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Biological Assessment for Rare and Endangered Plant Species

Related to CERCLA
Characterization Activities

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EXECUTIVE SUMMARY

Eleven special status plant species are known to survive on or very near the Hanford Site. None of these species currently are listed as Federal Threatened or Endangered Species¹. However, four local species currently are candidates for federal protection. These species are the Northern Wormwood (Artemisia campestris ssp. borealis var. wormskioldii), Persistentsepal Yellowcress (Rorippa columbiae), Hoover's Desert Parsley (Lomatium tuberosum), and Columbia Milkvetch (Astragalus columbianus). The Northern Wormwood and Persistentsepal Yellowcress are listed by the state of Washington as endangered, while Hoover's Desert Parsley and Columbia Milkvetch are listed by the state as threatened². The state of Washington lists seven additional species as sensitive²: Gray Cryptantha (Cryptantha leucophea), Bristly Cryptantha (Cryptantha interrupta), Piper's Daisy (Erigeron piperianus), Dense Sedge (Carex densa), Shining Flatsedge (Cyperus rivularis), Southern Mudwort (Limosella acaulis), and False-pimpernel (Lindernia anagallidea).

Although no legal protection is provided by the state of Washington for the plant species listed as state endangered, threatened, or sensitive², Westinghouse Hanford Company has committed to giving listed species special consideration when planning and performing field sampling, monitoring, and characterization activities.

¹DOI, 1990, "Endangered and Threatened Wildlife and Plants; Review of Plant Taxa for Listing as Endangered or Threatened Species; Notice of Review," 55 *Federal Register* Number 35, pg 6184-6229, U.S. Department of Interior, Washington, D.C.

²Washington Natural Heritage Program, 1990, *Endangered, Threatened and Sensitive Vascular Plants*, Department of Natural Resources, Olympia, Washington.

Environmental characterization in support of hazardous, radioactive, and mixed waste site cleanup (in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980³) can involve a large number of both nonintrusive and intrusive activities. Many of these activities could have a detrimental impact on listed plant species. These impacts can be minimized by following simple conservation policies while conducting the various field activities. For instance, off-road vehicular traffic can have a severe impact on native habitats and, therefore, should be kept to a minimum. Personnel performing the field activities should be trained to preserve, respect, and minimize their impact on native habitat while performing work in the field. In addition, areas where sampling is planned should be surveyed for the presence of listed plant species before the initiation of the field activities. Extremely disturbed areas could be exempted from this requirement provided adequate habitat assessments have been performed by qualified personnel.

³Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 26 USC 1 et seq.

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1.0 THREATENED, ENDANGERED, AND SENSITIVE PLANT SPECIES

At least 11 plant species that are considered to be endangered, threatened, or sensitive by the Washington State Natural Heritage Program (1990) are known to survive on or near the Hanford Site. Of these species, two are classified by the state as endangered, two are considered threatened, and seven are sensitive. All of the species considered by the state to be threatened or endangered are listed as candidates for federal protection under the *Endangered Species Act of 1973*. None of the state sensitive species are currently candidates for federal protection. A species is considered to be endangered by the state of Washington if it is in danger of becoming extinct or extirpated in the state of Washington within the near future should factors contributing to its decline continue. A species is listed by the state as threatened if it is likely to become endangered in the near future should factors contributing to its decline not be reversed. A species is considered sensitive if it is vulnerable or declining and could become threatened or endangered without active management or removal of threats. Four additional sensitive species have been reported by St. John & Jones (1928) or ERDA (1975), but have not been recently documented on the Hanford Site. Of the 11 known species, 5 inhabit the shore along the Columbia River, and 6 survive in various upland habitats. Currently, there is no legal protection provided to any state listed plant species or to candidates for federal threatened or endangered species status. However, Westinghouse Hanford Company (Westinghouse Hanford) has committed to giving these species special consideration while carrying out field activities (WHC 1988).

1.1 WETLAND SPECIES

Rorippa columbiana (State Endangered, Federal Candidate): The Columbia or Persistent-sepal Yellowcress is found at numerous locations along the shoreline of the Columbia River. It often is found in open gravelly areas, but can survive in sandy soil and in association with other species. It usually is found very near the waterline and certainly is submerged during periods of high water. The plants are short-lived perennials, and the seeds are often dispersed in the river; therefore, the populations tend to be found at different locations each year. Recent sightings have been made at the Hanford Townsite, Whitebluffs Ferry Landing, 100-D Area, and 100-B Area. Sauer and Leder (1985) reported findings of this species in the vicinity of the Vernita Bridge, the Hanford Townsite, and at a number of locations on the shore and islands of the Columbia River between the Hanford Townsite and the 300 Area.

Limosella acaulis (State Sensitive): The Southern Mudwort grows in shallow water or wet mud on the shoreline of the Columbia River. The species is known to exist within 1/4 mi of 100 B and 100 K Areas. Numerous other locations along the river also would provide suitable habitat.

Lindernia anagallidea (State Sensitive) - False Pimpernel, *Carex densa* (State Sensitive) - Dense Sedge, and *Cyperus rivularis* (State Sensitive) - Shining Flatsedge: All are found in wetland habitats in the vicinity of the 100-BC Area. Suitable habitat exists at a number of other locations along the Columbia River.

Collinsia sparsiflora var. *bruciae* (State Sensitive) - The Few-Flowered Blue-Eyed Mary has been reported in an Environmental Impact Statement (ERDA 1975). This reporting has not been verified independently, and the plants found actually may belong to the very similar species *C. parviflora*.

1.2 UPLAND SPECIES

Artemisia campestris ssp. *borealis* var. *wormskioldii* (State Endangered, Federal Candidate) or Northern Wormwood: This taxa is known from only two populations in Washington State, one of which is located in a semi-disturbed, rocky flat adjacent to the Columbia River near Beverly, Washington, approximately 10 mi northwest of the Hanford Site. Other varieties of *A. campestris* are very common in similar habitats on the Hanford Site. The most obvious distinction between these varieties is flowering period. The *wormskioldii* variety flowers in April, while the other varieties flower during the summer. Because of the extreme rarity of var. *wormskioldii*, its known occurrence within 10 to 15 mi of the Hanford Site, and the large amount of suitable habitat along the shoreline and on the islands of the Columbia River, special emphasis should be given to the search for this species during biological surveys in the 100 Areas. This species was not detected during ecological surveys of the 100 Areas conducted during fiscal year 1991.

Astragalus columbianus (State Threatened, Federal Candidate): The Columbia Milkvetch was once believed to be extinct, but since has been found to be relatively common on the Yakima Firing Range. It has been found within 1 - 2 mi of the Hanford Site on both sides of Umtanum Ridge. It is primarily associated with sagebrush steppe on sandy soils and potentially could be found on the Hanford Site proper. At this point it has not been documented within the Hanford Site boundaries.

Lomatium tuberosum (State Threatened, Federal Candidate): Hoover's Desert Parsley is found on steep talus slopes near Priest Rapids Dam. Except for similar habitats on Gable Mountain and Gable Butte it is not expected to be found on the Hanford Site, and it has not been found yet at these locations.

Erigeron piperianus (State Sensitive): Pipers Daisy is relatively common on Umtanum Ridge and the Arid Lands Reserve, and has been found on a disturbed berm of 216-B-3 Pond, near the 200 East Area. It also has been reported west of the Basalt Waste Isolation Project shaft site, near Highway 240. In other parts of Washington State, it is usually associated with undisturbed, sandy, sagebrush steppe and, therefore, could be found in numerous locations on the Hanford Site.

Cryptantha leucophea (Sensitive): The Gray Cryptantha is found among sand dunes at a number of locations on the Hanford Site. Major populations are found near the railroad tracks in the vicinity of May Junction, 3 to 4 mi north of the Wye Barricade. A small population has also been found along Route 2 North, 1/2 mi East of 100 D Area. The Bristly Cryptantha (*C. interrupta*) also a sensitive species, has been found on the Hanford Site, but is not as extensively documented as the Gray Cryptantha.

Three additional sensitive species, the Palouse Milkvetch (*Astragalus arrectus*), Coyote Tobacco (*Nicotiana attenuata*), and the Dwarf Evening-primrose (*Oenothera pygmaea*), were reported by St. John and Jones (1928) to exist on or near the Hanford Site. Recent collections of these species on the Hanford Site are not documented. If these species do exist on the Hanford Site, they most likely would be found in association with sagebrush in dry upland areas.

1.3 OTHER SPECIES OF INTEREST

Several other species on the Hanford Site are of interest during ecological and biological investigations. The Desert Dodder (*Cuscuta denticulata*) has been found just off the far west end of the Hanford Site in Cold Creek Valley. This is apparently the only known finding of this species in the state of Washington. The Natural Heritage Program (1990) lists it as a Type I monitor species, meaning that additional data is needed before a formal categorical listing can be assigned.

Thompson's Sandwort (*Arenaria franklinii* var. *thompsonii*), has received some interest in the past. However, botanists from the Washington Natural Heritage Program now feel that all individuals of the species *A. franklinii* in the state of Washington belong to the variety *franklinii*, and have listed it as a Type II Monitor species, meaning that more taxonomic work needs to be performed before a formal classification can be made. This taxa also is listed as a federal candidate under category 3C, which means that it is no longer being considered for listing as threatened or endangered because of taxonomic uncertainties (DOI 1990). If the Hanford Site plants are of variety *thompsonii*, the taxa would probably be listed as either threatened or sensitive. Individuals of this taxa are found in sandy areas or on open sand dunes throughout the Hanford Site.

A number of species that exist on the Hanford Site are listed as Type III monitor species by the Washington Natural Heritage Program (1990), this means that these species are more abundant or less threatened than was believed previously. Even though these species are not considered to be in danger now, they are still of interest because they tend to indicate tracks of relatively undisturbed, native vegetation. Species that are in this category include Robinson's Onion (*Allium robinsonii*), Stalked-Pod Milkvetch (*Astragalus sclerocarpus*), Crouching Milkvetch (*Astragalus succumbens*), Rosy Balsamroot (*Balsamorhiza rosea*), Columbia River Mugwort (*Artemisia lindleyana*), Palouse Thistle (*Cirsium brevifolium*), Chick Lupine (*Lupinus microcarpus*), Smooth Cliffbrake (*Pallaea glabella*), and Fuzzy-Tongue Penstemon (*Penstemon eriantherus*).

2.0 POTENTIAL EFFECTS OF CHARACTERIZATION ACTIVITIES ON THREATENED, ENDANGERED, AND SENSITIVE PLANT SPECIES

The 100, 200, and 300 Areas of the U.S. Department of Energy's Hanford Site have been placed on the National Priorities List, which requires remediation under the *Comprehensive Environmental Response, Compensation, and*

Liability Act of 1980. Many activities associated with the characterization of hazardous and/or radioactive waste sites have the potential to impact listed plant species. Most of the activities will have very minor effects that can be minimized through careful conduct of the field operations. Some activities have the potential to cause drastic effects and may require a compromise between protecting endangered species and protecting human health. A more complete description of the planned characterization activities is provided by *Biological Assessment for Characterization Activities of the 100, 200, and 300 Operable Units* Fitzner and Weiss (1991). Any characterization activities that involve alterations of the soil surface or existing grade requires an excavation permit (WHC 1990 and WHC 1988, Sec. W). Biological characterization and impacts on rare species will be considered when approving these permits.

2.1 NONINTRUSIVE CHARACTERIZATION ACTIVITIES

Many of the nonintrusive characterization activities will have very minimal impacts on listed plant species, especially those activities that are performed by remote sensing or by personnel on foot. These activities include cultural resource surveys, ecological investigations, air monitoring, topographic mapping, surface radiation surveys, electromagnetic induction/magnetometer surveys, and process effluent/discharge pipeline integrity assessments. The only major disturbance expected during these activities would result from vehicular traffic off established roads. More damage could occur from the use of ground-penetrating radar, which typically is dragged along the ground surface and could disturb listed plants and/or critical habitat.

Some activities can be classified as 'quasi-intrusive' because minor disturbance to the soil surface is involved. These activities include geologic investigations, soil gas surveys, surface soil sampling, and surface-water and sediment sampling. Again, the major cause of disturbance associated with these activities would be off-road vehicular traffic. If the locations of listed plant populations are known before sampling and the field crew is careful to minimize disturbance to vegetation during sample collection, other impacts will be minimal.

2.2 INTRUSIVE CHARACTERIZATION ACTIVITIES

These activities include test pit soil sampling, and borehole or well drilling. These activities have a much greater chance of impacting threatened, endangered, or sensitive species because of the greater intensity and extent of efforts. The drilling of a monitoring well usually includes stripping off the vegetation in at least a 50-ft radius around the borehole for fire protection. Additional surface area is used for parking, change trailers, rest facilities, mobile laboratories, and access roads to the well site. Negative impacts to listed species can be minimized by surveying the area for listed species at an appropriate time: in the growth season before work begins at each site, marking any listed species found, training personnel to respect these markings and, if possible, minimizing the amount of surface stripping. Alternatively, the well location could be moved, if possible, to avoid the disturbance of listed species. Much of the characterization work

will be conducted in areas that have been extensively disturbed in the past and are now sprayed with herbicides, covered with cobbles and gravel, or dominated by introduced weeds such as cheatgrass and/or Russian thistle. These areas, which include old burial sites, cribs, razed buildings, and former parking areas, are extremely unlikely to contain any listed plant species. Therefore, the need for formal field surveys for listed plant species in these areas is reduced greatly.

2.3 IMPACTED SPECIES

The species considered to be upland species are the most likely to suffer direct disturbance during characterization and remediation of the 100 Areas. Most of the sampling and remediation activities will be conducted away from the shoreline of the Columbia River and, therefore, the wetland species will not suffer much direct disturbance. The wetland species could suffer if any activities result in an erosion of the shoreline, a redirection of the river flow, or a significant change in the water level in the river. Any sediment sampling performed should be conducted without disturbing the existing vegetation. The upland species are vulnerable to disturbance during all phases of characterization and remediation. The best method for protection of these species is to examine each area for the presence of listed species before work initiation and to take appropriate measures to protect these plants while the work is in progress.

2.4 GENERAL RECOMMENDATIONS

Impacts to threatened, endangered, and sensitive plant species can be minimized during characterization activities by following simple conservation procedures. Off-road vehicular traffic should be limited because this can have a major impact on habitat integrity. Personnel performing the characterization activities should be trained to preserve and respect the native habitat while performing work in the field. Finally, areas should be surveyed before major characterization efforts, especially those using intrusive sampling techniques. These surveys should be conducted at points in the growth season when the species of interest are in an identifiable state. This would be during the spring for most of the upland species and during the late summer and fall for the wetland species.

Unfortunately, many of the field activities occur at inopportune times of the year for adequate onsite threatened and endangered species surveys. Conflicts between the need for environmental documentation and the need for timely completion of sampling efforts can be minimized by identifying sampling locations (e.g., drill sites) as early as possible in the planning process. If the specific coordinates are not known, then a larger surface area that includes all potential sampling locations can be surveyed. Additionally, all records of threatened and endangered species surveys should be located in a single database. This will allow easy access to determine if a specific location has been surveyed in the past, when, and what was found. A number of potential sites can be approved for activities based solely on knowledge of past activities in the vicinity; this would allow some projects to continue even if field surveys cannot be conducted. Also, intrusive sampling activities in many highly disturbed areas can be conducted with a simple

habitat assessment instead of a formal field survey. The protection and conservation of native and/or critical habitat is of primary concern. Therefore, even if a listed species is present in an area such as a crib, burial ground, or other highly disturbed surface, the area probably would not be considered critical and would certainly not be considered native habitat. A habitat assessment for this purpose could be conducted at any time, but should be performed by competent professionals.

3.0 REFERENCES

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