

Stakeholder Involvement in the Revegetation of the 92-Acre Area – 17152

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ABSTRACT

The U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office (NNSA/NFO) works closely with stakeholders that have an interest in the revegetation of a closed landfill on the Nevada National Security Site (NNSS). Located at the Radioactive Waste Management Complex on the NNSS, the 92-Acre Area was operational from 1961 to 2010. In 2009, the Nevada Division of Environmental Protection (NDEP) and NNSA/NFO agreed on a closure path consisting of a vegetative cover. Closure activities were initially completed in 2012.

Although revegetation was initially promising, subsequent monitoring revealed that a viable plant community had not been established. Subsequently, sections of the site were chosen as test plot locations to determine the best path forward. Despite various seeding methods, mulching techniques, and irrigation frequencies, the test plots failed to produce viable plant communities in 2013 and 2014.

NNSA/NFO had been in communication with one stakeholder, NDEP, during the revegetation process. NDEP agreed that after three failed revegetation attempts, a change in strategy was necessary. The Consolidated Group of Tribes and Organizations (CGTO), a coalition of tribal members representing seventeen culturally affiliated tribes and one organization, agreed to provide guidance using traditional ecological knowledge for revegetating the 92-Acre Area. A Tribal Revegetation Committee (TRC) was formed and tasked with developing guidance from a unique tribal perspective.

After visiting the 92-Acre Area and receiving background information, the TRC held several meetings and deliberated on how to address the revegetation challenges. The TRC submitted recommendations to NNSA/NFO identifying approaches that incorporate tribal perspectives in revegetating the site.

The Nevada Site-Specific Advisory Board (NSSAB), which is made up of community members who represent Nevada stakeholders, was also asked for input regarding the 92-Acre Area. After a public meeting in May 2016, the NSSAB submitted recommendations, which included a suggestion to consider input from the CGTO.

INTRODUCTION

The 92-Acre Area is a closed site located at the Area 5 Radioactive Waste Management Complex (RWMC) on the Nevada National Security Site (NNSS). The NNSS is approximately 3,522 square kilometers (km²) (1,360 square miles [mi²]) controlled by the U.S. Department of Energy (DOE) and is surrounded by an additional 11,700 km² (4,500 mi²) of restricted land (the U.S. Air Force-controlled Nevada Test and Training Range). The RWMC is comprised of 3 km² (1.16 mi²), 0.7 km² (0.3 mi²) of which are in use. The U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office (NNSA/NFO) will maintain ownership of the RWMC in perpetuity. Nuclear testing was conducted nearby in Area 5 prior to the 1992 moratorium.

The 92-Acre Area was operational from 1961 to 2010. The site included landfill cells, trenches, and boreholes where waste was placed. Portions of the site were listed in the *Federal Facility Agreement and Consent Order (FFACO)*, a regulatory agreement between the Nevada Division of Environmental Protection (NDEP), DOE, and the U.S. Department of Defense that identifies sites of historical contamination.[1] NNSA/NFO closed the entire 92-Acre Area using the FFACO process. In 2009, NDEP and NNSA/NFO agreed on a closure path consisting of a vegetative cover. Vegetation prevents precipitation from percolating deep into the soil by returning moisture to the atmosphere by evapotranspiration. Vegetation also minimizes wind and water erosion on the covers. Closure activities were initially completed in 2012, and the site was closed with post-closure monitoring and use restrictions, as detailed in the *Closure Report for the 92-Acre Area and Corrective Action Unit 111: Area 5 WMD Retired Mixed Waste Pits, Nevada National Security Site, Nevada*.[2]

Revegetation Efforts

Closure activities were conducted at the 92-Acre Area between January 2011 and January 2012 and included constructing four 2.4-meter (8-foot) thick engineered covers over the boreholes, trenches, and pits in the 92-Acre Area. The revegetation efforts began in October 2011. The top layer of the soil covers was disked to break up soil crusting, and a soil stabilizer (Soiltac®) was applied to provide temporary erosion control. A seed mix consisting of species native to the NNSS was applied to the covers using broadcast seeding; the seeds were then covered with straw mulch that was spread and crimped into the soil. An irrigation system was installed to augment natural precipitation.

Although revegetation results were initially promising, with several seedlings and established plants observed in December 2012, subsequent monitoring revealed that a viable plant community had not been established. Most of the desirable native species were dead with a high concentration of invasive weeds (which have shallow root systems and are annual plants, and therefore will not perform the desired actions of evapotranspiration and preventing erosion).

Subsequently, sections of the site were chosen as test plot locations in order to determine the best path forward for revegetation. In 2013, the first test plots used

various seeding methods and mulching techniques, but failed to produce a viable plant community. Another set of test plots in 2014 also failed.

STAKEHOLDERS AND NATIVE AMERICAN TRIBES

NNSA/NFO works closely with multiple stakeholders that have an interest in the revegetation of the 92-Acre Area.

Nevada Division of Environmental Protection

NDEP is the regulatory authority for the FFACO. NDEP's approval of the closure of the 92-Acre Area under the FFACO included the requirement that the covers be vegetated. Therefore, during the revegetation process, NDEP has been involved in the decisions to plant test plots to determine the best path forward to achieve a vegetative cover on the 92-Acre Area. NDEP agreed with NNSA/NFO that after three failed revegetation attempts, a change in strategy was necessary.

Nevada Site Specific Advisory Board

The Nevada Site-Specific Advisory Board (NSSAB) is a part of the Environmental Management (EM) Site-Specific Advisory Board, a stakeholder board that provides the DOE Assistant Secretary for Environmental Management and designees with independent advice, information, and recommendations on issues affecting the EM program at various sites. Among those issues are clean-up standards and environmental restoration, waste management and disposition, stabilization and disposition of non-stockpile nuclear materials, excess facilities, future land use and long-term stewardship, risk assessment and management, and clean-up science and technology activities.

The NSSAB is composed of community members with involvement from designated Liaisons who represent Nevada stakeholders by reviewing and commenting on environmental restoration (e.g., groundwater contamination and historic nuclear test area cleanup) and waste management (e.g., radioactive waste transportation and disposal) activities at the NNSS. The members bring a variety of perspectives to the NSSAB on issues of significant concern to the region. Members also provide community viewpoints on rural interests, environmental concerns, and local government. NNSA/NFO may request that the NSSAB review specific issues of concern, or the NSSAB may initiate review of environmental management activities. The results of these reviews are then transmitted through recommendations to NNSA/NFO.

The NSSAB was asked for input regarding a potential path forward for the 92-Acre Area. At a public meeting in May 2016, information regarding the 92-Acre Area and the revegetation attempts was presented to the Board. After much discussion, the NSSAB submitted their recommendations to NNSA/NFO, which included a recommendation that NNSA/NFO explore all available opportunities. Other recommendations included various methods such as fertilizer, transplants, soil testing, and different topsoil; the letter also included a recommendation to consider input from the Consolidated Group of Tribes and Organizations (CGTO).[3]

Consolidated Group of Tribes and Organizations

The CGTO is a coalition of seventeen culturally affiliated tribes and one organization. The CGTO Spokesperson serves as a liaison to the NSSAB. Liaisons are not voting members but participate in NSSAB deliberations and contribute their institutional views. The CGTO agreed to provide guidance using traditional ecological knowledge that could be applied to revegetating the 92-Acre Area. A Tribal Revegetation Committee (TRC) composed of six members of the CGTO was formed to provide guidance and cultural insight from traditional ecological knowledge in collaboration with a Portland State University ethnoecologist under contract to Desert Research Institute.

An initial meeting of the TRC included multiple presentations from DOE and other subject matter experts with background information regarding the RWMC, the 92-Acre Area, and details of the three revegetation attempts. Subsequent meetings of the TRC included a visit to the 92-Acre Area and a closed landfill in Area 3 considered to be an example of a successful revegetation. The TRC then held several meetings and deliberated on how to best address the revegetation challenges. The TRC returned recommendations to NNSA/NFO identifying approaches for incorporating tribal perspectives in revegetating the site.[4]

The report included tribal perspectives on the NNSS and the basis for those perspectives, recommendations for future test plots on the 92-Acre Area, and a request that NNSA/NFO include the CGTO and TRC in ongoing and future planning and co-management activities that integrate tribal ecological knowledge to restore cultural and ecological balance to other areas on the NNSS.

CONCLUSIONS

Involving tribes and stakeholders that have a shared interest in the revegetation of the 92-Acre Area resulted in new ideas to consider as well as improved communication between the public, tribes, and NNSA/NFO. The CGTO has cultural and historical ties to the land that can be applied to addressing the revegetation challenges. In addition, knowing that key tribes and stakeholders are actively involved with NNSA/NFO gives state regulators confidence in the process.

REFERENCES

1. *Federal Facility Agreement and Consent Order*, 1996 (as amended). Agreed to by the State of Nevada; U.S. Department of Energy, Environmental Management; U.S. Department of Defense; and U.S. Department of Energy, Legacy Management.
2. U.S. Department of Energy, National Nuclear Security Administration, 2012. *Closure Report for the 92-Acre Area and Corrective Action Unit 111: Area 5 WMD Retired Mixed Waste Pits, Nevada National Security Site, Nevada*. DOE/NV--1472. Las Vegas, NV.
3. Nevada Site-Specific Advisory Board, "Recommendation for Revegetation at CAU 111 (Work Plan #3)," letter, May 18, 2016.

4. Tribal Revegetation Committee Consolidated Group of Tribes and Organizations, 2016. *Phase 1 Recommendations, Tribal Revegetation Project, Nevada National Security Site*. Submitted by Desert Research Institute and Portland State University.

ACKNOWLEDGEMENTS

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