

SUBMIT OPTION SUBMITTAL FORM BY:

1. EMAIL TO: COLORADORIVERBASINSTUDY@USBR.GOV

2. U.S. MAIL TO: BUREAU OF RECLAMATION, ATTENTION MS. PAM ADAMS, LC-2721, P.O. BOX 61470, BOULDER CITY, NV 89006-1470

3. FACSIMILE TO: 702-293-8418

Option Submittal Form

Contact Information (optional):

Keep my contact information private.

Contact Name: _____	Title: _____
Affiliation: _____	
Address: _____	
Telephone: _____	E-mail Address: _____

Date Option Submitted: January 6, 2012

Option Name:

Brush control on BLM land

Description of Option:

Control the prevalence of brush on BLM rangeland to improve conditions for growth of native grasses thereby increasing runoff from these rangelands. This would be an augmentation option that increases system flows.
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Location: Describe location(s) where option could be implemented and other areas that the option would affect, if applicable. Attach a map, if applicable.

All seven basin states. The amount of BLM managed land in the basin totals almost 100,000 square miles, or about 40 per cent of the total area of the basin. The largest amounts of land are in Arizona and Utah. In general, the BLM land is marked by annual runoff usually less than 0.1 inch and frequently zero.

Quantity and Timing: Roughly quantify the range of the potential amount of water that the option could provide over the next 50 years and in what timeframe that amount could be available. If option could be implemented in phases, include quantity estimates associated with each phase. If known, specify any important seasonal (e.g., more water could be available in winter) and/or frequency (e.g., more water could likely be available during above-average hydrologic years) considerations. If known, describe any key assumptions made in order to quantify the potential amount.

At most about 1.0 MAF of runoff is generated annually, on average, from BLM land. Available research is contradictory. In some instances, control of brush and conversion to native grasses tends to increase runoff by about 10 per cent, which could be a basin wide increase in yield of 100,000 AFY. A more realistic estimate is probably 50,000 AFY. Some research indicates that

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the root systems of the deep-rooted native grasses actually form channels into the soil that allows more efficient infiltration thereby increasing upper zone soil moisture that is subsequently used by the grasses for transpiration.

Additional Information

Technical Feasibility: Describe the maturity and feasibility of the concept/technology being proposed, and what research and/or technological development might first be needed.

Several methods have been shown to be effective in controlling brush. Among the most widely used are chemical sprays, spraying and chaining, roller chopping, root plowing followed by reseeding, controlled burning, and grubbing. The method most widely used is chemical spraying.

Costs: Provide cost and funding information, if available, including capital, operations, maintenance, repair, replacement, and any other costs and sources of funds (e.g., public, private, or both public and private). Identify what is and is not included in the provided cost numbers and provide references used for cost justification. Methodologies for calculating unit costs (e.g., \$/acre-foot or \$/million gallons) vary widely; therefore, do not provide unit costs without also providing the assumed capital and annual costs for the option, and the methodology used to calculate unit costs.

Average costs for the various methods range from \$5 to \$7 per acre for controlled burning to \$110 to \$140 per acre for root plowing and reseeding. Chemical spraying costs about \$30 per acre and has to be repeated at about 8-year intervals. A representative annual cost would be \$4 per acre per year. At this cost, spraying all of the BLM land would cost \$256 million per year. If this resulted in 50,000 AF of additional runoff, the cost per AF would be over \$5,000. It should be noted that the primary purposes of brush control on BLM land are to improve the suitability of the use of the land for grazing livestock and to improve the ecosystem and habitat values. Hence, not all of the cost would necessarily be incurred for generating additional runoff.

Permitting: List the permits and/or approvals required and status of any permits and/or approvals received.

Control of brush by chemical spraying has been relatively widely used, hence permitting requirements must be reasonable.

Legal / Public Policy Considerations: Describe legal/public policy considerations associated with the option. Describe any agreements necessary for implementation and any potential water rights issues, if known.

Authorization for control of brush would have to be obtained from the BLM. Additional runoff would probably be considered to be Colorado River system water that would fit within river allocation practices in effect.

Primary public policy considerations relate to defining multiple benefits of brush control and then sources of funding for the activity.

Implementation Risk / Uncertainty: Describe any aspects of the option that involves risk or uncertainty related to implementing the option.

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The primary risk is the uncertainty associated with the amount of additional runoff created by brush control.

Reliability: Describe the anticipated reliability of the option and any known risks to supply or demand, such as: drought risk, water contamination risk, risk of infrastructure failure, etc.

The reliability of the brush control can be reasonably predicted, but the reliability of additional water supply is uncertain.

Water Quality: Identify key water quality implications (salinity and other constituents) associated with the option in all of the locations the option may affect.

To be determined

Energy Needs: Describe, and quantify if known, the energy needs associated with the option. Include any energy required to obtain, treat, and deliver the water to the defined location at the defined quality.

Energy Required	Source(s) of Energy
Only energy required is that needed for production and application of chemicals.	To be determined

Hydroelectric Energy Generation: Describe, and quantify if known, any anticipated increases or decreases in hydroelectric energy generation as a result of the option.

Location of Generation	Impact to Generation
To be determined. .	Any additional runoff would generate commensurate additional hydropower

Recreation: Describe any anticipated positive or negative effects on recreation.

Location(s)	Anticipate Benefits or Impacts
	To be determined.

Environment: Describe any anticipated positive or negative effects on ecosystems within or outside of the Colorado River Basin.

Location(s)	Anticipated Benefits or Impacts
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	A primary purpose of brush control is to restore the dominance of native prairie grasses and improve ecosystem values. However, new ecosystems have evolved to adapt to the presence of brush and the net effect of changed ecosystems would have to be evaluated.

Socioeconomics: Describe anticipated positive or negative socioeconomic (social and economic factors) effects.

Value of rangeland is improved by brush control thereby improving economics of livestock grazing on the BLM lands leased for this purpose.

Other Information: Provide other information as appropriate, including potential secondary benefits or considerations. Attach supporting documentation or references, if applicable.

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