(s)**

Miluk Village is the only Tribally held tract with easy access to the estuary, the traditional center of Tribal life. The Tribes currently try to maintain this property as a natural coastal forest despite heavy parking utilization by the surrounding community.

**Adjacent Land Use(s)**

To the north of this tract is a stream that empties into the bay from a corrugated culvert beneath Cape Arago Highway as well as a single family residence. South of the tract lies a residence on shallow tidal lands. Cape Arago Highway borders the property to the east, followed by multiple residential homes. To the west lies a seawall, which was built for shoreline erosion control.

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenian Blackberry (<em>Rubus armeniacus</em>)</td>
<td>Infrequent</td>
<td>Throughout terrestrial portions of property</td>
</tr>
<tr>
<td>Curly Dock (<em>Rumex crispus</em>)</td>
<td>Occasional</td>
<td>Throughout terrestrial portions of property</td>
</tr>
<tr>
<td>Other invasive (Needs Identified)</td>
<td>Rare</td>
<td>One individual found in center of terrestrial portions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horsetail</td>
<td>Frequent</td>
<td>Throughout terrestrial portions of property</td>
</tr>
<tr>
<td>Native Blackberry</td>
<td>Occasional</td>
<td>Found intermittingly on terrestrial portions</td>
</tr>
<tr>
<td>Red Alder</td>
<td>Rare</td>
<td>A few individuals in center of terrestrial portions</td>
</tr>
<tr>
<td>Salmonberry</td>
<td>Infrequent</td>
<td>Surrounding outside of old pump station on property</td>
</tr>
</tbody>
</table>
Shore Pine | Rare | Only 5 individuals found on south side of terrestrial portions of property
Silverweed | Infrequent | Found on west side of old pump house station
Willow | Abundant | Mostly found on south side of terrestrial portions

The majority of the terrestrial portions of this tract are highly disturbed and covered with gravel.

**Surface Water and Wetlands**

A small unnamed stream drains into the estuary adjacent and to the north of Miluk Village.

The majority of this tract is classified in the NWI as an estuarine and marine wetland type.

**Environmental Issues Associated With This Tract**

A Phase I Environmental Site Assessment performed by NATECH Native American Technology Corporation in May of 2013 revealed no evidence of recognized environmental conditions. However, based on field observations, paint layers on the interior and exterior of the old pump house as well as roofing material(s), the concrete floor and concrete wall layer at the exterior of the building, and the masonry cement between the cinder blocks are suspected to contain asbestos-containing materials (ACM). Paint on the old pump house is also suspected to be lead-based.

Traditional food stuffs found in the estuary portion of this property, particularly shellfish, have been known to harbor elevated levels of Paralytic Shellfish Toxin (PST) during warmer months when bio-toxin producing algae “bloom.” Consumption of high levels of PST can cause severe illnesses and even death. Domoic Acid, which is also produced by algae, has also been discovered at elevated levels in shellfish in the Coos Bay and outlying areas and can cause domoic acid toxicosis, which affects the central nervous system, causing disorientation and, in some instances, fatal seizures. Sampling and testing for shellfish toxins may need to be instituted in the future to ensure that these traditional foods remain safe for tribal member consumption as well as for our other fauna.

**Recommendations**

1. Invasive and culturally significant species surveys should be done at least once a year but preferably twice a year to capture species that are more visible when in different stages of growth for plant species or during periods of higher activity for culturally significant animal species.
2. Develop and implement a site specific invasive species management plan.
3. Collect semi-annual surface water samples for the analysis of nutrients and bacteria.
4. Collect semi-annual measurements of physical water quality parameters.

Eason Tract:

**Tract Description, History, and Background**

The Eason Tract is located approximately one and one half miles northeast of downtown Charleston, Oregon in wooded uplands. This tract is heavily wooded with areas of thick underbrush along the southern two thirds and eastern quarter. Within the interior are several small, shallow areas of standing water. There are few anthropomorphic objects within the site, except for three obscure trails leading from Libby Drive into the interior of the tract. Historically, this tract has been wooded and vacant. However aerial photographs taken in 1967 show that this tract appears to have been logged.

**Current Landuse(s)**
This tract is currently vacant and has no current uses, except as timberland. The property has no improvements or utilities on site.

**Adjacent Landuse(s)**

Adjacent land use consists of urban residential and forest land. BACAPA Baseball and Community Park is located east of the property.

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scotch Broom (<em>Cytisus scoparius</em>)</td>
<td>Rare</td>
<td>Southern end of property bordering Libby Ln</td>
</tr>
</tbody>
</table>

English holly was observed on adjacent properties west of this tract, but not on the tract itself.

<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracken Fern</td>
<td>Infrequent</td>
<td>Found intermittently throughout property</td>
</tr>
<tr>
<td>Cascara</td>
<td>Infrequent</td>
<td>Found intermittently throughout property</td>
</tr>
<tr>
<td>Cedar</td>
<td>Frequent</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>Occasional</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Evergreen Huckleberry</td>
<td>Abundant</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Red Elderberry</td>
<td>Infrequent</td>
<td>Found intermittently throughout property</td>
</tr>
<tr>
<td>Rhododendron</td>
<td>Frequent</td>
<td>Throughout property; especially southern end</td>
</tr>
<tr>
<td>Salal</td>
<td>Abundant</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Sitka Spruce</td>
<td>Rare</td>
<td>Found sparsely throughout property</td>
</tr>
<tr>
<td>Sword Fern</td>
<td>Infrequent</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Western Hemlock</td>
<td>Frequent</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Willow</td>
<td>Infrequent</td>
<td>Observed in southern portion of property</td>
</tr>
</tbody>
</table>

**Surface Water and Wetlands**

There is no surface water on this tract.

No NWI or LWI wetlands are located on this tract.
**Environmental Issues Associated With This Tract**

In 2002, the Tribes’ conducted an environmental site investigation to determine whether the historic landfill site located potentially upgradient from the tract was impacting groundwater on the site. The registered professional geologist contracted to perform the site investigation determined that the “data collected during the evaluation (e.g. test pit and groundwater samples) of the potential recognized environmental conditions provided sufficient information to support a professional opinion that there [is] no reasonable basis for suspecting the migration of hazardous substances or petroleum products onto the [tract] from an adjacent property”.

**Recommendations**

1. Invasive and culturally significant species surveys should be done at least once a year but preferably twice a year to capture species that are more visible when in different stages of growth for plant species or during periods of higher activity for culturally significant animal species.
2. Develop and implement a site specific invasive species management plan.
Tract Description, History, and Background

The Coos Head Tract is 43.38 acre parcel located in Coos County, OR south of Charleston, OR. The western half of this tract consists of buildings (previously used for storage and military operations), and recreational and parking areas. Three buildings were used for administration, unit training, dining, and temporary housing. Other buildings on the tract were used by the Air National Guard (ANG) for supply, maintenance shops, and vehicle maintenance, respectively. The eastern half of the property is mainly dominated by coniferous trees, especially shore pine, with three large cleared areas that were used as antenna sites by the USN prior to occupation by the ANG. In 1994, prior to field work commencing, soil was excavated from the largest antenna site and used to construct a 15-foot mound for a radar site. Two underground bunkers are located in the northeast corner of the station which were used to store munitions. Potable water supply and sanitary sewer service is provided to Coos Head by local municipal utilities.

The tract was first developed when it was withdrawn from public domain by the Bureau of Land Management for military use on June 14, 1874. The Army used the facility primarily for land-
based inlet defense until 1957, when the property was transferred to the Navy. The station was
developed by the Navy in 1957 as the Coos Head Naval Station. The Navy operated the stations
from 1957 to 1987 as a land-based low frequency submarine communications site, and currently
operates a small section of the present station known as the Terminal Building.

The ANG took operational control of the station on December 1, 1987, through a lease from the
Bureau of Land Management to the Secretary of the Air Force, who in turn, licensed Coos Head
ANG Station to the State of Oregon for ANG use. The Coos Head ANG Station was under the
operational management of the 104th Air Control Squadron (ACS), which is a Geographically
Separate Unit (GSU) from the 142nd Fighter Wing. The mission of the 104th ACS was to provide
and operate, on a worldwide basis, mobile communications equipment to support air-to-air and
air-to-ground communications. In October 1996, the 104th ACS ceased operations at the Coos
Head ANG Station. Currently, the only operating mission is by the USN at the Terminal Building.
The ANG portion of the tract was transferred to the Tribes by the General Service Administration
(GSA) in October 2005.

**Current Landuse(s)**

The decommissioned U.S. Naval base on this tract has been recently partially demolished and
grass planted in its stead. The maintenance shop and a few other buildings still remain on the
tract and may be utilized in the future. The Tribes’ have also built property caretaker housing and
implemented drinking water and wastewater distribution system improvements. Environmental
remediation efforts are still being pursued on this tract.

**Adjacent Landuse(s)**

To the west of this tract is Coos Bay’s south jetty and Bastendorff Beach; to the north is a sandbar,
a Coast Guard observation station, the entrance to Coos Bay, and the north jetty at the south end
of the North Spit; and to the east and south is forested land including a wildlife preserve, recently
logged land, and rural residential land.

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenian Blackberry (<em>Rubus armeniacus</em>)</td>
<td>Infrequent</td>
<td>Found sparsely throughout the property</td>
</tr>
<tr>
<td>Bamboo</td>
<td>Rare</td>
<td>Near Spring</td>
</tr>
<tr>
<td>Bull Thistle (<em>Cirsium vulgare</em>)</td>
<td>Infrequent</td>
<td>Mostly in disturbed and grassy areas</td>
</tr>
<tr>
<td>Cheatgrass?</td>
<td>Rare</td>
<td>Only found in one location: on the lowlands of this tract bordering the parking area of</td>
</tr>
</tbody>
</table>
Culturally Significant Species | Relative Abundance | Location
--- | --- | ---
Bracken Fern | Infrequent | Throughout property, especially in moist areas
Cascara Buckthorn | Infrequent | Found sparsely throughout the property
Cedar | Frequent | Scattered throughout the property
Cow Parsnip | Infrequent | Found bordering Bastendorf Beach
Curly Dock | Rare | Grassy areas
<table>
<thead>
<tr>
<th>Plant Name</th>
<th>Frequency</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Currant, Wild</td>
<td>Infrequent</td>
<td>Found in lowlands of property near Bastendorf Beach</td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>Occasional</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Evergreen Huckleberry</td>
<td>Frequent</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Giant Chain Fern</td>
<td>Rare</td>
<td>Found growing on cliff face bordering Bastendorf Beach</td>
</tr>
<tr>
<td>Horsetail</td>
<td>Occasional</td>
<td>Found in moist areas throughout property</td>
</tr>
<tr>
<td>Lady Fern</td>
<td>Infrequent</td>
<td>Found bordering Bastendorf Beach</td>
</tr>
<tr>
<td>Licorice Fern</td>
<td>Infrequent</td>
<td>Found growing on trees near Bastendorf Beach</td>
</tr>
<tr>
<td>Maidenhair Fern</td>
<td>Rare</td>
<td>Found on cliff face bordering lowlands property near Bastendorf Beach</td>
</tr>
<tr>
<td>Native blackberry</td>
<td>Infrequent</td>
<td>Found sparsely throughout the property</td>
</tr>
<tr>
<td>Red Alder</td>
<td>Occasional</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Red Elderberry</td>
<td>Infrequent</td>
<td>Found sparsely throughout the property</td>
</tr>
<tr>
<td>Rhododendron</td>
<td>Occasional</td>
<td>Found sparsely throughout the property</td>
</tr>
<tr>
<td>Salal</td>
<td>Abundant</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Salmonberry</td>
<td>Infrequent</td>
<td>Throughout property intermittingly</td>
</tr>
<tr>
<td>Shore Pine</td>
<td>Abundant</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Sitka Spruce</td>
<td>Occasional</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Sword Fern</td>
<td>Infrequent</td>
<td>Throughout property intermittingly</td>
</tr>
<tr>
<td>Thimbleberry</td>
<td>Infrequent</td>
<td>Throughout property intermittingly</td>
</tr>
<tr>
<td>Trillium</td>
<td>Rare</td>
<td>Found near spring</td>
</tr>
<tr>
<td>Western Hemlock</td>
<td>Infrequent</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Wild Strawberry</td>
<td>Infrequent</td>
<td>Dry, sandy areas</td>
</tr>
<tr>
<td>Willow</td>
<td>Occasional</td>
<td>Found mostly in lowlands</td>
</tr>
</tbody>
</table>
Native beach aster on cliff face noted as unusual.

**Surface Water and Wetlands**

The Pacific Ocean and Coos Bay are located directly northwest and north of the station, respectively. The natural topography on this tract results in the drainage of surface water northward, toward the Pacific Ocean and Coos Bay.

Previous site investigations conducted by the ANG at this tract have identified shallow groundwater in five piezometers at depths ranging from 18 to 69 ft bgs. Based upon the lithology encountered and upon potentiometric maps generated from ANG site investigations, the shallow groundwater was interpreted to be perched above a sandy shale layer and flowing to the west and north toward the cliffs, which are a point of discharge. Seepage from the cliff face, varying from 5 to 40 ft bgs, was observed during previous site investigations conducted by the ANG at Coos Head as part of the remedial investigation and clean-up of soil and groundwater contamination at Coos Head.

No NWI or LWI wetlands are located on this tract. However, several wetland type areas have been observed on the tract.

**Environmental Issues Associated With This Tract**

During the military’s tenure, several hazardous materials were discharged at the site. Investigations of these discharges have resulted in the identification of several areas of concern (Map 1). The Oregon Air National Guard (ANG) has accepted and retains responsibility for site remediation in accordance with various federal laws and their implementing programs (the Oregon ANG contact person is Roger C. Rein, Civ ORANG 142 FW/Environmental Manager, 506-665-4462). Under the terms of the Department of Defense and State Memorandum of Agreement (DSMOA) for Oregon, the Oregon Department of Environmental Quality (ODEQ) is providing oversight to the Oregon ANG. Benzene, ethylbenzene, naphthalene, and TCE as well as petroleum hydrocarbon (TPH) indicators - diesel (TPH-D) and oil (TPH-O) have been detected in groundwater samples on the tract. ANG is currently taking groundwater remediation action by means of an air sparge system.
Recommendations

1. Oversee remediation at Coos Head to ensure remediation for contaminants of concern meets needs of the Tribes’ for use and development.
2. Invasive and culturally significant species surveys should be done at least once a year but preferably twice a year to capture species that are more visible when in different stages of growth for plant species or during periods of higher activity for culturally significant animal species.
3. Develop and implement a site specific invasive species management plan.
4. Develop and implement a groundwater protection plan.
5. Implement the Tribes’ Integrated Waste Management Plan to ensure environmental protection through proper disposal of municipal waste, construction and demolition wastes, and other special wastes, such as household hazardous waste, industrial waste, asbestos, appliances, electronic equipment, tires, motor oil, etc.
Gregory Point/Chief’s Island:

**Tract Description, History, and Background**

Gregory Point and Chief’s Island consist of approximately 31 acres located on an uplifted marine terrace along the Southern Oregon Coast approximately two miles south of the mouth of Coos Bay. This tract is the site of the Miluk Coos village of Bal’diyaka. Carbon 14 dates from this site indicate occupancy for at least 2000 years. Recorded archaeological sites are located on the mainland and on Chief’s Island. A Tribal cemetery is located on the mainland.

The Gregory Point/Chief’s Island tract is located in a high energy rocky intertidal and subtidal area where wave energy excludes abundant or diverse hard substrate communities. The uplifted marine terrace consists of a stratum of Pleistocene beach deposits overlying less-permeable Coaledo Formation sandstone. Cape Arago Lighthouse is currently located on Chief’s Island and is listed in the National Registry. Significant seabird nesting occurs on Chief’s Island, along with roosting by the endangered Brown Pelican.

**Current Landuse(s)**
This tract currently serves as a sacred place for our ancestors that are buried on site and ceremonies, particularly the Tribes’ annual salmon celebration.

**Adjacent Landuse(s)**

The tract is bordered by steep cliff sides to the north, east, and west. North and west of this tract lies the Pacific Ocean, to the east is Lighthouse Beach, and to the southeast continues the marine terrace and private residences. Sunset Bay State Park is located immediately south of this tract. Landuses adjacent to this property include rural residential housing and Cape Arago State park day use recreation and overnight camping.

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bull Thistle (<em>Cirsium vulgare</em>)</td>
<td>Infrequent</td>
<td>Mainly in grassy areas</td>
</tr>
<tr>
<td>Crocosmia (<em>Crocosmia spp</em>)</td>
<td>Infrequent</td>
<td>Island between pavement</td>
</tr>
<tr>
<td>Kale</td>
<td>Occasional</td>
<td>Mostly alongside old bridge trail and surrounding area</td>
</tr>
<tr>
<td>Scotch Broom (<em>Cytisus scoparius</em>)</td>
<td>Infrequent</td>
<td>Intermittingly throughout property</td>
</tr>
<tr>
<td>Shining Geranium (<em>Geranium lucidum</em>)</td>
<td>Rare</td>
<td>Along roadside</td>
</tr>
<tr>
<td>Thistle? (needs identified)</td>
<td>Rare</td>
<td>Moist areas</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracken Fern</td>
<td>Occasional</td>
<td>Intermittingly throughout property</td>
</tr>
<tr>
<td>Cedar</td>
<td>Infrequent</td>
<td>Intermittingly throughout property</td>
</tr>
<tr>
<td>Currant, Wild</td>
<td>Rare</td>
<td>One location</td>
</tr>
<tr>
<td>Cow Parsnip</td>
<td>Occasional</td>
<td>Grassy areas</td>
</tr>
<tr>
<td>Evergreen Huckleberry</td>
<td>Frequent</td>
<td>Through property</td>
</tr>
<tr>
<td>Fern (<em>Polypodium spp</em>)</td>
<td>Occasional</td>
<td>Mostly alongside old bridge trail and surrounding area</td>
</tr>
<tr>
<td>Red Alder</td>
<td>Infrequent</td>
<td>Intermittingly throughout property</td>
</tr>
<tr>
<td>Red Huckleberry</td>
<td>Infrequent</td>
<td>Found a few individuals along roadside</td>
</tr>
<tr>
<td>Salal</td>
<td>Abundant</td>
<td>Through property</td>
</tr>
<tr>
<td>Salmonberry</td>
<td>Occasional</td>
<td>Intermittingly throughout property</td>
</tr>
<tr>
<td>Plant</td>
<td>Frequency</td>
<td>Location</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Sea Watch</td>
<td>Occasional</td>
<td>Found bordering the northern cliffs of the property</td>
</tr>
<tr>
<td>Sedge</td>
<td>Occasional</td>
<td>Found intermittingly as well as on an elevated platform</td>
</tr>
<tr>
<td>Shore Pine</td>
<td>Occasional</td>
<td>Intermittingly throughout property</td>
</tr>
<tr>
<td>Sphagnum Moss</td>
<td>Occasional</td>
<td>Along roadside and in grassy area</td>
</tr>
<tr>
<td>Sitka Spruce</td>
<td>Frequent</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Stinging Nettle</td>
<td>Rare</td>
<td>Near old bridge trail</td>
</tr>
<tr>
<td>Sword Fern</td>
<td>Infrequent</td>
<td>Intermittingly throughout property</td>
</tr>
<tr>
<td>Thimbleberry</td>
<td>Occasional</td>
<td>Intermittingly throughout property</td>
</tr>
<tr>
<td>Western Hemlock</td>
<td>Occasional</td>
<td>Throughout property</td>
</tr>
<tr>
<td>Wild Strawberry</td>
<td>Infrequent</td>
<td>Dryer areas bordering gravel road</td>
</tr>
</tbody>
</table>

**Surface Water and Wetlands**

A culvert runs underneath Cape Arago Hwy and onto the tract where it discharges onto the beach at Sunset Bay State Park. No perennial streams or ponds are located on the tract and surface runoff is generally the result of storm events. In the past, water was provided to the tract by the Coos Bay North Bend Water Board. However, water lines are believed to contain asbestos and have been decommissioned.

Wetlands found on this tract are: estuarine and marine wetlands and freshwater emergent wetlands totally approx. 10 acres and forested/shrubs wetlands totally approx. 4 acres. In addition, according to the Oregon Rapid Assessment Protocol map tool, a LWI mapped wetland (listed as a Bog or Fen wetland type) is located on the tract.

**Environmental Issues Associated With This Tract**

During an environmental due diligence assessment (EDDA) conducted for eventual property transfer purposes by the Engineering/Remediation Resources Group (ERRG) for the United States Coast Guard (USCG) under Contract HSCGBB04D6XB002, lead contamination was found at shallow depths in site soil on Chief’s Island. Lead in the surface soil was the only contaminant found with concentrations exceeding the Oregon Department of
Environmental Quality (ODEQ) Cleanup Criteria for industrial use (800 milligrams per kilogram [mg/kg]). The exceedances were found only in parts of Chief’s Island. In addition, lead-based paint was found in two types of paints at the lighthouse, and low levels of mercury were found on the surface of the lighthouse lantern room. Remediation efforts of Chief’s Island were not executed since the property was transferred directly into trust for the Tribes’. Therefore, lead concentrations that exceed Oregon Department of Environmental Quality (ODEQ) Cleanup Criteria for industrial use are still present on Chief’s Island. Sediment ingestion by foraging brown pelicans, cormorants, and murres could potentially affect reproduction, egg hatchability, chick survivability, and neurobehavioral development of these birds. Further future testing will need to be performed on Chief’s island to ensure that lead concentrations and other contaminants of concern are not affecting the health and survivability of birds foraging and roosting on the island.

No elevated lead concentrations were found in the surface soil around the old four-plex at the Gregory Point site. However, demolition and removal of the four-plex in February 2007 could have potentially contaminated the soil surrounding the old foundation. Further future testing may need to be performed to ensure that lead and other suspected contaminants are not present in the surrounding soil.

Graves and gravestones located on the property are endanger of being sloughed off/eroded into the Pacific Ocean over time by wind and/or wave action.

**Recommendations**

1. Invasive and culturally significant species surveys should be done at least once a year but preferably twice a year to capture species that are more visible when in different stages of growth for plant species or during periods of higher activity for culturally significant animal species.
2. Develop and implement a site specific invasive species management plan.
3. Develop and implement a groundwater protection plan.
4. Develop and implement a wetland management plan.
5. Perform sediment testing for lead and other suspected contaminants.
**Sixes River Tract:**

**Tract Description, History, and Background**

The Sixes River Tract is a 1.25 acre parcel located on the lower mainstem of the Sixes River adjacent to milepost 2 on Sixes River Road in Curry County, Oregon. The Sixes River watershed is a 5th field watershed that drains approximately 85,832 acres (134 square miles) and is situated almost entirely within Curry County except for a small area of the Upper Sixes Mainstem subwatershed that extends into Coos County. The upper portion of the basin is characterized by steeply sloped forested areas with narrow valleys and tributary streams that have moderately steep to very steep gradients. Grazing, rural residential development, and other agricultural uses are dominant in the lower portion of the basin. Approximately 69% of the watershed is in private ownership. Forestry is the most dominant land use in the Sixes River Watershed.

**Current Landuse(s)**
At the time of this assessment, the Tribes do not have any current land uses occurring at the site other than water quality monitoring. No utilities, improvements, or structures are currently located on this property.

**Adjacent Landuse(s)**

The dominant adjacent land use is forestry. Rural residential housing also occurs adjacent to this property.

<table>
<thead>
<tr>
<th>Invasive/Nuisance Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenian Blackberry (<em>Rubus armeniacus</em>)</td>
<td>Infrequent</td>
<td>Near river’s edge</td>
</tr>
<tr>
<td>Fox Glove (<em>Digitalis spp</em>)</td>
<td>Infrequent</td>
<td>Near river’s edge</td>
</tr>
<tr>
<td>Japanese Knotweed (<em>Polygonum cuspidatum</em>)</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Reed Canary Grass</td>
<td>?</td>
<td>Along the margins on gravel bar</td>
</tr>
</tbody>
</table>

Nearby, but outside of the Tribal property boundary, are major amounts of blackberry and a minor amount of English Ivy and Teasel.

<table>
<thead>
<tr>
<th>Culturally Significant Species</th>
<th>Relative Abundance</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>?</td>
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<td>?</td>
<td>?</td>
<td>?</td>
</tr>
</tbody>
</table>

This site was unable to be environmentally assessed at the time this assessment was performed; therefore, this site will need to be assessed for invasive/nuisance species as well as culturally significant species.

**Surface Water and Wetlands**

The Sixes River estuary is approximately 330 acres in area and has a watershed of approximately 129 square miles. Head of tide is about 2.5 miles from the mouth. The estuary is designated as a
Nature estuary under the Oregon Estuary Classification system, and it is listed by The Wetlands Conservancy as one of “Oregon’s Greatest Wetland’s”. The Oregon Rapid Wetland Assessment Map Tool identifies the entire riparian buffer of the lower Sixes River as a Wetland Priority Area. The NWI Riverine wetland type also occurs on this property.

**Environmental Issues Associated With This Tract**

Stretches of the Sixes River near the Tribes’ tract are 303(d) listed for temperature, which is affecting salmon and trout rearing and migration. Beaver creek, which flows through this tract, is not 303(d) listed. However, water quality monitoring performed by the Tribes’ department of natural resources has indicated low dissolved oxygen levels and high temperatures during summer months, which could impair this particular stretch of the Sixes River and, thus, affect salmon and trout rearing and migration. Additional parameters of concern within this watershed are nutrients. Data collected by local watershed assessments for this area appear to indicate that water quality within the Sixes River is moderately impaired due to high nitrate, phosphorus, and fecal coliform levels. Nitrate levels tend to exceed water quality standards during early winter high flow (storm) events. In addition, high phosphate and fecal coliform levels tend to occur from fall through early spring. The exceedances in phosphate and fecal coliform levels may also correlate with high flow events.

**Recommendations**

1. Invasive and culturally significant species surveys should be done at least once a year but preferably twice a year to capture species that are more visible when in different stages of growth for plant species or during periods of higher activity for culturally significant animal species.
2. Develop and implement a site specific invasive species management plan.
3. Collect semi-annual surface water samples for the analysis of nutrients and bacteria.
4. Collect semi-annual measurements of physical water quality parameters.
5. Collect semi-annual macroinvertebrates for stream viability determination.
6. Develop and implement a groundwater protection plan.
7. Develop and implement a wetland management plan.
4.0 Conclusion

“Historically we have regarded the air, water, and soil that surround us as waste receptacles and have given little consideration to the ecological consequences of our actions. As a result, wildlife populations are confronted with a bewildering array of pollutants that we release into the environment either by intent or accident” (Marinebio.org 1). We are just beginning to realize that matter is not created nor destroyed, but simply transformed (The law of conservation of matter). Nothing can be thrown away because there isn’t an “away” to through it into. Keeping this ideal in mind, we, the people of the Coos, Lower Umpqua, and Siuslaw Indians, invoke our ancestors’ traditions as we move forward in helping to protect, restore, enhance, and manage our ancestral territory to ensure the resurgence of Tribal first foods and culturally significant species as well as the continuation and prosperity of our culture.
Index:

**Relative Abundance**

Abundant (A)—Dominant, codominant, or characteristic (thousands of individuals or colonies).

Frequent (F)—Easily or generally encountered but not dominant (hundreds of individuals or colonies).

Occasional (O)—Widely scattered throughout the survey area (26 to 100 individuals or colonies).

Infrequent (I)—Found in several locations but difficult to locate (5 to 25 individuals or colonies).

Rare (R)—Difficult to find and limited to one or two localities (1 to 5 individuals or colonies).
Sources


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