

#### Options to Consider for Small Whorled Pogonia:

1. Establish a horizontal buffer distance from the plant – avoid construction within this distance. The buffer should be large enough to maintain existing canopy cover, sunlight & moisture regimes.
1. Minimize overall clearing of vegetation so that the project will not appreciably change the light regime or moisture conditions at the population sites. These measures should address potential site-specific changes based on aspect, daily and annual patterns of insolation, penetration of sunlight and wind through the remaining tree canopy, and any other pertinent factors.
2. Avoid changes in hydrology for streams & banks to prevent/reduce runoff, sedimentation, slope failures, etc. from the disturbed area so that they do not reach the populations. These measures should be site specific (i.e., not a reference to the overall project sedimentation and erosion control plans).
3. Avoid increases in sedimentation or erosion at the site (control and minimize cut and fill in areas upslope or upstream of the plant including any sections of the pipeline that occur upstream in a waterway; make sure that disturbed areas downstream of the site don't erode into the floodplain; have a good overall sediment and erosion control plan).
4. Avoid activities that would increase non-native seed mixes (work with the FWS and other applicable agencies to develop appropriate and specific mix of seeds); rinse any construction equipment entering the project area; replant areas not to be maintained as ROW with native woody vegetation.
5. Direct run-off or spills from pipeline construction away from SWP populations and streams.
6. Make sure to plan for access roads, and areas to be used for spoil or fill so that the items above are addressed for these aspects of construction as well.
7. Develop a monitoring plan for plant & habitat conditions (including invasive species) around known population's pre and post-construction.
8. Develop plan to monitor contractor so that all conservation measures are implemented as planned.
9. Make sure that long-term maintenance activities (spraying, mowing, etc.) will not affect the species.
10. Maintain an undisturbed forested buffer surrounding each colony/plant documented on the site. The Service recommends the protection of the entire upslope drainage of the colony or plant and a 50-foot forested buffer downslope of the colony/plant on the project site. This buffer area should be shown on the site plan and clearly marked in the field with an orange construction fence. The location of the orange construction fence should be approved by the Service prior to any construction or land clearing.

Reference this site for previous SWP Biological Opinions:

<https://www.fws.gov/northeast/endangered/TEBO/PDFs/NewTown05-V2948.pdf>