

Appendix 1A NSHE-NFWF Assignment and Delegation Agreement

ASSIGNMENT AND DELEGATION AGREEMENT

This Assignment and Delegation Agreement, made effective and entered into this 24th day of December, 2009 by and between the Nevada System of Higher Education on behalf of the University of Nevada, Reno, ("**Assignor**") and the National Fish and Wildlife Foundation, a Congressionally-chartered non-profit organization ("**Assignee**").

WHEREAS, in order to build upon the important initial work of Assignor in seeking to provide water to Walker Lake while sustaining the Walker River Basin's economy and ecosystem, Assignee has expressed its willingness to undertake the Walker River Basin Acquisition Program authorized originally by Section 208(a) of Public Law 109-103, and has been designated as having such authority under Public Law 111-85, which amends Section 208(a) of Public Law 109-103 with respect to the Acquisition Program.

WHEREAS, Assignor has notified the Sellers under those certain Option and Purchase Agreements set forth in Attachment A of its intent to assign those agreements to Assignee and that such assignment shall release the Nevada System of Higher Education on behalf of the University of Nevada, Reno from any further obligation under such Option and Purchase agreements.

WHEREAS, Assignor desires to assign and delegate to Assignee all of its rights, obligations and responsibilities in and to the program known as the Walker River Basin Acquisition Program and to the agreements herein described, and Assignee desires to obtain and accept the assignment of all rights, obligations and responsibilities in and to the Program and under those agreements.

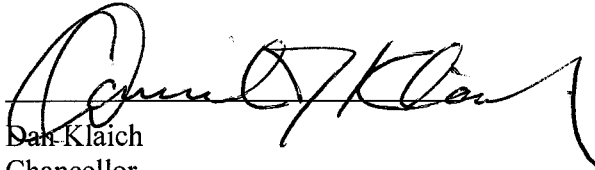
NOW THEREFORE, for good and valuable consideration, the parties agree as follows:

- (1) Assignor hereby assigns and delegates to Assignee all of its rights, obligations and responsibilities in the program known as the Walker River Basin Acquisition Program.
- (2) Assignor hereby assigns and delegates to Assignee all of its rights, title and interest in and to the agreements and extensions of agreements described in Exhibit A, and incorporated by reference, with no further liability of Assignor in connection with the agreements or the Program.
- (3) Assignor agrees and covenants that Assignor will, if reasonably requested by Assignee, and without further consideration, execute, acknowledge and deliver such further instruments and take such other actions as may reasonably be necessary in order to vest in Assignee all rights, obligations and responsibilities in and to the program known as the Walker River Basin

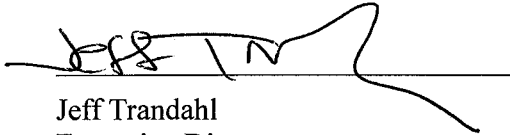
Acquisition Program, provided that Assignor shall not be obligated to incur any fees or expenses or make any payments.

- (4) Any extension or exercise of an option assigned hereunder shall be on behalf of Assignee and not on behalf of or as agent for Assignor.

IN WITNESS WHEREOF, the parties hereby execute this Assignment and Delegation Agreement on the day and year written above.



Dan Klaich
Chancellor
Nevada System of Higher Education
on behalf of the University of Nevada, Reno
2601 Enterprise Road
Reno, Nevada 89512



Jeff Trandahl
Executive Director
National Fish and Wildlife Foundation
1133 15th Street, NW
Suite 1100
Washington, D.C. 20005

EXHIBIT A

Agreement Description

1. Water and Water Rights Option and Purchase Agreement dated September 19, 2007 by and between Masini Investments, LLC, L&M Family Limited Partnership, and Valley Vista Ranch LLC, and the Nevada System of Higher Education on behalf of the University of Nevada, Reno. Extended until December 31, 2009 by letter agreement dated August 27, 2009.
2. Ground Water Option and Purchase Agreement dated April 4, 2008 by and between Homestretch Geothermal, LLC and Homestretch Energy, LLC, and the Nevada System of Higher Education on behalf of the University of Nevada, Reno. Extended by its terms until April 4, 2010.
3. Ground Water Rights Option and Purchase Agreement dated April 4, 2008 by and between Homestretch Geothermal, LLC and Homestretch Energy, LLC, and the Nevada System of Higher Education on behalf of the University of Nevada, Reno.
4. Water and Water Rights Option and Purchase Agreement dated July 29, 2008 by and between Sunrise Ranch LLC and the Nevada System of Higher Education on behalf of the University of Nevada, Reno. Extended until July 29, 2010.
5. Water and Water Rights Option and Purchase Agreement dated December 29, 2008 by and between DG-HP, Inc. and the Nevada System of Higher Education on behalf of the University of Nevada, Reno.
6. Water and Water Rights Option and Purchase Agreement dated February 10, 2009 by and between George Brazil Aguiar and Janiel Mae Aguiar, Co- Trustees of the Aguiar Family Trust u/t/a dated 6/5/07 and George Brazil Aguiar and Janiel Mae Aguiar, husband and wife, and the Nevada System of Higher Education on behalf of the University of Nevada, Reno.
7. Water and Water Rights Option and Purchase Agreement dated April 10, 2009 by and between David M. Little and Sherry L. Little, husband and wife, and the Nevada System of Higher Education on behalf of the University of Nevada, Reno.
8. Water and Water Rights Option and Purchase Agreement dated June 24, 2009, among Joseph William Tibbals and Carol Joyce Tibbals, husband and wife, and Joseph William Tibbals and Carol Joyce Tibbals, Trustees of the Tibbals Family Trust dated September 7, 2000, and the Nevada System of Higher Education on behalf of the University of Nevada, Reno.

EXHIBIT A

Agreement Description (cont'd)

9. Water and Water Rights Option and Purchase Agreement dated June 26, 2009 by and between Sovereign Enterprises, LLC, and the Nevada System of Higher Education on behalf of the University of Nevada, Reno.
10. Water and Water Rights Option and Purchase Agreement dated July 21, 2009, among the Glenn Michael Sciarani and Darla Zoe Sciarani Co-Trustees of the Glenn and Darla Sciarani Family Trust dated November 7, 2001, and John Sciarani, Trustee for the John Sciarani Trust dated August 23, 1990, and the Nevada System of Higher Education on behalf of the University of Nevada, Reno.
11. Water and Water Rights Option and Purchase Agreement dated July 21, 2009 between Desert Pearl Farms, LLC and the Nevada System of Higher Education on behalf of the University of Nevada, Reno.
12. Agreement for Water Right Title Research and Title Insurance dated June 25, 2008 between Stewart Title Guaranty Company and Nevada System of Higher Education on behalf of the University of Nevada, Reno.
13. Agreement for Water Right Title Research and Title Insurance dated September 17, 2009 between Stewart Title Guaranty Company and Nevada System of Higher Education on behalf of the University of Nevada, Reno.

**Appendix 1B Desert Terminal Lakes
Program Legislation
Related to the Walker
River Basin**

Appendix 1B Desert Terminal Lakes Program Legislation Related to the Walker River Basin

- 1) **Public Law 107-171, Farm Security and Rural Investment Act of 2002** (Farm Bill),
SECTION 2507 DESERT TERMINAL LAKES, enacted 5/13/02 – There are three versions:

[Note: This section, as originally legislated, was in effect from 5/13/02 until 6/18/08, when it was amended by Section 2807 of Public Law 110-246.]

SEC. 2507. DESERT TERMINAL LAKES.

(a) *IN GENERAL.* Subject to subsection (b), as soon as practicable after the date of enactment of this Act, the Secretary of Agriculture shall transfer \$200,000,000 of the funds of the Commodity Credit Corporation to the Bureau of Reclamation Water and Related Resources Account, which funds shall —

(1) *be used by the Secretary of the Interior, acting through the Commissioner of Reclamation, to provide water to at-risk natural desert terminal lakes; and*

(2) *remain available until expended.*

(b) *LIMITATION.*--The funds described in subsection (a) shall not be used to purchase or lease water rights.

As amended by Public Law 110-246, Section 2807, enacted 6/18/08:

[Note: This section, in the following form, was in effect from 6/18/08 until 10/28/09 when it was further amended by Section 207 of Public Law 111-85 on 10/28/09, as shown below; an additional specific authorized use was added.]

SEC. 2507 - DESERT TERMINAL LAKES

(a) *Transfer - Subject to subsection (b) and paragraph (1) of section 207(a) of Public Law 108-7 (117 Stat. 146), notwithstanding paragraph (3) of that section, on the date of enactment of the Food, Conservation, and Energy Act of 2008, the Secretary of Agriculture shall transfer \$175,000,000 of the funds of the Commodity Credit Corporation to the Bureau of Reclamation Water and Related Resources Account, which funds shall — [See footnotes below for referenced legislation]*

(1) *be used by the Secretary of the Interior, acting through the Commissioner of Reclamation, to provide water to at-risk natural desert terminal lakes; and*

(2) *remain available until expended.*

(b) Permitted Uses- In any case in which there are willing sellers, the funds described in subsection (a) may be used—

(1) to lease water; or

(2) to purchase land, water appurtenant to the land, and related interests in the Walker River Basin in accordance with section 208(a)(1)(A) of the Energy and Water Development Appropriations Act, 2006 (Public Law 109-103; 119 Stat. 2268).

Legislation referenced above in Section 2507 - Desert Terminal Lakes

Public Law 108-7 Section 207(b) *ADMINISTRATION- The Secretary of the Interior, acting through the Commissioner of Reclamation, may provide financial assistance to State and local public agencies, Indian tribes, nonprofit organizations, and individuals to carry out this section and section 2507 of Public Law 107-171.*

Public Law 108-7 Section 207(a)(1) *subject to paragraph (3), provide water and assistance under that section only for the Pyramid, Summit, and Walker Lakes in the State of Nevada;*

Public Law 108-7 Section 207(a)(3) *use \$2,000,000 to provide grants, to be divided equally, to the State of Nevada, the State of California, the Truckee Meadows Water Authority, and the Pyramid Lake Paiute Tribe, to implement the Truckee River Settlement Act, Public Law 101-618*

[Note: This version Section 2507 has been in effect since 10/28/09 when it was modified by Section 207 of Public Law 111-85, the Energy and Water Development Appropriations Act, 2010; section (b)(3) was added.]

SEC. 2507 - DESERT TERMINAL LAKES

(a) Transfer - Subject to subsection (b) and paragraph (1) of section 207(a) of Public Law 108-7 (117 Stat. 146), notwithstanding paragraph (3) of that section, on the date of enactment of the Food, Conservation, and Energy Act of 2008, the Secretary of Agriculture shall transfer \$175,000,000 of the funds of the Commodity Credit Corporation to the Bureau of Reclamation Water and Related Resources Account, which funds shall —

(1) be used by the Secretary of the Interior, acting through the Commissioner of Reclamation, to provide water to at-risk natural desert terminal lakes; and

(2) remain available until expended.

(b) Permitted Uses- In any case in which there are willing sellers, the funds described in subsection (a) may be used—

(1) to lease water; or

(2) to purchase land, water appurtenant to the land, and related interests in the Walker River Basin in accordance with section 208(a)(1)(A) of the Energy and Water Development Appropriations Act, 2006 (Public Law 109-103; 119 Stat. 2268); and

- (3) *for efforts consistent with researching, supporting, and conserving fish, wildlife, plant, and habitat resources in the Walker River Basin.*

2) Public Law 108-7, Omnibus Appropriations Bill, Section 207, enacted 2/20/03

The following appropriations shall be expended to execute authorized functions of the Bureau of Reclamation:

SEC. 207. RESTORATION OF FISH, WILDLIFE, AND ASSOCIATED HABITATS IN WATERSHEDS OF CERTAIN LAKES.

- (a) *IN GENERAL.--In carrying out section 2507 of Public Law 107 171, the Secretary of the Interior, acting through the Commissioner of Reclamation, shall--*

(1) *subject to paragraph (3), provide water and assistance under that section only for the Pyramid, Summit, and Walker Lakes in the State of Nevada;*

(2) *use \$1,000,000 for the creation of a fish hatchery at Walker Lake to benefit the Walker River Paiute Tribe; . . .*

- (b) *ADMINISTRATION.--The Secretary of the Interior, acting through the Commissioner of Reclamation, may provide financial assistance to State and local public agencies, Indian tribes, nonprofit organizations, and individuals to carry out this section and section 2507 of Public Law 107-171.*

3) Public Law 108-137, Energy and Water Development Appropriations Act, 2004, Section 217, enacted 12/01/03

SEC. 217. RESTORATION OF FISH AND WILDLIFE HABITAT, PROVISION OF BOTTLED WATER FOR FALLON SCHOOLCHILDREN, AND ASSOCIATED PROVISIONS.

- (a) *IN GENERAL.--In carrying out section 2507 of Public Law 107-171, title II, subtitle F, the Secretary of Interior, acting through the Commissioner of Reclamation, shall-- . . .*

(4) *Provide \$1,000,000 to the University of Nevada, Reno's Biodiversity initiative for public education and associated technical assistance and outreach concerning the issues affecting the restoration of Walker Lake.*

- (b) *ADMINISTRATION.--The Secretary of the Interior, acting through the Commissioner of Reclamation, may provide financial assistance to State and local public agencies, Indian tribes, nonprofit organizations, and individuals to carry out this section and section 2507 of Public Law 107-171.*

4) Public Law 109-103, Energy and Water Development Appropriations Act, 2006, Section 208, enacted 11/19/05: There are two versions of Section 208(a).

[Note: Section 208(a) of this legislation in its initial form was in effect until 10/28/09, when it was amended by Public Law 111-85 to allow the National Fish and Wildlife Foundation to use the funding.]

SEC. 208.

- (a) (1) *Using amounts made available under section 2507 of the Farm and Security Rural Investment Act of 2002 (43 U.S.C. 2211 note; Public Law 107-171), the Secretary [of the Interior] shall provide not more than \$70,000,000 to the University of Nevada—*
- (A) to acquire from willing sellers land, water appurtenant to the land, and related interests in the Walker River Basin, Nevada; and*
 - (B) to establish and administer an agricultural and natural resources center, the mission of which shall be to undertake research, restoration, and educational activities in the Walker River Basin relating to—*
 - (i) innovative agricultural water conservation;*
 - (ii) cooperative programs for environmental restoration;*
 - (iii) fish and wildlife habitat restoration; and*
 - (iv) wild horse and burro research and adoption marketing.*
- (2) *In acquiring interests under paragraph (1)(A), the University of Nevada shall make acquisitions that the University determines are the most beneficial to—*
- (A) the establishment and operation of the agricultural and natural resources research center authorized under paragraph (1)(B); and*
 - (B) environmental restoration in the Walker River Basin.*
- (b) (1) *Using amounts made available under section 2507 of the Farm and Security Rural Investment Act of 2002 (43 U.S.C. 2211 note; Public Law 107-171), the Secretary shall provide not more than \$10,000,000 for a water lease and purchase program for the Walker River Paiute Tribe.*
- (2) *Water acquired under paragraph (1) shall be—*
- (A) acquired only from willing sellers;*
 - (B) designed to maximize water conveyances to Walker Lake; and*
 - (C) located only within the Walker River Paiute Indian Reservation.*
- (c) *Using amounts made available under section 2507 of the Farm and Security Rural Investment Act of 2002 (43 U.S.C. 2211 note; Public Law 107-171), the Secretary, acting through the Commissioner of Reclamation, shall provide—*
- (1) \$10,000,000 for tamarisk eradication, riparian area restoration, and channel restoration efforts within the Walker River Basin that are designed to enhance water delivery to Walker Lake, with priority given to activities that are expected to result in the greatest increased water flows to Walker Lake; and*
 - (2) \$5,000,000 to the United States Fish and Wildlife Service, the Walker River Paiute Tribe, and the Nevada Division of Wildlife to undertake activities, to be coordinated*

by the Director of the United States Fish and Wildlife Service, to complete the design and implementation of the Western Inland Trout Initiative and Fishery Improvements in the State of Nevada with an emphasis on the Walker River Basin.

- (d) *For each day after June 30, 2006, on which the Bureau of Reclamation fails to comply with subsections (a), (b), and (c), the total amount made available for salaries and expenses of the Bureau of Reclamation shall be reduced by \$100,000 per day.*

Section 208(a) of Public Law 109-103, Energy and Water Development Appropriations Act, 2006, Section 208(a), as amended by Section 206 of Public Law 111-85, Energy and Water Development Appropriations Act, 2010, enacted 10/28/09.

SEC. 208.

(a) ACTION BY SECRETARY.

(1) PROVISION OF FUNDS-

(A) *IN GENERAL.*-Using amounts made available under section 2507 of the Farm and Security Rural Investment Act of 2002 (43 U.S.C. 2211 note; Public Law 107-171), the Secretary [of the Interior] shall provide not more than \$70,000,000 to the University of Nevada or the National Fish and Wildlife Foundation –

- (i) *to acquire from willing sellers land, water appurtenant to the land, and related interests in the Walker River Basin, Nevada; and*
- (ii) *to establish and administer an agricultural and natural resources center, the mission of which shall be to undertake research, restoration, and educational activities in the Walker River Basin relating to—*
 - (I) *innovative agricultural water conservation;*
 - (II) *cooperative programs for environmental restoration;*
 - (III) *fish and wildlife habitat restoration; and*
 - (IV) *wild horse and burro research and adoption marketing.; and*
- (iii) *to design and implement conservation and stewardship measures to address impacts from activities carried out--*
 - (I) *under clause (i); and*
 - (II) *in conjunction with willing landowners.*

(B) NATIONAL FISH AND WILDLIFE FOUNDATION-

- (i) *DATE OF PROVISION.*---The Secretary shall provide funds to the National Fish and Wildlife Foundation pursuant to subparagraph (A) in an advance payment of the available amount---

(I) *on the date of enactment of the Energy and Water Development and Related Agencies Appropriations Act, 2010; or*

(II) *as soon as practicable after that date of enactment.*

(ii) **REQUIREMENTS---**

(I) **IN GENERAL---** *Except as provided in subclause (II), the funds provided under clause (i) shall be subject to the National Fish and Wildlife Foundation Establishment Act (16 U.S.C. 3701 et seq.), in accordance with section 10(b)(1) of that Act (16 U.S.C. 3709(b)(1)).*

(II) **EXCEPTIONS---** *Sections 4(e) and 10(b)(2) of the National Fish and Wildlife Foundation Establishment Act (16 U.S.C. 3703(e), 3709(b)(2)), and the provision of subsection (c)(2) of section 4 of that Act (16 U.S.C. 3703) relating to subsection (e) of that section, shall not apply to the funds provided under clause (i).*

(2) *In acquiring interests under paragraph (1)(A)(i), the University of Nevada or the National Fish and Wildlife Foundation shall make acquisitions that the University or the Foundation determines to be the most beneficial to--*

(A) *the establishment and operation of the agricultural and natural resources research center authorized under paragraph (1)(A)(ii); and*

(B) *environmental restoration in the Walker River Basin.*

5) **Public Law 110-161, Consolidated Appropriations Act, 2008, enacted 12/26/07, Subsections 208(a)(5), (6), (7), and (8)** - *Three minor amendments were made by Section 207 of Public Law 111-8, enacted 3/11/09; none of the changes affected the subsections related to the Walker River basin.*

Sec. 208.

(a) *Notwithstanding any other provision of law, of amounts made available under section 2507 of the Farm Security and Rural Investment Act of 2002 (43 U.S.C. 2211 note; Public Law 107-171), the Secretary of the Interior— . . .*

(5) *shall allocate \$2,500,000 to the United States Fish and Wildlife Service to analyze, in cooperation and consultation with external experts, the impacts of low water flows on reproduction at the Walker Lake fishery, including an analysis of methods to prevent permanent effects on the fishery from low water flows;*

(6) *shall allocate \$4,000,000 to the State of Nevada to prepare watershed inventories, with a particular focus on the Walker and Carson River Basins; . . .*

(8) *shall allocate \$500,000 for the Walker River Paiute Tribe for legal and professional services in support of settling tribal water claims in the Walker River Basin and to Walker Lake;*

(9) *shall allocate \$1,000,000 to the Walker River Irrigation District--*

(A) *to plan and implement a weed control program to improve conveyance efficiency of water controlled by the Irrigation District; and*

(B) *to make improvements to water gauges controlled by the Irrigation District to enhance the water monitoring activities of the Irrigation District;*

- 6) **Public Law 110-246, enacted June 18, 2008, SEC. 2807. DESERT TERMINAL LAKES,** (Originally enacted on May 22, 2008, as Public Law 110-234, Section 2807) – This legislation amended Section 2507 of Public Law 107-171, as shown under item 1 above, to appropriate an additional \$175 million to the Desert Terminal Lakes Program and remove the limitation on acquiring water from willing sellers.

Section 2507 of the Farm Security and Rural Investment Act of 2002 (43 U.S.C. 2211 note; Public Law 107-171) is amended--

(1) in subsection (a)—

(A) *by striking '(a)' and all that follows through '\$200,000,000' and inserting '(a) Transfer- Subject to subsection (b) and paragraph (1) of section 207(a) of Public Law 108-7 (117 Stat. 146), notwithstanding paragraph (3) of that section, on the date of enactment of the Food, Conservation, and Energy Act of 2008, the Secretary of Agriculture shall transfer \$175,000,000'; and*

(B) *by striking the quotation marks at the beginning of paragraphs (1) and (2); and (2) by striking subsection (b) and inserting the following new subsection:*

(b) *Permitted Uses- In any case in which there are willing sellers, the funds described in subsection (a) may be used--*

(1) *to lease water; or*

(2) *to purchase land, water appurtenant to the land, and related interests in the Walker River Basin in accordance with section 208(a)(1)(A) of the Energy and Water Development Appropriations Act, 2006 (Public Law 109-103; 119 Stat. 2268).*

- 7) **Public Law 111-8, Omnibus Appropriations Act, 2009, enacted 3/11/09, Section 208**

Sec. 208. Notwithstanding any other provision of law, of amounts made available under section 2507 of the Farm Security and Rural Investment Act of 2002 (43 U.S.C. 2211 note; Public Law 107-171), the Secretary of the Interior acting through the Commissioner of Reclamation, shall allocate—

(1) *\$300,000 to the Desert Research Institute for LIDAR acquisition data in the Walker River Basin, to supplement water rights research and data funded under section 208(a)(1) of the Energy and Water Development Appropriations Act, 2006 (Public Law 109-103; 119 Stat. 2268); and*

(2) *\$300,000 to the Director of the United States Fish and Wildlife Service to conduct a multiyear assessment of and monitoring of the ability of west central Nevada lakes to*

support migratory loons, and identification of wintering areas and annual range of loons using Walker Lake during migration.

- 8) Public Law 111-85, Energy and Water Development Appropriations Act, 2010, enacted 10/28/09, Sections 206-208** – Sections 206 and 207 contain various amendments to previous Desert Terminal Lakes Program legislation and Section 208 contains new program legislation.

Section 206 – Amends Section 208(a) of Public Law 109-103. That legislation directed Reclamation to provide \$70 million to the University of Nevada for 1) a Walker River Basin acquisition program for environmental restoration, and 2) to establish and administer a Walker River Basin agricultural and natural resources center. The amendments authorize the National Fish and Wildlife Foundation to administer the program.

Section 207 – Amends Public Law 107-171, Section 2507(b). That legislation authorizes the Desert Terminal Lakes Program. The amendment adds an authorized purpose for conservation of Walker River Basin fish, wildlife, plant and habitat resources.

Section 208 – Provides \$66.2 million to the National Fish and Wildlife Foundation to establish the Walker Basin Restoration Program for the primary purpose of restoring and maintaining Walker Lake, and directs how that funding should be allocated. The section also allocates \$14.5 million of previously-appropriated funds for 5 projects; 4 are in the Truckee River Basin, 1 in the Walker River Basin.

Sec. 206. *Section 208(a) of the Energy and Water Development Appropriations Act, 2006 (Public Law 109-103; 119 Stat. 2268), is amended--*

(1) in paragraph (1)--

- (A) by redesignating clauses (i) through (iv) of subparagraph (B) as subclauses (I) through (IV), respectively, and indenting the subclauses appropriately;*
- (B) by redesignating subparagraphs (A) and (B) as clauses (i) and (ii), respectively, and indenting the clauses appropriately;*
- (C) by striking “(a)(1) Using’ and inserting the following:*

‘(a) Action by Secretary-

‘(1) PROVISION OF FUNDS-

‘(A) IN GENERAL- Using’;

(D) in subparagraph (A) (as so redesignated)--

- (i) in the matter preceding clause (i) (as so redesignated), by inserting ‘or the National Fish and Wildlife Foundation’ after ‘University of Nevada’;*
- (ii) in clause (ii)(IV) (as so redesignated), by striking the period at the end and inserting ‘; and’; and*
- (iii) by adding at the end the following:*

`(iii) to design and implement conservation and stewardship measures to address impacts from activities carried out--

`(I) under clause (i); and

`(II) in conjunction with willing landowners.'; and

(E) by adding at the end the following:

`(B) NATIONAL FISH AND WILDLIFE FOUNDATION-

`(i) DATE OF PROVISION- The Secretary shall provide funds to the National Fish and Wildlife Foundation pursuant to subparagraph (A) in an advance payment of the available amount--

`(I) on the date of enactment of the Energy and Water Development and Related Agencies Appropriations Act, 2010; or

`(II) as soon as practicable after that date of enactment.

`(ii) REQUIREMENTS-

`(I) IN GENERAL- Except as provided in subclause (II), the funds provided under clause (i) shall be subject to the National Fish and Wildlife Foundation Establishment Act (16 U.S.C. 3701 et seq.), in accordance with section 10(b)(1) of that Act (16 U.S.C. 3709(b)(1)).

`(II) EXCEPTIONS- Sections 4(e) and 10(b)(2) of the National Fish and Wildlife Foundation Establishment Act (16 U.S.C. 3703(e), 3709(b)(2)), and the provision of subsection (c)(2) of section 4 of that Act (16 U.S.C. 3703) relating to subsection (e) of that section, shall not apply to the funds provided under clause (i).'; and

(2) in paragraph (2)--

(A) in the matter preceding subparagraph (A), by striking `paragraph (1)(A)' and all that follows through `beneficial to--' and inserting `paragraph (1)(A)(i), the University of Nevada or the National Fish and Wildlife Foundation shall make acquisitions that the University or the Foundation determines to be the most beneficial to--'; and

(B) in subparagraph (A), by striking `paragraph (1)(B)' and inserting `paragraph (1)(A)(ii)'.

Sec. 207. *Section 2507(b) of the Farm Security and Rural Investment Act of 2002 (43 U.S.C. 2211 note; Public Law 107-171) is amended--*

(1) in paragraph (1), by striking `or' at the end;

(2) in paragraph (2), by striking the period at the end and inserting `; and'; and

(3) by adding at the end the following:

`(3) for efforts consistent with researching, supporting, and conserving fish, wildlife, plant, and habitat resources in the Walker River Basin.'.

Sec. 208.

(a) *Of the amounts made available under section 2507 of the Farm Security and Rural Investment Act of 2002 (43 U.S.C. 2211 note; Public Law 107-171), the Secretary of the Interior, acting through the Commissioner of Reclamation, shall—*

(1) *provide, subject to subsection (b), \$66,200,000 to establish the Walker Basin Restoration Program for the primary purpose of restoring and maintaining Walker Lake, a natural desert terminal lake in the State of Nevada, consistent with protection of the ecological health of the Walker River and the riparian and watershed resources of the West, East, and Main Walker Rivers; and*

(2) *allocate--*

(A) *acting through a nonprofit conservation organization that is acting in consultation with the Truckee Meadows Water Authority, \$2,000,000, to remain available until expended, for--*

(i) *the acquisition of land surrounding Independence Lake; and*

(ii) *protection of the native fishery and water quality of Independence Lake, as determined by the nonprofit conservation organization;*

(B) *\$5,000,000 to provide grants of equal amounts to the State of Nevada, the State of California, the Truckee Meadows Water Authority, the Pyramid Lake Paiute Tribe, and the Federal Watermaster of the Truckee River to implement the Truckee-Carson-Pyramid Lake Water Rights Settlement Act (Public Law 101-618; 104 Stat. 3294);*

(C) *\$1,500,000, to be divided equally by the city of Fernley, Nevada, and the Pyramid Lake Paiute Tribe, for joint planning and development activities for water, wastewater, and sewer facilities;*

(D) *\$1,000,000 to the United States Geological Survey to design and implement, in consultation and cooperation with other Federal departments and agencies, State and tribal governments, and other water management and conservation organizations, a water monitoring program for the Walker River Basin; and*

(E) ~~\$45,000,000~~ *\$5,000,000 to implement the 1996 Truckee River Water Quality Settlement Agreement by acquiring water rights for the benefit of the Truckee River and Pyramid Lake. [Note: On 10/30/09, 2 days after this legislation was enacted, Public Law 111-88 was enacted, correcting this \$45 million earmark to \$5 million, as follows: “energy and water development, technical correction, Sec. 440. Section 208(a)(2)(E) of the Energy and Water Development and Related Agencies Appropriations Act, 2010 is amended by striking ‘\$45,000,000’ and inserting ‘\$5,000,000’.”*

(b) (1) The amount made available under subsection (a)(1) shall be--

(A) used, consistent with the primary purpose set forth in subsection (a)(1), to support efforts to preserve Walker Lake while protecting agricultural, environmental, and habitat interests in the Walker River Basin; and

(B) allocated as follows:

(i) \$25,000,000 to the Walker River Irrigation District, acting in accordance with an agreement between that District and the National Fish and Wildlife Foundation--

(I) to administer and manage a 3-year water leasing demonstration program in the Walker River Basin to increase Walker Lake inflows; and

(II) for use in obtaining information regarding the establishment, budget, and scope of a longer-term leasing program.

(ii) \$25,000,000 to advance the acquisition of water and related interests from willing sellers authorized by section 208(a)(1)(A)(i) of the Energy and Water Development Appropriations Act, 2006 (Public Law 109-103; 119 Stat. 2268).

(iii) \$1,000,000 for activities relating to the exercise of acquired option agreements and implementation of the water leasing demonstration program, including but not limited to the pursuit of change applications, approvals, and agreements pertaining to the exercise of water rights and leases acquired under the program.

(iv) \$10,000,000 for associated conservation and stewardship activities, including water conservation and management, watershed planning, land stewardship, habitat restoration, and the establishment of a local, nonprofit entity to hold and exercise water rights acquired by, and to achieve the purposes of, the Walker Basin Restoration Program.

(v) \$5,000,000 to the University of Nevada, Reno, and the Desert Research Institute--

(I) for additional research to supplement the water rights research conducted under section 208(a)(1)(A)(ii) of the Energy and Water Development Appropriations Act, 2006 (Public Law 109-103; 119 Stat. 2268);

(II) to conduct an annual evaluation of the results of the activities carried out under clauses (i) and (ii); and

(III) to support and provide information to the programs described in this subparagraph and related acquisition and stewardship initiatives to preserve Walker Lake and protect agricultural, environmental, and habitat interests in the Walker River Basin.

(vi) \$200,000 to support alternative crops and alternative agricultural cooperatives programs in Lyon and Mineral Counties, Nevada, that promote water conservation in the Walker River Basin.

(2) (A) The amount made available under subsection (a)(1) shall be provided to the National Fish and Wildlife Foundation--

(i) in an advance payment of the entire amount--

(I) on the date of enactment of this Act; or

(II) as soon as practicable after that date of enactment; and

(ii) except as provided in subparagraph (B), subject to the National Fish and Wildlife Foundation Establishment Act (16 U.S.C. 3701 et seq.), in accordance with section 10(b)(1) of that Act (16 U.S.C. 3709(b)(1)).

(B) Sections 4(e) and 10(b)(2) of the National Fish and Wildlife Foundation Establishment Act (16 U.S.C. 3703(e), 3709(b)(2)), and the provision of subsection (c)(2) of section 4 of that Act (16 U.S.C. 3703) relating to subsection (e) of that section, shall not apply to the amount made available under subsection (a)(1).

**Appendix 1C Notice of Intent and
Notice of Availability for
the Draft Environmental
Impact Report**

Notice of Intent for the Draft Environmental Impact Report

date of publication of this notice. If the authorized officer determines that a public meeting will be held, a notice of the time and place will be published in the **Federal Register** at least 30 days before the scheduled date of the meeting.

(Authority: 43 CFR 2310.3-1)

Kent Hoffman,

Deputy State Director, Lands and Minerals.

[FR Doc. E7-18890 Filed 9-24-07; 8:45 am]

BILLING CODE 6450-01-P

DEPARTMENT OF THE INTERIOR

National Park Service

Winter Use Plans, Final Environmental Impact Statement, Yellowstone and Grand Teton National Parks and the John D. Rockefeller, Jr., Memorial Parkway, Wyoming

AGENCY: National Park Service, Department of the Interior.

ACTION: Notice of Availability of the Final Environmental Impact Statement for the Winter Use Plans, Yellowstone and Grand Teton National Parks and the John D. Rockefeller, Jr., Memorial Parkway.

SUMMARY: Pursuant to National Environmental Policy Act of 1969, 42 U.S.C. 4332(2)(C), the National Park Service announces the availability of a Final Environmental Impact Statement for the Winter Use Plans, Yellowstone and Grand Teton National Parks and the John D. Rockefeller, Jr., Memorial Parkway, Wyoming.

Seven alternative winter use management plans are evaluated in this EIS; alternative 7 is the NPS preferred alternative. Alternative 1 would put into place the provisions of the temporary winter use plan of August 2004, with some modifications. Alternative 2 would prohibit recreational snowmobiling in the parks in favor of snowcoach access. Alternative 3A would close much of Yellowstone to oversnow travel, leaving the South Entrance to Old Faithful route open to such use. A variation of alternative 3 (3B) is the no action alternative—it closes all routes to motorized oversnow recreation. This would be the outcome of the temporary plan, should no new decision be made. Four other alternatives (4, 5, 6, and 7) would allow varying levels of snowmobile and snowcoach access to continue in the parks. Alternative 4 would allow for increased snowmobile use, relative to historic numbers. Alternative 5 would allow for some unguided snowmobile use and would feature seasonal and

flexible daily entry limits in Yellowstone. Alternative 6 would provide for plowing some roads in Yellowstone to allow commercial wheeled-vehicle access from West Yellowstone and Mammoth to Old Faithful. Preferred alternative 7 would provide for a balance of snowmobile and snowcoach use and protect park soundscapes, air quality, wildlife and other resources. In Yellowstone, the daily limit on snowmobiles would be 540 snowmobiles per day in Yellowstone. 65 snowmobiles would be allowed per day in Grand Teton and the Parkway. In Yellowstone, all snowmobilers would be required to travel with a commercial guide, and in both parks, all snowcoaches and most snowmobiles would be required to use Best Available Technology (BAT). 83 snowcoaches would be allowed into Yellowstone daily. The East Entrance would remain open for cross-country ski and snowshoe access.

DATES: The National Park Service will execute a Record of Decision (ROD) no sooner than 30 days following publication by the Environmental Protection Agency of the Notice of Availability of the Final Environmental Impact Statement.

ADDRESSES: Information will be available for public inspection online at <http://parkplanning.nps.gov/yell>, in the office of Superintendent Suzanne Lewis, PO Box 168, Yellowstone National Park, WY 82190, 307-344-2019 and in the office of Superintendent Mary Gibson Scott, Grand Teton National Park, PO Drawer 170, Moose, WY 83012-0170, 307-739-3300.

FOR FURTHER INFORMATION CONTACT:

Kevin Franken, P.O. Box 168, Yellowstone National Park, WY 82190, 307-344-2019, yell_winter_use@nps.gov.

Dated: August 30, 2007.

John T. Crowley

Acting Regional Director, Intermountain Region, National Park Service.

[FR Doc. E7-18935 Filed 9-24-07; 8:45 am]

BILLING CODE 4312-CT-P

DEPARTMENT OF THE INTERIOR

Bureau of Reclamation

Walker River Basin Acquisitions Program, Mineral, Lyon, and Douglas Counties, NV

AGENCY: Bureau of Reclamation, Interior.

ACTION: Notice of intent to prepare an environmental impact statement (EIS) and notice of public scoping meetings.

SUMMARY: Pursuant to the National Environmental Policy Act (NEPA), the Bureau of Reclamation (Reclamation) proposes to prepare an EIS for the Walker River Basin Acquisitions Program. The primary purpose of the program is to comply with the requirements of Public Law 107-171 (Desert Terminal Lakes Program), which appropriates funds to provide water to at-risk natural desert terminal lakes, and with Public Law 109-103, which allocates funds to the University of Nevada for two specific purposes. The first purpose is to implement a program for environmental restoration to acquire from willing sellers land, water appurtenant to the land, and related interests in the Walker River Basin, Nevada. Acquired water rights would be transferred to provide water to Walker Lake. The second purpose of the University's funding is to establish and operate an agricultural and natural resources center. The actions to be analyzed in this EIS will be the purchase of water rights and related interests from willing sellers in the Walker River Basin, Nevada.

DATES: A series of public scoping meetings will be held to solicit public input on the alternatives, concerns, and issues to be addressed in the EIS. The meetings dates are:

- Monday, October 22, 2007, 6 to 8 p.m., Reno, NV.
- Tuesday, October 23, 2007, 6 to 8 p.m., Yerington, NV.
- Wednesday, October 24, 2007, 6 to 8 p.m., Hawthorne, NV.
- Thursday, October 25, 2007, 6 to 8 p.m., Bridgeport, CA.

Written comments on the scope of the EIS should be sent by November 26, 2007.

ADDRESSES: The public scoping meetings locations are:

- Reno at Rancho San Rafael Park, Main Ranch House, 1595 N. Sierra Street.
- Yerington at Yerington High School, gymnasium, 114 Pearl Street.
- Hawthorne at Mineral County Public Library, meeting room, 110 1st Street.
- Bridgeport at Bridgeport Memorial Hall, 73 N. School Street.

Send comments on the scope of the EIS to Mrs. Caryn Hunt DeCarlo, Bureau of Reclamation, 705 N. Plaza Street, Room 320, Carson City, NV 89701, via e-mail to chunttdecarlo@mp.usbr.gov, or faxed to 775-884-8376.

FOR FURTHER INFORMATION CONTACT: Mrs. Hunt DeCarlo, 775-884-8352.

SUPPLEMENTARY INFORMATION: The project area is in the Walker River Basin

within Nevada, and includes both the East and West Walker Rivers. The goal of the program is to acquire water rights sufficient to increase the long-term average annual inflow to Walker Lake by up to 50,000 acre-feet. To increase Walker Lake inflows by up to 50,000 acre-feet annually may require acquiring more than 50,000 acre-feet of water rights due to annual hydrologic variability.

Special Assistance for Public Scoping Meeting

If special assistance is required at the scoping meetings, please contact Caryn Hunt DeCarlo at 775-884-8352, TDD 775-882-3436, or via e-mail at chunttdecarlo@mp.usbr.gov. Please notify Mrs. Hunt DeCarlo as far in advance of the meetings as possible to enable Reclamation to secure the needed services. If a request cannot be honored, the requestor will be notified. A telephone device for the hearing impaired (TDD) is available at 775-882-3436.

Public Disclosure

Before including your name, address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Dated: September 18, 2007.

Robert Eckart,

Acting Regional Environmental Officer, Mid-Pacific Region.

[FR Doc. E7-18879 Filed 9-24-07; 8:45 am]

BILLING CODE 4310-MN-P

INTERNATIONAL TRADE COMMISSION

[USITC SE-07-018]

Government In the Sunshine Act Meeting Notice

AGENCY HOLDING THE MEETING: United States International Trade Commission.

TIME AND DATE: October 2, 2007 at 11 a.m.

PLACE: Room 101, 500 E Street, SW., Washington, DC 20436, Telephone: (202) 205-2000.

STATUS: Open to the public.

MATTERS TO BE CONSIDERED:

1. Agenda for future meetings: None.
2. Minutes.

3. Ratification List.

4. Inv. Nos. 731-TA-919 and 920 (Review) (Welded Large Diameter Line Pipe from Japan and Mexico)—briefing and vote. (The Commission is currently scheduled to transmit its determinations and Commissioners' opinions to the Secretary of Commerce on or before October 16, 2007.)

5. Outstanding action jackets: None.

In accordance with Commission policy, subject matter listed above, not disposed of at the scheduled meeting, may be carried over to the agenda of the following meeting.

By order of the Commission.

Issued: September 19, 2007.

William R. Bishop,

Hearings and Meetings Coordinator.

[FR Doc. E7-18811 Filed 9-24-07; 8:45 am]

BILLING CODE 7020-02-P

DEPARTMENT OF JUSTICE

[OMB Number 1122-0013]

Office on Violence Against Women; Agency Information Collection Activities: Extension of a Currently Approved Collection; Comments Requested

ACTION: 30-day notice of information collection under review: Semi-Annual Progress Report for the Rural Domestic Violence and Child Victimization Enforcement Grant Program.

The Department of Justice, Office on Violence Against Women (OVW), will be submitting the following information collection request to the Office of Management and Budget (OMB) for review and approval in accordance with the Paperwork Reduction Act of 1995. The proposed information collection is published to obtain comments from the public and affected agencies. This proposed information collection was previously published in the **Federal Register** Volume 72, Number 137, page 39447 on July 18, 2007, allowing for a 60-day comment period.

The purpose of this notice is to allow for an additional 30 days for public comment until October 25, 2007. This process is conducted in accordance with 5 CFR 1320.10.

Written comments and/or suggestions regarding the items contained in this notice, especially the estimated public burden and associated response time, should be directed to the Office of Management and Budget, Office of Information and Regulatory Affairs, Attention Department of Justice Desk Officer, Washington, DC 20503. Additionally, comments may be

submitted to OMB via facsimile to (202) 395-5806.

Written comments and suggestions from the public and affected agencies concerning the proposed collection of information are encouraged. Your comments should address one or more of the following four points:

(1) Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility;

(2) Evaluate the accuracy of the agency's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used;

(3) Enhance the quality, utility, and clarity of the information to be collected; and

(4) Minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g., permitting electronic submission of responses.

Overview of This Information Collection

(1) *Type of Information Collection:* Extension of a currently approved collection.

(2) *Title of the Form/Collection:* Semi-Annual Progress Report for Grantees from the Rural Domestic Violence and Child Victimization Enforcement Grant Program.

(3) *Agency form number, if any, and the applicable component of the Department of Justice sponsoring the collection:* Form Number: 1122-0013. U.S. Department of Justice, Office on Violence Against Women (Rural Program).

(4) *Affected public who will be asked or required to respond, as well as a brief abstract:* The affected public includes the approximately 165 grantees of the Rural Program. The primary purpose of the Rural Program is to enhance the safety of victims of domestic violence, dating violence, sexual assault, stalking, and child victimization by supporting projects uniquely designed to address and prevent these crimes in rural jurisdictions. Grantees include States, Indian tribes, local governments, and nonprofit, public or private entities, including tribal nonprofit organizations, to carry out programs serving rural areas or rural communities.

(5) *An estimate of the total number of respondents and the amount of time estimated for an average respondent to*

Notice of Availability for the Draft Environmental Impact Report

publishes its Notice of Availability in the **Federal Register**. The BLM will announce future meetings or hearings and any other public involvement activities at least 15 days in advance through public notices, media news releases, and/or mailings.

ADDRESSES: You may submit comments by any of the following methods:

Web Site: <http://www.blm.gov/ca/palmsprings>.

- *E-mail:* mbennett@ca.blm.gov.

- *Fax:* (760) 833-7199.

- *Mail:* Bureau of Land Management, Palm Springs-South Coast Field Office, 1201 Bird Center Drive, Palm Springs, CA 92262.

Copies of the Draft South Coast Resource Management Plan Amendment and Draft Environmental Impact Statement (EIS) for the Santa Ana Wash Land Exchange are available for review at the Palm Springs-South Coast Field Office and via the Internet at <http://www.blm.gov/ca/palmsprings>. Electronic (on CD-ROM) or paper copies may also be obtained by contacting Michael Bennett at the addresses and phone number below. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

FOR FURTHER INFORMATION CONTACT:

Michael Bennett; Bureau of Land Management, Palm Springs-South Coast Field Office, 1201 Bird Center Drive, Palm Springs, CA 92262; (760) 833-7139; mbennett@blm.gov.

SUPPLEMENTARY INFORMATION: The Draft EIS analyzes a proposed exchange of ownership of approximately 315 acres of BLM land with approximately 320 acres of land owned by the San Bernardino Valley Water Conservation District (District), and the amendment of the South Coast Resource Management Plan (SCRMP) to support this exchange. Additional lands, including up to 85 acres of BLM lands (Federal lands managed by the BLM) and up to 60 acres of District land, will be exchanged if necessary to equalize values. The lands proposed for exchange are located within the Santa Ana River Wash in southwestern San Bernardino County, California. A primary purpose of the exchange is for the BLM to dispose of isolated lands which have been previously degraded by mining

activities within the Santa Ana River Wash ACEC, and in exchange, to acquire District lands with high habitat value. Lands acquired by the BLM through the proposed exchange would be given the ACEC land use designation. These lands would also become part of the planned multi-jurisdictional, multi-species Habitat Conservation Area (HCA) described in the 2008 Upper Santa Ana River Wash Land Management and Habitat Conservation Plan (Wash Plan). Of the lands acquired by the District, approximately 259 acres would be leased for mining and approximately 56 acres would be set aside for habitat conservation. This action would fulfill the need for a comprehensive solution to competitive land uses within the Wash Plan Area by preserving unique habitats under the BLM ACEC while allowing mineral development and other uses to occur in predominantly disturbed areas. These Federal actions are analyzed in the Draft EIS. A Record of Decision for the proposed land exchange and plan amendment will be prepared following the Final EIS in accordance with the planning regulations at 43 CFR 1610 and the NEPA, 42 U.S.C. 4321 *et seq.* The Notice of Intent to publish this EIS was published in the **Federal Register** on April 26, 2004. Public workshops and scoping meetings were held in the cities of Highland and Redlands in May 2004. Predominant issues identified so far include threatened, endangered, and other special status species, mineral resources, water resources, recreation, visual resources, cultural resources, land management, and traffic management.

Authority: 40 CFR 1506.6, 43 CFR 1610.2.

John R. Kalish,

Field Manager.

[FR Doc. E9-17574 Filed 7-23-09; 8:45 am]

BILLING CODE 4310-40-P

DEPARTMENT OF THE INTERIOR

Bureau of Reclamation

Walker River Basin Acquisition Program

AGENCY: Bureau of Reclamation, Interior.

ACTION: Notice of Availability and Notice of Public Meetings for the Draft Environmental Impact Statement (Draft EIS).

SUMMARY: The Bureau of Reclamation (Reclamation) has made available for public review and comment the Draft EIS for the Walker River Basin Acquisition Program. (Acquisition

Program). Reclamation is directed in Public Law 109-103 to provide \$70 million in funding to the University of Nevada to implement a program for environmental restoration in the Walker River Basin. The law directs that the funds be used by the University to acquire from willing sellers land, water appurtenant to the land, and related interests in the Walker River Basin, Nevada. Acquired water rights would be transferred to provide water to Walker Lake. The funding is also for the University to establish and operate an agricultural and natural resources center.

The Draft EIS evaluates the potential environmental effects of the Acquisition Program on the affected communities, tribes, and environmental resources of the Walker River Basin in Nevada.

DATES: Submit written comments on the draft environmental document on or before [INSERT DATE 45 DAYS AFTER DATE OF EPA'S PUBLICATION OF EISES RECEIVED].

Public meetings will be held to discuss the purpose and content of the draft environmental document and to provide the public an opportunity to comment on the draft environmental document. Written comments will also be accepted at the public meetings. The meetings dates and times are:

- Monday, August 17, 2009, 6 to 8 p.m., Reno, NV;
- Tuesday, August 18, 2009, 6 to 8 p.m., Yerington, NV;
- Wednesday, August 19, 2009, 6 to 8 p.m., Wellington, NV;
- Thursday, August 20, 2009, 6 to 8 p.m., Hawthorne, NV.

ADDRESSES: The public meetings will be held at:

- Rancho San Rafael County Park, Main Ranch House, 1595 N. Sierra Street, Reno, NV 89503;
- Casino West Convention Center, 11 North Main Street, Yerington, NV 89447;
- Smith Valley Community Center, 2783 Highway 208, Wellington, NV 89444;
- Mineral County Public Library, First & "A" Street, Hawthorne, NV 89415.

Written comments on the Draft EIS should be addressed to Mrs. Caryn Hunt DeCarlo, Bureau of Reclamation, 705 N Plaza, Room 320, Carson City, NV 89701.

Copies of the draft document may be requested from Mrs. Caryn Hunt DeCarlo at the above address, by calling 775-884-8352 or at chunttdecarlo@mp.usbr.gov. See **SUPPLEMENTARY INFORMATION** section for locations where copies of the Draft EIS are available.

FOR FURTHER INFORMATION CONTACT: Mrs. Caryn Hunt DeCarlo, Bureau of Reclamation at the phone number or e-mail address above.

SUPPLEMENTARY INFORMATION: Since 1882, diversions from the Walker River, primarily for irrigated agriculture, have resulted in a steadily declining surface elevation of Walker Lake with a current net decrease of 150 feet. The decrease has resulted in negative impacts to water quality and lake ecology and congressional legislation has been passed to address the concerns. Section 2507 of Public Law 107–171 (Desert Terminal Lakes Program) appropriated funds to provide water to at-risk natural desert terminal lakes. Subsequent legislation in 2003 specified that the funding was to be used “only for the Pyramid, Summit, and Walker Lakes in the State of Nevada.” Additional legislation in 2006, Public Law 109–103, Title II, Section 208(a) allocated \$70 million to be provided by Reclamation to the University of Nevada for acquisition, from willing sellers, for land, water appurtenant to the land, and related interests in the Walker River Basin, Nevada. The goal of the Acquisition Program is to acquire water rights sufficient to increase the long-term average annual inflow to Walker Lake by 50,000 acre-feet.

The Draft EIS considers the direct, indirect, and cumulative effects on the physical, natural, and human environment that may result from the Acquisition Program. The Draft EIS addresses potentially significant environmental issues. Three acquisition alternatives as well as the no action alternative are addressed.

Copies of the Draft EIS are available for public review at the following locations:

- Bureau of Reclamation, Denver Office Library, Building 67, Room 167, Denver Federal Center, 6th and Kipling, Denver, CO 80225
- Natural Resources Library, U.S. Department of the Interior, 1849 C Street, NW., Main Interior Building, Washington, DC 20240–0001;
- Bureau of Reclamation, Mid-Pacific Regional Office Library, 2800 Cottage Way, W–1825, Sacramento, CA 95825–1898;
- Bureau of Reclamation, Lahontan Basin Area Office, 705 N Plaza, Room 320, NV 89701;
- Lyon County Library—Smith Valley, 32 Day Lane, Smith Valley, NV 89444–0156;
- Lyon County Library—Yerington, 20 Nevin Way, Yerington, NV 89447;
- Mineral County Library—Hawthorne, P.O. Box 1390, Hawthorne, NV 89415;

- Walker River Paiute Tribe—P.O. Box 220, Schurz, NV 89427;
- Yerington Paiute Tribe—171 Campbell Lane, Yerington, NV 89447.

If special assistance is required at the public meetings, please contact Caryn Hunt DeCarlo at 775–884–8352 no less than five working days before the meeting to allow Reclamation to secure the needed services. If a request cannot be honored, the requestor will be notified.

Before including your name, address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Dated: February 27, 2009.

Richard M. Johnson,

Acting Regional Director, Mid-Pacific Region.

Editorial Note: This document was received in the Office of the Federal Register on July 21, 2009.

[FR Doc. E9–17675 Filed 7–23–09; 8:45 am]

BILLING CODE 4310–MN–P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[LLIDIO1000–L71220000–PH0000–LVTF80230000; DDG–07–0010]

Notice of Availability of the Final Environmental Impact Statement for the Three Rivers Stone Quarry Expansion

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice of availability.

SUMMARY: In accordance with the National Environmental Policy Act of 1969 (NEPA, 42 U.S.C. 4321 *et seq.*) and the Federal Land Policy and Management Act of 1976 (FLPMA, 43 U.S.C. 1701 *et seq.*) the Bureau of Land Management (BLM), Challis Field Office, announces the availability of the Three Rivers Stone Quarry Expansion Final Environmental Impact Statement (FEIS). The FEIS addresses a proposal submitted by L&W Stone Corporation to amend the existing Plan of Operations to allow for expansion of its existing building stone quarry.

DATES: The FEIS is available for 30 days following publication of the Environmental Protection Agency Notice of Availability (NOA) in the

Federal Register. The Record of Decision (ROD) will not be approved by the BLM for at least 30 days following publication of the NOA for the FEIS by the Environmental Protection Agency.

ADDRESSES: Copies of the FEIS are available upon request from the BLM Idaho Falls District Office, 1405 Hollipark Drive, Idaho Falls, Idaho, 83401, phone 208–524–7530. You may request either a paper or an electronic (CD) copy. A copy of the FEIS is also available on the Internet at http://www.blm.gov/id/st/en/fo/challis/nepa/Three_Rivers.html.

FOR FURTHER INFORMATION CONTACT: Charles Horsburgh, Project Manager, BLM Idaho Falls District, 1405 Hollipark Drive, Idaho Falls, Idaho 83401, phone 208–524–7530, or fax 208–524–7505.

SUPPLEMENTARY INFORMATION: L&W Stone Corporation mines locatable flagstone on public lands administered by the BLM’s Challis Field Office in Custer County, Idaho. L&W Stone submitted an Amended Plan of Operations for its quarry under the 43 CFR 3809 Regulations in December 2002. The BLM completed an Environmental Assessment (EA) regarding the Amended Plan of Operations, signed a Finding of No Significant Impact (FONSI) in July 2004, and approved the project. As a result of a lawsuit that was filed objecting to that approval, the BLM was ordered by a Federal judge to prepare an EIS for the Amended Plan of Operations.

A Notice of Intent to Prepare the EIS was published in the **Federal Register** on October 21, 2005, inviting comments on the scope of the EIS, concerns, issues, and proposed alternatives. Public scoping meetings were held during the 45-day public comment period in Challis, Idaho, on November 16, 2005, and in Boise, Idaho, on November 17, 2005.

The Draft EIS was released for public review on December 14, 2007. Public meetings were held during the 45-day public comment period in Boise, Idaho, on January 16, 2008, and in Challis, Idaho, on January 17, 2008. A total of 13 written comments were received during this process. All comments were analyzed and appropriate changes or clarifications were incorporated into the FEIS. The comments and responses are appended to the FEIS.

The BLM will prepare a Record of Decision (ROD) for the proposed project no earlier than 30 days following the publication of the NOA by the Environmental Protection Agency. Public comments will be accepted on the FEIS and will be considered as part

Appendix 1D Regulatory Information

Appendix 1D Regulatory Information

Water Resources

Federal

Walker River Decree

The Walker River Decree (C-125, filed April 15, 1936, amended April 24, 1940) establishes the rights of appropriators in Nevada (and California) to the waters of the Walker River and/or its tributaries (*U.S. vs. Walker River Irrigation District* 1936 and 1940). The rights adjudged to individual land owners include the amounts of water (in cubic feet per second [cfs]) to which the owner is entitled at the point of diversion from the stream course during the specified irrigation season (generally March through October); the year of relative priority (1860 through 1905) assigned to each such right; and the number of irrigated (i.e., water-righted) acres to which such water can be applied within the legally described place of use. According to Pahl (1999), a total of approximately 1,575 cfs of water rights and 110,852 acres of water-righted land were adjudicated by the Decree; of these, approximately 864 cfs and 66,376 acres were located in the Nevada portions of the Basin.

The Decree also confirms the rights of the Walker River Irrigation District (WRID) to divert water into storage at Bridgeport and Topaz Lake Reservoirs in California during the non-irrigation season (generally November through February) up to specified annual limits; the rights to divert and store additional water, up to specified limits, during the irrigation season so long as all other decreed rights are satisfied; and the right to distribute such water to lands within the WRID boundaries. Similar diversion and storage rights were adjudicated to individual claimants for a number of smaller reservoirs on upstream tributaries in California, including Black Reservoir, Green Lakes, Lobdell Lake, Poore Lake, and Lower and Upper Twin Lakes; however, such rights are beyond the scope of this Draft EIS.)

The U.S. District Court in Nevada retains jurisdiction over the Decree for the purpose of “changing the duty of water or for correcting or modifying [the] decree [and] for regulatory purposes” (*U.S. vs. Walker River Irrigation District* 1936, Decree Article XIV, page 73). The Decree is administered by a six-person United States Board of Water Commissioners (USBWC), which is appointed by the Court “to act as a water master or board of commissioners to apportion and distribute the waters of the Walker River, its forks and tributaries in the State of Nevada and the State of California” (U.S. Board of Water Commissioners 1996). The Chief Deputy Water Commissioner serves as federal Water Master for the system, and works across six administrative divisions to oversee daily operations in accordance with the Decree and USBWC’s 1953 Rules and Regulations for the Distribution of Water. USBWC’s 1996 Administrative Rules and Regulations

govern proposed changes to the point of diversion or the manner or place of use of decreed water rights, as well as compliance with California Fish and Game Code Section 5937 and with other applicable provisions of state law.

In general, proposed changes to decreed water rights in California are to be filed initially with the California State Water Resources Control Board (SWRCB), while changes to decreed water rights in Nevada are to be filed initially with the Nevada State Engineer (NSE); however, no decision or report of either state agency will take effect “unless and until the court having jurisdiction over the Walker River Action finally approves it and enters an order modifying the Walker River Decree accordingly” (U.S. Board of Water Commissioners 1996).

Walker River Indian Reservation

The final Walker River Decree adjudicated to the United States a continuous flow right of 26.25 cfs with an 1859 priority date (the most senior water right in the system) for the irrigation of 2,100 acres of land within the Walker River Indian Reservation, with said water to be diverted from the Walker River upon or above the Reservation over a 180-day irrigation season each year (9,370 acre-feet per year [af/yr]). These direct-diversion natural-flow water rights are currently administered by the federal Water Master at the U.S. Geological Survey (USGS) gage near Wabuska, just above the Reservation boundary. The BIA administers these waters within the Reservation (including any flow in excess of the above-stated water rights) on behalf of the Walker River Paiute Tribe (WRPT). Accordingly, the USBWC’s 1996 Administrative Rules and Regulations (Section 2.3) “do not apply to any change in the point of diversion and/or place of use of water adjudicated to the United States...for the benefit of the Walker River Indian Reservation, which change is entirely within the boundaries of the Walker River Indian Reservation.”

Weber Dam, an earthen dam on the Walker River within the Walker River Indian Reservation, was constructed in the 1930s by BIA as part of the Walker River Indian Irrigation Project. Weber Dam and Reservoir are operated and maintained by BIA to provide irrigation water to the Reservation pursuant to regulations governing the maintenance and operation of Indian irrigation projects (25 CFR Part 171). Repairs and modifications to the Dam were recently completed under BIA’s Dam Safety Maintenance and Repair Program and have restored the Reservoir’s maximum storage capacity to approximately 10,700 acre-feet (U.S. Geological Survey 2009). Because the final Walker River Decree did not provide for an express right to store water in Weber Reservoir (*U.S. vs. Walker River Irrigation District* 1940), the United States on behalf of WRPT, is seeking to establish such a right (together with various other rights) under litigation now pending in the U.S. District Court of Nevada (Yardas 2007 Appendix E).

Groundwater provides an additional source of water for the Reservation. Up to five large-capacity wells have been constructed for irrigation purposes; however,

only three of those were operational as of 2005 (Miller Ecological Consultants 2005). Numerous other small-capacity wells are used for domestic and stock water purposes. WRPT asserts exclusive jurisdiction over groundwater within the Reservation boundaries, and in the above-referenced litigation the United States on behalf of the Tribe is seeking reserved rights to groundwater under all Reservation lands (Yardas 2007 Appendix E).

Clean Water Act

The CWA was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. The CWA now serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. In the state of Nevada, the NDEP Bureau of Water Quality Planning (BWQP) helps to administer the CWA.

The CWA empowers EPA to set national water quality standards and effluent limitations and includes programs addressing both point source and nonpoint source pollution. *Point source pollution* is pollution that originates or enters surface waters at a single, discrete location, such as an outfall structure or an excavation or construction site. *Nonpoint source pollution* originates over a broader area and includes urban contaminants in stormwater runoff and sediment loading from upstream areas. The CWA operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit.

The following paragraphs provide additional details on specific sections of the CWA.

- **Section 303 – Total Maximum Daily Loads.** Section 303(d) of the CWA established the total maximum daily load (TMDL) process to guide the application of state water quality standards. A TMDL is an assessment of the amount of a pollutant that a waterbody can receive and not violate water quality standards. TMDLs provide a way to integrate the management of both point and nonpoint sources of pollution through the establishment of waste load allocations for point source discharges and load allocations for nonpoint sources of pollution. NDEP is required to identify and prioritize those waters for which TMDLs are needed. These streams are impaired by the presence of pollutants, including sediment, and are more sensitive to disturbance.
- **Section 401 - Water Quality Certification.** Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the appropriate state regulatory agency. Under the CWA, a state must issue or waive Section 401 Water Quality

Certification for the project to be permitted under Sections 402 or 404. The applicant must submit a written request for 401 Certification to the Bureau of Water Quality Planning (BWQP) and detailed information on the project's impact on water quality prior to beginning construction.

- **Section 402 - NPDES Permits for Discharge to Surface Waters, General.** CWA Section 402 regulates discharges to surface waters through the NPDES program, administered by EPA. The NPDES program serves to control direct or point source discharges of water pollutants to surface waters of the United States. This includes construction-related stormwater discharges to surface waters. The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits.

NPDES permits are issued either by EPA or an authorized state or tribe. In Nevada, NDEP is authorized by the EPA to oversee the NPDES program. The NPDES program issues permits to all facilities where effluent will be released or discharged to surface waters. A permit applicant must provide quantitative analytical data identifying the types of pollutants present in the facility's effluent. Specific terms and conditions of an NPDES permit vary from facility to facility, but each state that is authorized to administer the NPDES program must at least meet minimum EPA standards.

NPDES permits describe technology-based and water quality-based effluent limits, and establish pollutant monitoring and reporting requirements. Technology-based limitations are established according to the treatment technology capabilities of individual industrial sectors, or source categories. Water quality-based limitations are typically designed to protect designated beneficial uses of surface water (e.g., supporting aquatic life). Water quality criteria and standards vary from state to state, as well as within a given state, depending on uses of the receiving water.

- **Section 402 - NPDES Permits for Discharge to Surface Waters, Construction.** Most construction projects that disturb 1 acre of land or more are required to obtain coverage under the NPDES General Permit for Construction Activities (also known as a General Construction Permit), which requires the property owner to file a Notice of Intent to discharge stormwater and to prepare and implement a SWPPP. The SWPPP includes a site map and a description of proposed construction activities, along with demonstration of compliance with relevant local ordinances and regulations. The SWPPP must also describe the project-specific BMPs that will be implemented to prevent or reduce the discharge of construction-related pollutants, including sediments, into stormwater runoff and surface drainage. Permittees are required to conduct annual monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of stormwater-related pollutants into stormwater runoff.

- **Section 404 - Permits for Fill Placement in Wetlands and other Waters of the United States.** Under the CWA Section 404, the U.S. Army Corps of Engineers (Corps) and EPA regulate the discharge of dredged and fill materials into waters of the United States. Waters of the United States refers to oceans, bays, rivers, streams, lakes, ponds, and wetlands, including the following:
 - ❑ areas within the OHWM of a stream, including nonperennial streams with a defined bed and bank, and any stream channel that conveys natural runoff, even if it has been realigned; and
 - ❑ seasonal and perennial wetlands, including coastal wetlands.
- Wetlands are defined for regulatory purposes as areas “inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3, 40 CFR 230.3).
- Project proponents must obtain a permit from the Corps for all discharges of dredged or fill material into waters of the United States, including wetlands, before proceeding with a proposed activity. The Corps may issue either an individual permit evaluated on a case-by-case basis or a general permit evaluated at a program level for a series of related activities.
- Compliance with CWA Section 404 requires compliance with several other environmental laws and regulations. The Corps cannot issue an individual permit or verify the use of a general permit until the requirements of NEPA, the ESA, and the NHPA have been met. Additionally, the Corps cannot issue or verify any permit until a water quality certification, or waiver of certification, has been issued by BWQP pursuant to CWA Section 401. Section 404 permits may be issued only for the least environmentally damaging practicable alternative.

State

Nevada Department of Conservation and Natural Resources

The Nevada Department of Conservation and Natural Resources houses the Nevada Division of Water Resources (NDWR), which is the primary agency in charge of hydrology- and water quality-related issues in Nevada. The mission of NDWR is to conserve, protect, manage, and enhance the state's water resources through the appropriation and reallocation of public waters. NDWR is responsible for quantifying existing water rights, monitoring water use, distributing water in accordance with court decrees, reviewing water availability for new subdivisions and condominiums, reviewing the construction and operation of dams, appropriating geothermal water, licensing and regulating well

drillers and water rights surveyors, reviewing flood control projects, monitoring water resource data and records, and providing technical assistance to the public and governmental agencies.

Nevada State Engineer

The office of the NSE is within NDWR. The NSE has little involvement in the direct administration of decreed surface water rights in the Walker River Basin. As noted above, however, the NSE is charged with initial jurisdiction concerning proposed changes to decreed water rights (apart from allocated storage rights; see below); and under Nevada law, the NSE may not approve a transfer that conflicts with existing rights, with protectable interests in existing domestic wells, or which threatens to prove detrimental to the public interest; nor may the proposed change adversely affect the cost of water for other holders of rights within an irrigation district, nor lessen the efficiency of the district in the delivery or use of water (NRS Section 533.370 *et. seq.*).

Conditions for transfer approval can often be met by limiting proposed changes to the consumptive use portion of an existing water right, and/or by providing various forms of assurance with regard to the future payment of associated fees and assessments. In addition, the NSE's office has indicated a willingness to consider other possible approaches that could result in either the full transfer of an existing water right or the partial transfer of conserved water derived from such rights. While the specific circumstances of individual change proposals will always be determinative, in general, the ability to adequately monitor, track, and account for the various types of water and water rights involved will be crucial to the evaluation and approval (with or without conditions) of any such proposals (Gallagher pers. comm. December 2008).

Temporary changes to existing water rights may be approved for a period of up to 1 year in duration without prior public notice if the NSE finds that the proposed change is in the public interest and does not impair the water rights held by other persons (NRS 533.345). Alternatively, a person or entity may temporarily convert agricultural water rights for wildlife purposes or to improve the quality or flow of water for successive periods of up to three years in duration provided that the person or entity who owns the water rights applies for and receives all necessary permits and approvals from the NSE (NRS 533.0243). While either of these provisions could potentially be used in conjunction with a program of temporary water leasing in the Walker River Basin (such as Alternative 2 described in this Draft EIS), there are no comparable provisions for temporary changes under the USBWC's 1996 Administrative Rules and Regulations.

The NSE has issued at least three post-decree certificates of appropriation for the use of surface water in the Nevada portions of the Walker River Basin. Often described generally as floodwater rights (because they are junior in priority to most other existing surface water rights, and because they are only available from

May through July each year), they include two certificates granted to WRID in 1976 (8859 on the West Walker River and 8860 on the East Walker River) for the irrigation of lands located generally within the District's boundaries. (WRID describes the water derived from the exercise of these rights as "state permit water.") Of note, certificates 8859 and 8860 include the express condition that "the total duty of water shall not exceed 4.0 af/acre/season from any and/or all sources." A third certificate of appropriation (10860) was issued by the NSE to NDOW in 1983 for up to 575,870 af/yr (January 1 to December 31) for use at Walker Lake with a 1970 priority date (i.e., the most junior surface water right in the Walker River system).

Groundwater rights in Nevada are also administered by the NSE. Apart from small domestic wells, groundwater cannot be extracted for use without a state-issued permit or certificate. Groundwater permits or certificates can be issued for either primary or supplemental uses and are generally limited to a combined water duty of not more than 4.0 af per season (or per year) from all sources.

In addition, within the Walker River Basin in Nevada, Smith Valley, Mason Valley, and Whiskey Flat-Hawthorne (Walker Lake) subbasins, and the Nevada portion of the Antelope Valley subbasin, have been "designated" by the NSE and are thus closed to further appropriation for irrigation purposes. Transfers of groundwater rights are subject to NSE approval; and while transfers of supplemental groundwater rights (from one supplemental use to another) have sometimes been allowed, in general they will not be approved in designated portions of the Basin if there is a potential for increased groundwater withdrawals as a consequence. Thus, in general, a supplemental groundwater right may only be used in conjunction with a "new" water right whose date of priority is the same as or better than that of the water right originally supplemented.

Nevada Division of Environmental Protection

NDEP is the lead agency for Nevada's Comprehensive State Groundwater Protection Program). The core of this program is comprised of pollution control programs that address potential water quality impacts from mining, underground storage tanks, underground injection wells, discharges to groundwater, landfills, and hazardous waste storage. In addition, NDEP is responsible for enforcing federal and state regulations including the CWA sections 404, 402 and 401.

California

WRID's stored water rights in Bridgeport and Topaz Lake Reservoirs were initially set forth in the Walker River Decree (see above) and are presently governed by water rights licenses issued by the SWRCB of California. (See SWRCB License 9407 for Bridgeport Reservoir, as amended by SWRCB Order WR 90-18; and SWRCB License 3978 and 6000 for Topaz Lake Reservoir). In addition, under USBWC's 1996 Administrative Rules and Regulations, SWRCB

is the state agency with initial jurisdiction concerning proposed changes to decreed water rights in the California portions of the Basin. In addition, any proposed changes to the above-referenced California water rights licenses would fall under the SWRCB's exclusive jurisdiction.

Chapter 10.5 of the California Water Code (Sections 1700-1745) governs changes to the point of diversion, place of use, or purpose of use of California water rights. Section 1701 provides that a post-1914 appropriator may change the point of diversion, place of use, or purpose of use under an existing permit or license subject to the SWRCB's approval; and Section 1702 makes clear that any such approval will depend on the SWRCB's determination that the proposed change will not injure any other appropriator or other lawful water user. Under California law, no water rights permits or licenses are required for the extraction of ground water; an overlying landowner's use of ground water is limited only by the amounts reasonably necessary for beneficial use.

Local

Walker River Irrigation District

Pursuant to applicable provisions of the Walker River Decree, WRID distributed its stored water rights in Bridgeport Reservoir and Topaz Lake Reservoir to two major classes of land within its boundaries. First, all water righted lands with decreed priority dates of 1874 or later received an original apportionment¹ that sought to equalize diversion duties for the sum of natural flow plus storage at approximately 3.21 or 4.28 af/acre. (Lands with earlier decreed priority dates did not receive any allocation of supplemental storage water.) Second, storage rights were also allocated or apportioned to lands *without* any decreed water rights. For these "new lands," a primary (nonsupplemental) storage duty of up to 1.54 or 2.06 af/acre was assumed, along with a 65-day maximum diversion period.

Section 2.4 of USBWC's 1996 Administrative Rules and Regulations makes clear that "[a]ny change in the point of diversion and/or place of use of storage waters adjudicated to [WRID], which change is entirely within the boundaries of the [District], shall be made pursuant to adopted rules and regulations of the governing body of said District" (however, this exception "shall not apply to any transfer outside the present boundaries of the [District] nor shall [it] apply should there be a change in the authority given the [District] under Nevada law"). The applicable rules and regulations of WRID were last revised in 1986 (see Rules and Regulations Governing the Distribution and Use of Water, Walker River

¹ The terms *apportioned*, *distributed*, and *allocated* are used interchangeably in this section and describe the same essential function: WRID's post-decree allocation of storage water rights (both supplemental and primary) to lands within its boundaries.

Irrigation District 1986 pgs. 4-1 through 4-7). While the exact nature of WRID’s post-decree storage water apportionments to individual land owners remains uncertain, it does seem clear that WRID will need to be involved in any changes to those “rights” that may be proposed by individual willing sellers as part of the Proposed Project or alternatives.

Regional Plans

Lyon County Master Plan

Smith Valley, Mason Valley, and the East Walker Valley are located in Lyon County. The Lyon County Master Plan (Lyon County 1990) contains many goals and policies pertaining to water resources. The following policies from the Conservation and Natural Resources Chapter are the most pertinent to the Proposed Project and alternatives.

- Goal 1: Retain existing water resources which exist for benefit of Lyon County use: agriculture, residential, and industrial (p 29 of pdf).
- This includes preventing the export of water or water rights from the county and performing studies to ensure that the aquifer is not being depleted.
- Goal 2: To protect and enhance water quality throughout Lyon County (p 29 of pdf).
- Goal 3: Minimize possibility of flooding and resultant damage (p 30 of pdf).
- Goal 6: Enter into long-term contracts with ranchers and other quantity users to exchange treated wastewater for fresh water where applicable (p 30 of pdf).
- Goal 7: Control soil erosion and slope stability (p 30 of pdf).

Mineral County Master Plan

The Reservation Reach and Walker Lake are located in Mineral County. The Mineral County Master Plan (Mineral County 2006) includes concern about water availability for municipal uses. Some key statements potentially relevant to the Proposed Project and alternatives are as follows.

- The water level of Walker Lake has always been and will remain a key concern to Mineral County and will continue to be of “MAJOR IMPACT in the future (p 78).
- There are two geothermal wells in the Hawthorne area and the water temperature is high enough to consider both energy development, as well as resort use (p 82).

- The County government will develop policies to protect all water rights within Mineral County from encroachment by outside entities (p 83).

Biological Resources

The following agencies have authority to review projects for conformance with biologically related issues of applicable guidelines, codes, and legislative acts:

- U.S. Fish and Wildlife Service (USFWS)—Nevada Fish and Wildlife Office
- Bureau of Reclamation (Reclamation)
- U.S. Bureau of Indian Affairs (BIA)
- U.S. Army Corps of Engineers (Corps)—Sacramento District
- Nevada Department of Wildlife (NDOW)
- Nevada Division of Environmental Protection (NDEP), Bureau of Water Quality Planning

These agencies have authority to review proposed projects within their areas of jurisdiction and, where construction is involved, inspect various aspects of the project construction, including ground-disturbing activities such as vegetation removal, ground leveling, and materials staging areas.

Federal

Endangered Species Act of 1973

The Endangered Species Act of 1973 (ESA) (16 United States Code [U.S.C.] 1531 *et seq.*) and subsequent amendments provide for the conservation of listed species or candidates for listing as endangered or threatened species and the ecosystems on which they depend. USFWS has jurisdiction over federally listed plants, wildlife, and fish species. Listed endangered species are in danger of extinction throughout all or a significant portion of their range. Listed threatened species are likely to become endangered in the foreseeable future. Once a species is listed, all protective measures authorized by the ESA apply to the species and its habitat. Proposed species are those that are proposed in the *Federal Register* (FR) to be listed under the ESA. Candidate species are those for which USFWS has sufficient information to propose them as endangered or threatened under ESA, but for which development of a proposed listing regulation is precluded by other higher priority listing activities. Proposed and candidate species do not receive statutory protection under the ESA; however, USFWS encourages conservation measures. Relevant provisions of, or actions in response to, the ESA are described below.

- **ESA Section 7: Consultation Process for Federal Actions.** Under ESA Section 7, the lead federal agency conducting, funding, or permitting an action must consult with USFWS to ensure that the proposed action will not jeopardize the continued existence of an endangered or threatened species or destroy or adversely modify designated critical habitat. If a proposed project “may affect” a listed species or designated critical habitat, the lead agency is required to prepare a biological assessment (BA) evaluating the nature and severity of the expected effect. In response, USFWS issues a biological opinion (BO), with a determination that the proposed project either:
 - ❑ may jeopardize the continued existence of one or more listed species (jeopardy finding) or result in the destruction or adverse modification of critical habitat (adverse modification finding), or
 - ❑ will not jeopardize the continued existence of any listed species (no jeopardy finding) or result in adverse modification of critical habitat (no adverse modification finding).

The BO may stipulate discretionary “reasonable and prudent” conservation measures. If it is determined the proposed project would not jeopardize the continued existence of a listed species, USFWS issues an incidental take statement to authorize the proposed activity.

- **ESA Section 9: Prohibitions.** Section 9 of ESA prohibits the *take* of any fish or wildlife species listed under ESA as endangered. *Take*, as defined by ESA, means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” Harm is defined as “any act that kills or injures the species, including significant habitat modification.” Take of threatened species also is prohibited under Section 9 unless otherwise authorized by federal regulations.² Additionally, Section 9 prohibits removing, cutting, and maliciously damaging or destroying federally listed plants on sites under federal jurisdiction.
- **ESA Section 3: Critical Habitat.** Critical habitat is defined in ESA Section 3(5)(A) as “specific areas within the geographic area occupied by the species on which are found those physical or biological features essential to the conservation of the species and which may require specific management considerations or protection.” Critical habitat is also defined as “specific areas outside the geographical area occupied by the species at

¹ In some cases, exceptions may be made for threatened species under ESA Section 4(d); in such cases, USFWS or National Marine Fisheries Service (NMFS) issues a “4(d) rule” describing protections for the threatened species and specifying the circumstances under which take is allowed.

the time it is listed but a determination has been made that such areas are essential for the conservation of the species.” The designation of critical habitat for a listed species helps focus conservation activities by identifying areas that contain essential habitat features regardless of whether they currently are occupied by the listed species.

- **Walker River Basin Recovery Implementation Plan.** USFWS is developing the Walker River Basin Recovery Implementation Plan to address the requirements of the 1995 Lahontan Cutthroat Trout (LCT) Recovery Plan and mandates of the ESA as amended. The concept of *recovery* is defined as “improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4(a)(1) of the Endangered Species Act as amended” (50 Code of Federal Regulations [CFR] §402.02). Therefore, the long-term goal of the LCT Recovery Plan is to remove LCT from the ESA list of threatened and endangered wildlife and plants.

Clean Water Act

The Clean Water Act (CWA) was enacted as an amendment to the Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. The CWA now serves as the primary federal law protecting the quality of the nation’s surface waters, including lakes, rivers, and coastal wetlands.

The CWA empowers EPA to set national water quality standards and effluent limitations and includes programs addressing both point- and nonpoint-source pollution. Point-source pollution is pollution that originates or enters surface waters at a single, discrete location, such as an outfall structure or an excavation or construction site. Nonpoint-source pollution originates over a broader area and includes urban contaminants in stormwater runoff and sediment loading from upstream areas. The CWA operates on the principle that all discharges into the nation’s waters are unlawful unless specifically authorized by a permit. Additional details on sections of the CWA. 33 U.S.C. 1251 *et seq.* are provided below.

- **CWA Section 401: Water Quality Certification.** Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the NDEP Bureau of Water Quality Planning.
- **CWA Section 404: Permits for Fill Placement.** Under the CWA Section 404, the Corps and EPA regulate the discharge of dredged and fill materials into waters of the United States. Waters of the United States refers to oceans, bays, rivers, streams, lakes, ponds, and wetlands, including:

- ❑ areas within the ordinary high water mark (OHWM) of a stream, including nonperennial streams with a defined bed and bank, and any stream channel that conveys natural runoff, even if it has been realigned; and
- ❑ seasonal and perennial wetlands.

Wetlands are defined for regulatory purposes as areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR 328.3, 40 CFR 230.3).

Project proponents must obtain a permit from the Corps for all discharges of dredged or fill material into waters of the United States, including wetlands, before proceeding with a proposed activity. As stated by the Counsel for EPA's January 19, 2001, determination in response to the *Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers* ruling, nonnavigable, isolated waters may not be regulated by the Corps. Generally, isolated wetlands are considered hydrologically isolated from other water bodies.

In 2006, the Supreme Court addressed the jurisdictional scope of Section 404 of the CWA, specifically the term waters of the U.S., in *Rapanos v. U.S.* and in *Carabell v. U.S.* (hereafter referred to as *Rapanos*). The *Rapanos* decision provides two new analytical standards for determining whether water bodies that are not traditional navigable waters, including wetlands adjacent to those nontraditional navigable waters, are subject to CWA jurisdiction (1) if the water body is relatively permanent or is a wetland that directly abuts a relatively permanent water body; or (2) if a water body, in combination with all wetlands adjacent to that water body, has a significant nexus with traditional navigable waters. As a result of this decision, the EPA and Corps developed guidance requiring the application of the two standards described above, as well as a greater level of documentation, to support an agency jurisdictional determination for a particular water body.

The Corps may issue either an individual permit evaluated on a case-by-case basis or a general permit evaluated at a program level for a series of related activities. General permits are preauthorized and are issued to cover multiple instances of similar activities expected to cause only minimal adverse environmental effects. A nationwide permit is a type of general permit issued to cover particular fill activities. Waters of the United States in the project area are under the jurisdiction of the Corps' Sacramento District.

Compliance with CWA Section 404 requires compliance with other laws and regulations. The Corps cannot issue an individual permit or verify the

use of a general permit until the requirements of NEPA, ESA, and the National Historic Preservation Act (NHPA) have been met. Additionally, the Corps cannot issue or verify any permit until a water quality certification, or waiver of certification, has been issued pursuant to CWA Section 401. A Section 404 permit may be issued only for the least environmentally damaging practicable alternative.

- **CWA Section 402: Permits for Stormwater Discharge.** CWA Section 402 regulates construction-related stormwater discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program, administered by EPA. In Nevada, NDEP reviews projects through the Section 402 application process.

NPDES permits are required for projects that disturb more than 1 acre of land. The NPDES permitting process requires the applicant to file a public notice of intent to discharge stormwater and to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP includes a site map and a description of proposed construction activities. In addition, it describes the best management practices (BMPs) that will be implemented to prevent soil erosion and discharge of other construction-related pollutants (e.g., petroleum products, solvents, paints, cement) that could contaminate nearby water resources. Permittees are required to conduct annual monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of stormwater-related pollutants.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 *et seq.*) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union and authorizes the Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes hunting seasons and capture limits for game species and protects migratory birds, their occupied nests, and their eggs (16 USC 703, 50 CFR 21, 50 CFR 10).

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat 350) makes it illegal to import, export, take (which includes molest or disturb), sell, purchase, or barter any bald eagle (*Haliaeetus leucocephalus*) or golden eagle (*Aquila chrysaetos*), or parts thereof. USFWS oversees enforcement of this act. The 1978 amendment authorizes the Secretary of the Interior to permit the taking of golden eagle nests that interfere with resource development or recovery operations.

Wild and Scenic Rivers Act of 1968

The Wild and Scenic Rivers Act of 1968 (16 U.S.C. 1271–1287) establishes a National Wild and Scenic Rivers System for the protection of rivers with important scenic, recreational, fish and wildlife, and other values. Although there is no designated wild or scenic river in the study area, the National Park Service (NPS) maintains a Nationwide Rivers Inventory (NRI), a register of river segments that potentially qualify as national wild, scenic, or recreational river areas (National Park Service 2004). Under a 1979 Presidential directive, and related Council on Environmental Quality (CEQ) procedures, all federal agencies must seek to avoid or mitigate actions that would adversely affect NRI segments. NPS has identified three river segments in the study area that are listed on the NRI:

- West Walker River from Walker River confluence to source (83 miles);
- East Walker River from the Nevada/California border to bridge crossing near Flying M Ranch headquarters (26 miles); and
- East Walker River from the bridge crossing near Sweetwater Creek confluence to bridge crossing near headquarters of Flying M Ranch (24 miles).

Executive Order 13186

Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (January 10, 2001; 66 FR 3853), directs each federal agency taking actions that have or may have a negative impact on migratory bird populations to work with USFWS to develop a Memorandum of Understanding that will promote the conservation of migratory bird populations. Protocols developed under the Memorandum of Understanding must incorporate the agency responsibilities listed below.

- Avoid and minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.
- Restore and enhance migratory bird habitats, as practicable.
- Prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds, as practicable.

The executive order is designed to assist federal agencies in complying with the MBTA and does not constitute any legal authorization to take migratory birds.

Executive Order 11990

Executive Order 11990, Protection of Wetlands (May 24, 1974; 42 FR 26961), provides for protection of wetlands through avoidance or minimization of adverse impacts. Any action that involved modification of or construction within

jurisdictional wetlands would require mitigation to be consistent with this executive order.

Executive Order 13112

Executive Order 13112, Invasive Species (January 14, 1999; 64 FR 2419), directs all federal agencies to prevent and control introductions of invasive nonnative species, and to minimize the economic, ecological, and human health impacts caused by invasive species infestations. It requires the NEPA process to include a determination of the likelihood of introducing or spreading invasive species and a description of measures being taken to minimize their potential harm.

State

Nevada Revised Statute 501: Wildlife Administration and Enforcement

The State of Nevada protects listed wildlife species under Nevada Revised Statute (NRS) 501. NDOW is the state agency responsible for the management, protection, and restoration of fish and wildlife resources. State regulations require a permit from NDOW to take any protected wildlife species. Nevada protected fish and wildlife species are species or subspecies of native fish, wildlife, and other fauna that are regarded as threatened with extinction. The Nevada Board of Wildlife Commission establishes policies and regulations necessary to the preservation, protection, management, and restoration of wildlife and habitat.

Nevada Administrative Code 527: Protection and Preservation of Timbered Lands, Trees and Flora

The State of Nevada maintains a list of plant species for which a population decline is documented in all or portions of their range within the state (Nevada Natural Heritage Program 2007a, 2007b), and protects those species threatened with extinction under Nevada Administrative Code (NAC) 527. This list of protected species is known as the Critically Endangered Species List. The State Forester, Fire Warden, or Nevada Board of Wildlife Commission can designate a fully protected species when, after consultation with competent authorities, it determines that a species is threatened with extinction and its survival requires assistance because of overexploitation, disease, or other factors or its habitat is threatened with destruction, drastic modification, or severe curtailment. Any species declared to be threatened with extinction must be placed on the list of fully protected species, and no member of its kind may be captured, removed, or destroyed at any time by any means except under special permit issued by State Forester, Fire Warden, or NDOW (NRS 527.270).

Nevada Revised Statute 555: Control of Insects, Pests and Noxious Weeds

The Nevada Department of Agriculture maintains a list of noxious weeds in the state (Nevada Department of Agriculture 2008), and is authorized to investigate

noxious weed occurrence and require landowners or occupants to control noxious weeds (NRS 555, sections 005-217). The overall significance of the noxious weed determines what prevention or control activities are appropriate, at what level, and when and where those activities should be conducted. According to NAC 555.090, the Walker River Weed Control District is created for the control of designated noxious weeds within the prescribed boundaries. Weeds to be controlled are limited to the following:

- Whitetop (*Cardaria* spp., *Lepidium* spp.);
- Knapweed (*Centaurea* spp.);
- Canada thistle (*Cirsium* spp.);
- Musk thistle (*Carduus* spp.);
- Scotch thistle (*Onopordum* spp.);
- Yellow star thistle (*Centaurea* spp.);
- Puncture vine (*Tribulus* spp.); and
- Licorice (*Glycyrrhiza* spp.).

Local

Mineral County Master Plan

The Mineral County Master Plan (Mineral County 2006) includes the following general goals related to the preservation and restoration of natural resources:

- Preserve and improve any outstanding natural, historic, or scenic features in Mineral County, and provide a plan that deals specifically with conservation and natural resource protection and development of public lands.
- Restore health and functioning to the natural resources of the County for present and future generations.

Lyon County Master Plan

The 1990 Lyon County Master Plan does not contain policies specifically for the protection of vegetation or wetland resources, other than as they relate to recreational uses (Lyon County 1990). An updated Lyon County Master Plan is expected in 2009. During this updating process, the County will address a variety of key issues, including natural resources and the environment (Lyon County 2007).

Land Use and Agriculture

Federal

Farmland Protection Policy Act

The Farmland Protection Policy Act (FPPA) (7 U.S.C. 658) was enacted by Congress as a subtitle of the 1981 Farm Bill. The purpose of the law is to “minimize the extent to which Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses” (Public Law [P.L.] 97-98, Section 1539-1549; 7 U.S.C. 4201 *et seq.*). The FPPA also stipulates that federal programs be compatible with state, local, and private efforts to protect farmland. For the purposes of the law, federal programs include construction projects—such as highways, airports, dams and federal buildings—sponsored or financed in whole or part by the federal government, and the management of federal lands. In addition, farmland is defined as prime farmland, unique farmland, and land of statewide or local importance. The U.S. Department of Agriculture’s Natural Resources Conservation Service is charged with oversight of the FPPA.

The FPPA applies to federal projects that would convert farmland to nonagricultural uses but does not authorize the federal government to regulate the use of private or nonfederal land or affect the rights of property owners. The FPPA does not, however, require that an agency modify its project to protect farmland, only that it evaluate the impacts and consider alternatives. The land evaluation and site assessment system is a tool for complying with the FPPA. This is a numerical system that rates both the quality of the soil and other site conditions that affect farm viability, such as distance to water and parcel size (American Farmland Trust 2006). This farmland conversion impact rating is an indicator for the project sponsor to consider alternative sites.

State

Nevada Wilderness Protection Act

The Nevada Wilderness Protection Act of 1989 (P.L. 101-195, S974) designates wilderness areas in Nevada, including lands in the Toiyabe National Forest. The act defines how the lands are to be used and cared for, and reserves water rights for the wilderness areas.

Nevada Division of State Parks

The Nevada Division of State Parks manages the Walker Lake State Recreation Area (SRA). Land use at the SRA is guided by the Walker Lake State Recreation Area Master Plan (Nevada Division of State Parks 1989). There are no immediate plans to update the Master Plan.

Wildlife Management Areas

Land use for the Mason Valley Wildlife Management Area (WMA) is outlined in the Mason Valley Wildlife Management Area Conceptual Management Plan (Nevada Department of Wildlife 2000). The Alkali Lake WMA, also located in the study area, currently does not have a conceptual management plan.

Local

Carson City Field Office Consolidated Resource Management Plan

Land use decisions on U.S. Bureau of Land Management (BLM) land in the Walker River Basin are guided by the Carson City Field Office Consolidated Resource Management Plan (Bureau of Land Management 2001). The plan is based on decisions from eight major field office planning documents and five amendments to these planning documents. Land use plan conformance determinations are based on the decisions and information contained in the plan. Issues covered in the plan include mining, grazing, herd management, land disposal and acquisition, and rights-of-way.

Walker River Paiute Tribe

There is no formal land use plan for the Walker River Indian Reservation, but because WRPT owns most of the land, the Tribal Council controls most land use decisions (Miller Ecological Consultants 2005).

Yerington Paiute Tribe

There is no formal land use plan for the YPT Reservation and Colony (Emm pers. comm.).

Mineral County Master Plan

Land use decisions in Mineral County are based on the 2006 Mineral County Master Plan. The goals applicable to the Proposed Project are presented below.

- Goal: Preserve and improve any outstanding natural, historic, or scenic features in Mineral County. Provide a plan that deals specifically with conservation and natural resource protection and development of public lands.
- Goal: Restore health and functioning to the natural resources of the County for present and future generations.

Lyon County Master Plan

Land use decisions in Lyon County are based on policies in the 1990 Lyon County Master Plan. The Lyon County Master Plan will be updated in 2009.

During this updating process, the County will address key issues (Lyon County 2007): land use and growth management; natural resources and the environment; parks, recreation, and open space; public facilities and services; transportation; regional coordination; community character and design; and community and culture. The conservation, natural resources, and land use goals from the current plan that are applicable to the Proposed Project are presented below.

- Goal: Retain existing water resources which exist for benefit of Lyon County use: agriculture, residential, and industrial.
- Goal: Lyon County shall review all development, special use and/or zone change proposals to ensure that existing and proposed land uses are compatible.
- Goal: Preserve agricultural lands.

Air Quality

Air quality management programs at the federal, state, and local level have evolved using two distinct management approaches:

- setting ambient air quality standards for acceptable exposure to air pollutants; and
- identifying specific chemical substances that are potentially hazardous to human health, and then regulating the amount of those substances that can be released by individual commercial or industrial facilities or by specific types of equipment.

Air quality programs based on ambient air quality standards typically address air pollutants that are produced in large quantities by widespread types of emission sources and that are of public health concern because of their toxic properties. Air quality programs based on regulation of other hazardous substances typically address chemicals used or produced by limited categories of industrial facilities.

Federal

Clean Air Act

The CAA (42 U.S.C. 85) requires each state to develop, adopt, and implement a state implementation plan (SIP) to achieve, maintain, and enforce federal air quality standards throughout the state. Deadlines for achieving the federal air quality standards vary according to air pollutant and the severity of existing air quality problems. The SIP must be submitted to and approved by EPA. SIP elements are developed on a pollutant-by-pollutant basis whenever one or more of the federal air quality standards are being violated. Additional elements of the CAA are described below.

- **Ambient Quality Standards.** Ambient air quality standards (AAQS) are regulatory levels of ambient pollutant concentrations that, when exceeded, may adversely affect the health and welfare of the public. National Ambient Air Quality Standards (NAAQS) were established as a result of the provisions of the CAA of 1970. The national standards are divided into primary standards designed to protect public health, and secondary standards intended to protect the public from any known or anticipated adverse effects of a pollutant. The NAAQS may be equaled continuously and exceeded once per year. National standards have been established for ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), particulate matter less than 10 microns (PM₁₀), particulate matter less than 2.5 microns (PM_{2.5}), sulfur dioxide (SO₂), and lead (Pb).
- **Section 176, General Conformity Rule.** The 1990 amendments to CCA Section 176 required EPA to promulgate rules to ensure that federal actions conform to the appropriate SIP. The U.S. EPA Conformity Rule consists of transportation and general conformity requirements. The General Conformity Rule (40 CFR 51.850-.860 and 40 CFR 93.150-.160) requires any federal agency responsible for an action in a nonattainment area to either determine that the action is exempt or positively determine that the action conforms to the applicable SIP. In addition to the roughly 30 presumptive exemptions established and available in the General Conformity Rule, an agency may establish that rates would be less than specified emission rate thresholds, known as *de minimis* limits. An action is exempt from a conformity determination if an applicability analysis shows that the total direct and indirect emissions from the project will be below the applicable *de minimis* thresholds and will not be regionally significant, which is defined as representing ten percent or more of an area's emissions inventory or budget.
- **Section 188(f), Waiver Provision.** Section 188(f) of the CAA allows the EPA to waive the attainment status for PM₁₀ and PM_{2.5} in areas where nonanthropogenic sources (i.e., natural sources that are not influenced directly or indirectly by human activity) may contribute significantly to violations of the standards. Examples of nonanthropogenic PM₁₀ emission sources include volcanic eruptions, smoke from natural forest and range fires, windblown dust from undisturbed natural areas, and salt spray in coastal areas. The U.S. House of Representatives committee report on the 1990 CAA amendments specifically cited dust from Owens Lake and Mono Lake in California as examples of anthropogenic emissions because dust storms in those areas are caused ultimately by the human activity of diverting water from the streams feeding Owens Lake and Mono Lake (Stensvaag 1991). It is likely that any fugitive dust problems linked to lakebed areas exposed by reduced water inflows to Walker Lake would be considered an anthropogenic air quality problem, and not derived from a natural event.

- **Criteria Pollutants.** Air quality in the United States is governed by the CAA, which is administered by EPA. Six criteria pollutants have been designated by EPA to focus on improving air quality throughout the country. The six criteria pollutants are nitrogen oxides (NO_x), O₃, Pb, SO₂, CO, and PM₁₀ and PM_{2.5}. A number of sources, both natural and anthropogenic, contribute to air pollution. These sources include stationary (power plants, factories), mobile (motor vehicles, construction equipment), and natural (wildfires and windblown dust) sources.

State

Nevada

In Nevada, air quality programs are managed in the Department of Conservation and Natural Resources (DCNR), Nevada Division of Environmental Protection (NDEP), and the Bureau of Air Quality Planning (BAQP). The Bureau of Air Pollution Control (BAPC) is responsible for regulating air quality and implementing SIPs to meet national air quality standards. The Nevada AAQS are similar to the NAAQS, except that the state provides an additional standard for CO in areas higher than 5,000 feet above sea level. Additionally, a violation of a state standard in Nevada occurs with the first annual exceedance, whereas federal standards are not violated until the second annual exceedance. BAPC operates a network of air monitoring stations near population centers, but there are no current monitoring stations near the project area.

California

In 1988, the California state legislature adopted the California Clean Air Act (CCAA), which established a statewide air pollution control program. Responsibility for achieving California's generally more stringent air quality standards is placed on the California Air Resources Board (CARB) and local air districts. Implementation of SIPs has been vested upon the 30 air districts in the state. Air district responsibilities include, among others, preparing air quality plans and maintaining air quality monitoring stations. The CCAA requires districts to expeditiously adopt and prepare an air quality attainment plan if the district violates a state air quality standard. California is the only state with air districts.

The majority of the Walker River Basin lies outside of California, and under all of the action alternatives all proposed acquisitions would occur in Nevada. In addition, none of the action alternatives are expected to affect air quality in California. Therefore, while briefly introduced here, California standards are not addressed further.

While EPA has established NAAQS for each pollutant that must not be exceeded, individual states may establish more stringent state or county standards but may

not lessen federal standards. Table 1A-1 compares the federal and Nevada state AAQS. As discussed above, if a county meets the federal or state ambient air quality standards, it is considered to be in attainment. If a county does not meet federal or state standards, it is considered to be in nonattainment.

Local

There are no local regulations pertaining to air quality in the project area.

Cultural Resources

Federal

National Historic Preservation Act of 1966

The NHPA as amended through 1992, particularly Sections 106 and 110, established the federal government's policy on historic preservation and its program for implementation of the policy. This program includes the National Register of Historic Places (NRHP), the position of State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (ACHP).

A major provision of the Act is Section 106, which requires federal agencies to take into account the effects of their undertakings on historic properties and to allow the ACHP an opportunity to comment on undertakings that could have such an effect. Section 110 requires federal agencies to assume responsibility for historic properties under their jurisdiction and to take measures to preserve them. Federal agencies are directed to inventory, evaluate, and nominate historic properties to the National Register. The NHPA provides for the dissemination of regulations, standards, and guidelines related to its provisions.

Antiquities Act of 1906

The Antiquities Act of 1906 authorizes the President to designate National Monuments on federally owned or controlled lands, and it also provides criminal sanctions against excavation, injury, or destruction of historic and prehistoric resources, located on federal lands. This Act was the first to provide for the issuing of permits by federal agencies for archaeological investigations for scientific and educational purposes on lands under their control. Such permits are now authorized under the Archaeological Resources Protection Act of 1979.

National Environmental Policy Act of 1969

NEPA directs federal agencies to use all practicable means to "Preserve important historic, cultural, and natural aspects of our national heritage..." (Section 101(b)(4)). Regulations for implementing the procedural provisions of NEPA are found in 40 CFR 1500-1508. If the presence of a significant environmental

resource is identified during the scoping process, federal agencies must take the resource into consideration when evaluating project effects. Consideration of cultural resources may be required under NEPA when a project is proposed for development on federal land, or land under federal jurisdiction. The level of consideration depends on the federal agency involved.

Historic Sites Act of 1935

The Historic Sites Act more firmly established the federal government's duty in historic preservation, and declared a national policy to preserve for public use historic sites, buildings, and objects. Much of what was mandated in this Act was later expanded upon in the NHPA.

Archaeological and Historic Preservation Act of 1960

Originally called the Reservoir Salvage Act, the Archaeological and Historic Preservation Act (as amended) amended the 1960 Reservoir Salvage Act and provided for the preservation of significant scientific, prehistoric, historic, and archaeological materials and data that might be lost or destroyed as a result of the construction of dams and reservoirs, or other federally sponsored projects.

Archaeological Resource Protection Act of 1979

The purpose of the Archaeological Resource Protection Act of 1979 (16 U.S.C. 470, as amended 1988) is to provide for the protection of archaeological resources on federal and Indian lands. It defines archaeological resources, requires permits to conduct archaeological investigations on federal or Indian lands, and requires the location of archaeological sites to be kept confidential. It also prohibits the excavation, removal, sale, or purchase of archaeological materials without a permit, under penalty of law that includes fines, imprisonment, or civil penalties. The Act also mandates the Secretaries of the Interior, Agriculture, and Defense, and the Chairman of the Board of the Tennessee Valley Authority to develop plans for surveying lands under their control, prepare a schedule for surveying lands containing the most important resources, and develop documents for reporting violations of the Act and establish when and how such documents are to be completed.

Native American Graves Protection and Repatriation Act of 1990

The Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C.3001) assigns ownership or control of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony that are excavated or discovered on federal or tribal lands after 1990 to lineal descendants or culturally affiliated Native American groups.

Executive Order 11593

Executive order 11593, Protection and Enhancement of the Cultural Environment (36 FR 8921, 1971), mandates that all Executive Branch agencies, bureaus, and offices 1) compile an inventory of the cultural resources—archaeological, architectural and historical properties, sites and districts—for which they are trustee; 2) nominate all eligible government properties to the National Register; 3) preserve and protect their cultural resources; and 4) insure that agency activities contribute to the preservation and protection of non-federally owned cultural resources. The deadline for federal agency compliance with Executive Order 11593 was July 1, 1973.

Executive Order 13175

Executive order 13175, Consultation and Coordination with Indian Tribal Governments (2000), replaces Executive Order 13084 (2000) and clearly defines consultation and coordination with Indian tribal governments. Tribes are recognized as having a unique trust relationship with the United States government. These relationships are called government-to-government relationships. Federal agencies have a duty to consult with tribal governments and must recognize tribal self government and sovereignty.

Directives and Policies

- **Bureau of Reclamation Manual Directives and Standards LND 02-01** is the primary internal planning document used in the U.S. Bureau of Reclamation offices. This document incorporates all cultural resources laws and regulations and dictates policy toward cultural resources.
- **Bureau of Reclamation Manual Policy LND P01** is a statement that, in association with the Directives and Standards LND 02-01, ensures the U.S. Bureau of Reclamation maintains a cultural resources program that reflects the spirit and intent of the legislative mandates.

State

There are no regulations pertaining to cultural resources in Nevada.

Local

There are no local regulations pertaining cultural resources in the project area.

Socioeconomics

Federal

There are no specific federal regulations pertaining to the assessment of socioeconomic impacts. The requirements of Executive Order 12898 are addressed under Environmental Justice (below) and the requirements of the Farmland Protection Policy Act are addressed under Land Use (above).

State

There are no state regulations regarding socioeconomic resources in Nevada.

Local

There are no local regulations regarding socioeconomic resources in the project area.

Recreation

Federal

BLM Carson City Field Office Consolidated Resource Management Plan

Management of recreation facilities and development of recreation plans and policies on BLM land in the Walker Basin are guided by national BLM policy and the *Carson City Field Office Consolidated Resource Management Plan*. The national BLM policy states that public lands and related waters will be available for a diversity of resource-dependent outdoor recreation opportunities while also being maintained as a national resource in harmony with the principle of balanced multiple use. To meet the overall objectives of the national BLM policy, specific recreation program policies have been developed locally to provide additional guidance. Specific policies in the plan address land use allocations for recreation activities, special designations for various areas, and maintenance of recreation management plans. Walker Lake has been given a special designation under this plan and has an associated recreation management plan (Bureau of Land Management 2001).

BLM Walker Lake Recreation Management Plan

Recreation planning for most public land on the east and west sides of Walker Lake is guided by the 1979 Walker Lake Recreation Management Plan (WLRMP). While the plan is dated, the implementation and management actions still apply. The plan summarizes the planned actions for three beach sites, undeveloped sites at the lake, and area-wide actions. At the time the WLRMP was published, the managed public land totaled approximately 63,800 acres. The

area has since increased in size as the lake continues to recede. The WLRMP contains two objectives relevant to the project evaluated in this Draft EIS:

- **Objective A.** Outdoor recreation will be the primary resource management program in the plan area. Other management activities within the BLM's authority will be allowed only if they do not compromise recreation values.
- **Objective B.** BLM will develop and enhance high-quality opportunities for water-oriented public recreation activities such as boating, fishing, swimming, wading, camping, picnicking, and sightseeing, by providing and maintaining facilities to accommodate these uses. Opportunities will be managed to provide as wide a range of settings as possible, from concentrated use in developed sites to dispersed use in undeveloped sites and areas.

Walker River Paiute Tribe

WRPT is governed by a seven-member Tribal Council and is advised by many committees, advisory boards, and commissions on program areas. The Tribe maintains administrative policies to govern the tribal people and the Reservation (Walker River Paiute Tribe 2008). The Walker River Indian Reservation does not have a formal recreation management plan, but it does impose regulations on recreation-related activities. All public access to the reservation requires permission from the tribal council. Fishing, hunting, and other recreation activities (e.g., off-highway vehicle use, equestrian trail riding, camping, and group activities at Weber Reservoir) on tribal land require permits and/or permission issued by the tribal council and have accompanying regulations. Fishing and hunting at Walker Lake on the reservation lands requires the appropriate permits from the tribal council (Williams pers. comm.).

State

Statewide Comprehensive Outdoor Recreation Plan Assessment and Policy Plan

The 2003 Statewide Comprehensive Outdoor Recreation Plan Assessment and Policy Plan (last revised in 2004) provides overall statewide recreation goals and objectives. Information and recommendations are laid out in the plan to guide the decision-making process of allocation of outdoor recreation resources. The issues, actions recommended to address these issues, and recreation needs listed are the driving factors for development of Land and Water Conservation Fund projects. The federal Land and Water Conservation Fund program provides matching grants to states for the acquisition and development of public outdoor recreation areas and facilities (Nevada Division of State Parks 2004).

Local

Lyon County

Recreation policies and goals for Lyon County are contained in the 1990 Lyon County Master Plan. The county is currently undertaking a comprehensive master planning effort to update the 1990 Master Plan. The updated plan likely will not be available until sometime in 2009. The current recreation goals are listed below.

- Goal 1: To retain areas throughout Lyon County that will support game, game birds, and fishing for outdoor enthusiasts.
- Goal 2: To create and reserve areas along waterways which can be used as parks, walkways, and river access.
- Goal 5: Promote and encourage the use of water areas for water sports, boating, etc.

Mineral County

Recreation-related goals of Mineral County are contained in the 2006 Mineral County Master Plan. This plan includes goals addressing recreation explicitly as well as goals addressing natural resources that provide recreational opportunities. The goals are presented below.

Conservation and Natural Resources Goal: To preserve and improve any outstanding natural, historic, or scenic features in Mineral County. To provide a plan that deals specifically with conservation and natural resource protection and development of public lands.

Natural Resources Goal: Restore health and functioning to the natural resources of Mineral County for present and future generations.

Recreation Goal: To continue planning and improving park and recreation facilities county wide. Encourage recreational facilities for all age groups in Mineral County and to continue recreational use of open lands, Walker Lake, rivers, etc.

Indian Trust Assets

Federal

Executive Order 13175

Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (65 FR 218), establishes regular and meaningful consultation and

collaboration with tribal officials in the development of federal policies that have tribal implications.

Presidential Memorandum

The Presidential Memorandum signed by President Clinton on April 29, 1994, Government-to-Government Relations with Native American Tribal Governments (59 FR 85), directs the U.S. Department of the Interior (DOI) and its bureaus (Including the Bureau of Reclamation) to assess the effect of its programs on Indian Trust Assets (ITAs) and federally recognized tribal governments. DOI and its bureaus are tasked with actively engaging federally recognized tribal governments and consulting with such tribes on a government-to-government level when its actions affect ITAs.

Department of the Interior Departmental Manual

The DOI Departmental Manual Part 512 assigns responsibility for ensuring protection of ITAs to the heads of bureaus and offices and states that it is the policy of DOI to recognize and fulfill its legal obligations to identify, protect, and conserve the trust resources of federally recognized Indian tribes and tribal members. All bureaus are responsible for identifying any impact of their plans, projects, programs, or activities on ITAs; ensuring that potential impacts are explicitly addressed in planning, decision, and operational documents; and consulting with recognized tribes who may be affected by proposed activities. Consistent with this, Reclamation's Indian trust policy states that Reclamation will carry out its activities in a manner that protects ITAs and avoids adverse impacts when possible, or provides appropriate mitigation or compensation when it is not. To carry out Part 512, Reclamation incorporated requirements into its NEPA compliance procedures to evaluate the potential effects of its proposed actions on ITAs. Reclamation is responsible for assessing whether the action alternatives would impact ITAs.

Bureau of Reclamation Policies

Indian Policy

This policy affirms that Reclamation will comply with both the letter and the spirit of federal laws and policies relating to Indians; acknowledge and affirm the special relationship between the United States and federally recognized Indian tribes; and actively seek partnerships with Indian tribes to ensure that tribes have the opportunity to participate fully in the Reclamation program as they develop and manage their water and related resources.

Protocol Guidelines

These guidelines establish the protocol for conducting consultation and maintaining government-to-government relationships with Indian Tribal Governments.

Indian Trust Asset Policy and Guidance

This memorandum outlines NEPA procedures to implement Indian trust resource policy (Bureau of Reclamation 1994).

State

There are no state regulations pertaining to ITAs in Nevada.

Local

There are no local regulations pertaining to ITAs in the project area.

Environmental Justice

Federal

Executive Order 12898

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (Feb 11 1994; 59 FR 32), stipulates that each federal agency will make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.

Environmental justice programs promote the protection of human health and the environment, empowerment via public participation, and the dissemination of relevant information to inform and educate affected communities.

State

There are no state regulations pertaining to environmental justice in Nevada.

Local

There are no local regulations pertaining to environmental justice in the project area.

Climate

Federal

There are currently no federal regulations pertaining to climate change, although 12 states and cities, in conjunction with several environmental organizations, sued to force the Environmental Protection Agency (EPA) to regulate greenhouse gas (GHG) emissions as a pollutant pursuant to the Clean Air Act (CAA) (*Massachusetts v. Environmental Protection Agency et al.* [U.S. Supreme Court 05-1120. Argued November 29, 2006—Decided April 2, 2007]). The Supreme Court ruled that the plaintiffs had standing to sue, that GHGs fit within the CAA's definition of a pollutant, and that the EPA's reasons for not regulating GHGs were insufficiently grounded in the CAA.

In November 2007 and August 2008, the Ninth Circuit U.S. Court of Appeals ruled that a National Environmental Policy Act (NEPA) document must contain a detailed GHG analysis. (*Center for Biological Diversity v. National Highway Safety Administration* 508 F. 3d 508 (2007) was vacated and replaced by *Center for Biological Diversity v. National Highway Safety Administration* 2008 Daily Journal Daily Appellate Report 12954 (August 18, 2008)). Despite the Supreme Court and circuit court rulings, there are no promulgated federal regulations to date limiting GHG emissions.

State

There are no state regulations addressing the assessment of climate change impacts in Nevada.

Nevada's Renewable Portfolio Standards, established in 1997 under Assembly Bill 336, raised in 2001 under Senate Bill 372, and further raised and extended in 2005 under Assembly Bill 03, require that 20% of all electricity generated in Nevada be derived from renewable generation sources by the year 2015. The Nevada Public Utilities Commission is responsible for implementing the program.

Local

There are no local regulations pertaining to climate change in the project area.

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Appendix 2A Option and Purchase Agreements

Appendix 2A Option and Purchase Agreements

Since early 2007, the Nevada System of Higher Education on behalf of the University of Nevada, Reno (University) has received more than 40 inquiries and offers from prospective willing sellers of land, water appurtenant to the land, and related interests in the Walker River Basin in Nevada. To preserve at least some of these potential acquisition opportunities, the University initiated efforts to evaluate each inquiry or offer and, where appropriate, developed and entered into water and water rights option and purchase agreements with individual willing sellers. (An option and purchase agreement sets forth the terms and conditions under which a buyer would be willing, but not required, to purchase the property interests owned and offered by a willing seller. These terms typically include a fixed period of time during which the options can be exercised, and require the buyer's up-front payment of a nonrefundable option fee. The terms also establish a purchase price subject to fair market value appraisal, title and ownership verification, and other contingencies.)

As of December 2009, a total of 10 individual option and purchase agreements had been completed and documented with the Lyon County Recorder's Office. Inquiries from other potential sellers were ongoing throughout 2009; however, no further option agreements were executed after July 2009 pending assignment of the Walker River Basin Acquisition Program (Acquisition Program) to the National Fish and Wildlife Foundation (NFWF) in accordance with Public Law (PL) 111-85. The completed options include nine agreements to acquire, conditionally, the water and water rights represented in whole or in part by more than 40 individual provisional Walker River Irrigation District (WRID) water cards; and two separate but closely related agreements (listed here as a single agreement, Option 2A-B) to acquire, conditionally, geothermal groundwater effluent. Table 2A-1 summarizes the natural flow, storage, and groundwater rights offered under each agreement, including associated appurtenant lands, total negotiated purchase prices for each category of water right under option (subject to appraisal, title verification, and other contingencies), and expected average yield at existing points of diversion for each option agreement and for each category of water right under option. Additional information for each completed option agreement appears below, including land use information for the land parcels associated with the optioned water rights. However, there is not always a one-to-one correspondence between the parcel acres and the option acres.

Table 2A-1. Recorded Option and Purchase Agreements through December 2009

	Offered					Not Offered	
	Decree Natural Flow (cfs)	Supplemental Storage Face Value (af/yr)	New Land Storage Face Value (af/yr)	Geothermal Groundwater Effluent (af/yr)	Expected Average Yield (af/yr) ^{a,b}	Decree Acres	New Land Acres
Option 1 - Masini et al.	19.751	474.3	484.1	—	5,431	1,561	263
Option 2A-B - Homestretch	—	—	—	7,000 ^b	7,000	—	—
Option 3 - Sunrise Ranch	3.312	149.2	191.5	—	962	276	124
Option 4 - DG-HP	1.808	37.9	7.5	—	483	150	5
Option 5 - Aguiar	8.844	359.3	170.8	—	2,362	738	122
Option 6 - Little	9.888	345.6	—	—	2,404	824	—
Option 7 - Tibbals	1.840	7.0	173.2	—	654	115	105
Option 8 - Sovereign	—	—	329.5	—	231	—	160
Option 9 - Sciarani	9.251	376.8	516.5	—	2,648	771	369
Option 10 - Desert Pearl Farms	11.290	236.5	192.4	—	2,760	917	125
Total	65.984	1,986.6	2,065.5	7,000	24,933	5,352	1,273
Expected Average Yield (af/year)	15,099	1,389	1,446	7,000	24,933	—	—
Purchase Price (\$ millions) ^c	\$59.3	\$6.4	\$6.3	\$18.0	\$90.0	—	—

a. Expected average card yield @ existing points of diversion per Revised DEIS analysis (Appendix 2B).
 b. Assumed face value of Option 2A-B. Actual value would be subject to groundwater and discharge permit restrictions.
 c. Purchase price subject to appraisal, title, and other contingencies. Derived values assume acquisition of all property interests under the terms of each agreement.

Notes: cfs = cubic feet per second; af/yr = acre-feet per year

Option 1 – Masini

Option 1 involves the potential acquisition of water rights appurtenant to 1,824 acres of land. The option agreement includes up to 19.751 cubic feet per second (cfs) of decreed natural flow direct diversion rights, up to 958.4 acre-feet per year (af/yr) of associated storage rights, associated floodwaters, and any associated supplemental groundwater rights still available at close of escrow. Related interests include ditch and drain rights and easements.

Most of the appurtenant lands under Option 1 are located in northern Mason Valley and are served by surface water diversions from the mainstem Walker River into the West Hyland Ditch. The Valley Vista Ranch parcels are located in southern Mason Valley and are the sole users served by surface water diversions from the West Walker River into the West Side Canal. For additional information, see Lyon County Document No. 414044, recorded September 19, 2007 (Lyon County 2009a, 2009b). Land use information is summarized by owner in Table 2A-2.

Table 2A-2. Option 1 Land Use Information - by Owner

Assessor Parcel Number	Acres	Land Use Code	Land Use Name
L & M Family Ltd Partnership			
001-152-009	0.110	400	General Commercial - retail, mixed, schools, hospitals, gas stations, etc.
001-152-019	0.090	400	General Commercial - retail, mixed, schools, hospitals, gas stations, etc.
001-152-026	0.060	400	General Commercial - retail, mixed, schools, hospitals, gas stations, etc.
001-192-016	0.520	430	Commercial hotel or motel
014-091-013	18.8	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
014-091-017	20.0	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
014-091-016	20.0	602	Rural-Agricultural deferred with Residence
014-091-015	20.0	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
014-201-035	78.6	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
014-191-002	814.9	602	Rural-Agricultural deferred with Residence
014-201-003	75.7	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
014-201-014	128.0	602	Rural-Agricultural deferred with Residence

Assessor Parcel Number	Acres	Land Use Code	Land Use Name
014-201-023	2.250	602	Rural-Agricultural deferred with Residence
014-201-024	5.610	605	Agricultural deferred with Improvements but no residences
014-201-025	281.230	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
014-201-001	156.3	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
014-201-032	160.000	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
014-201-034	2.290	180	Vacant-Minor Improvements-No usable structures
Masini Investments			
014-201-004	358.000	602	Rural-Agricultural deferred with Residence
014-201-007	240.000	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
001-011-002	2.000	140	Vacant Commercial
001-011-013	7.670	140	Vacant Commercial
001-011-016	1.000	140	Vacant Commercial
001-152-017			
001-011-017	0.120	400	General Commercial - retail, mixed, schools, hospitals, gas stations, etc
010-841-010	709.000	605	Agricultural deferred with Improvements but no residences
014-201-018	492.5	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
014-201-019	14.390	350	Multi-residential-Manufactured Home Park: Ten or More Manufactured Home Units
014-201-020	18.860	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
014-201-021	18.820	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
014-201-022	17.630	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
014-201-030	265.400	605	Agricultural deferred with Improvements but no residences

Assessor Parcel Number	Acres	Land Use Code	Land Use Name
Valley Vista Ranch LLC			
012-331-012	554.6	602	Rural-Agricultural deferred with Residence
012-331-013	39.5	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
Total	4,523.95		
Source: Lyon County 2009a, 2009b.			

Options 2A and 2B – Homestretch

Option 2A, the Homestretch geothermal pilot project, involves the potential purchase and delivery of up to 35,000 af of geothermal groundwater effluent from the Homestretch geothermal energy generating facility near Wabuska. The purchase would occur over a 5- to 7-year period as part of a pilot project that would provide the purchased water, minus losses, to Walker Lake. The agreement includes the potential acquisition of easements and other related interests, and defines the following sellers' obligations:

- pump and deliver water to an appropriate location for discharge to the Walker River,
- obtain Nevada Division of Environmental Protection (NDEP) discharge permits and all other approvals and agreements needed to effectuate such deliveries, and
- construct and install such facilities as may be needed to transport such water to the point of delivery and discharge.

The pilot project and the associated option agreement are not part of the Acquisition Program evaluated by this Revised DEIS. The Bureau of Reclamation (Reclamation) is examining the environmental consequences of the pilot project in a separate Environmental Assessment. The effects of projects affecting the Walker River Basin, such as the Homestretch pilot project are, however, briefly discussed in the Chapter 14, Cumulative Impacts, of this Revised DEIS. For additional information, see Lyon County Document No. 423957, recorded April 4, 2008 (Lyon County 2009a, 2009b).

Option 2B involves the potential acquisition of primary groundwater rights and related interests from the same geothermal energy generating facility. Contingent in part on sellers' performance under Option 2A above, Option 2B anticipates the purchase of up to 7,000 af/yr of primary groundwater rights. The terms specify that sellers may continue to pump and use the associated groundwater for nonconsumptive, noncontact geothermal uses so long as deliveries in the amount purchased are maintained on an average annual basis. Related interests under

Option 2B include easements for wells and well facilities, conveyance and cooling works, rights of access, construction of necessary water delivery infrastructure, discharge permits, and operational commitments. For additional information, see Lyon County Document No. 423956, recorded April 4, 2008 (Lyon County 2009a, 2009b). Land use information for Option 2 is presented in Table 2A-3.

Table 2A-3. Option 2 Land Use Information - Homestretch Geothermal LLC and Homestretch Energy LLC

Assessor Parcel Number	Acres	Land Use
014-081-003	79.6	General Industrial
014-081-016	160.8	Vacant Industrial
014-071-002	161.1	Vacant Industrial
014-071-001	40.2	Vacant Industrial
014-071-002	120.5	Vacant Industrial
Total	562.1	
Source: Lyon County 2009a, 2009b		

Option 3 – Sunrise Ranch

Option 3 involves the potential acquisition of water rights appurtenant to 400 acres of land along the mainstem Walker River in Mason Valley. The option agreement includes up to 3.312 cfs of decreed natural flow direct diversion rights, up to 340.7 af/yr of associated storage rights, associated floodwaters, and any associated supplemental groundwater rights still available at close of escrow. Related interests include ditch and drain rights and easements.

The land use designation for the parcels associated with this option is agricultural, and the parcels are served by surface water diversions into the Joggles Ditch. The land use information for each parcel is provided in Table 2A-4. For additional information, see Lyon County Document No. 429982, recorded August 6, 2008 (Lyon County 2009a, 2009b).

Table 2A-4. Option 3 Land Use Information – Sunrise Ranch LLC

Assessor Parcel Number	Acres	Land Use Code	Land Use Name
014-321-021	196.030	602	Rural-Agricultural deferred with Residence
014-321-001	196.030	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
Total	392.06		
Source: Lyon County 2009a, 2009b			

Option 4 – DG-HP

Option 4 involves the potential acquisition of water rights appurtenant to 155 acres of nonagricultural land (i.e., development and golf course parcels) along the East Walker River in Mason Valley. The option agreement includes up to 1.808 cfs of decreed natural flow direct diversion rights, up to 45.4 af/yr of associated storage rights, and associated floodwaters. Related interests include ditch and drain rights and easements.

The properties are served by surface water diversions into the Greenwood Ditch, Spragg-Woodcock Ditch, and Fox Ditch. A previous agreement may require DG-HP to withdraw the water rights associated with the golf course parcels prior to close of escrow. The land use information for each parcel is provided in Table 2A-5. For additional information, see Lyon County Document No. 436766, recorded January 14, 2009 (Lyon County 2009a, 2009b).

Table 2A-5. Option 4 Land Use Information – DG-HP, Inc.

Assessor Parcel Number	Acres	Land Use Code	Land Use Name
001-461-16	3.090	120	Vacant Single Family
001-471-12	3.600	170	Other unbuildable- roads, legal restrictions, cemetery, extreme terrain, etc.
001-471-13	18.710	120	Vacant Single Family
001-471-14	8.380	440	Resort Commercial-ski resorts, golf courses, auto collection, sports facilities, convention center, etc.
001-471-15	19.680	440	Resort Commercial-ski resorts, golf courses, auto collection, sports facilities, convention center, etc.
001-471-16	14.430	120	Vacant Single Family
001-471-17	9.500	440	Resort Commercial-ski resorts, golf courses, auto collection, sports facilities, convention center, etc.
001-592-01	0.211	120	Vacant Single Family
001-592-02	0.261	120	Vacant Single Family
001-592-04	0.340	120	Vacant Single Family
001-592-05	0.247	120	Vacant Single Family
001-592-06	0.213	120	Vacant Single Family
001-592-07	0.213	120	Vacant Single Family
001-592-08	0.247	120	Vacant Single Family
001-592-09	0.337	120	Vacant Single Family
001-592-11	0.254	120	Vacant Single Family
001-592-12	0.214	120	Vacant Single Family
001-601-01	0.280	120	Vacant Single Family
001-601-02	0.266	120	Vacant Single Family
001-601-03	0.239	120	Vacant Single Family
001-601-10	0.320	120	Vacant Single Family
001-601-15	0.220	120	Vacant Single Family
001-601-17	0.290	120	Vacant Single Family
001-601-18	0.297	120	Vacant Single Family
001-602-01	0.257	120	Vacant Single Family
001-602-02	0.260	120	Vacant Single Family
001-602-03	0.277	120	Vacant Single Family

Assessor Parcel Number	Acres	Land Use Code	Land Use Name
Total	82.633		
Source: Lyon County 2009a, 2009b			

Option 5 – Aguiar

Option 5 involves the potential acquisition of water rights appurtenant to 860 acres of land along the mainstem Walker River just south of the Mason Valley Wildlife Management Area (WMA) in Mason Valley. The option agreement includes up to 8.844 cfs of decreed natural flow direct diversion rights, up to 530.1 af/yr of associated storage rights, and associated floodwaters. Related interests include ditch and drain rights and easements.

The properties are served by surface water diversions into the Joggles Ditch and Nichol-Meritt Ditch. The land use information for each parcel is provided in Table 2A-6. For additional information, see Lyon County Document No. 437886, recorded February 11, 2009 (Lyon County 2009a, 2009b).

Table 2A-6. Option 5 Land Use Information – Aguiar Family Trust

Assessor Parcel Number	Acres	Land Use Code	Land Use Name
014-321-03	320	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
014-321-13	535	602	Rural-Agricultural deferred with Residence
Total	855		
Source: Lyon County 2009a, 2009b			

Option 6 – Little

Option 6 involves the potential acquisition of water rights appurtenant to 824 acres of land along the mainstem Walker River just south of the Mason Valley WMA in Mason Valley. The option agreement includes up to 9.888 cfs of decreed natural flow direct diversion rights, up to 345.6 af/yr of supplemental storage rights, and associated flood waters. Related interests include ditch and drain rights and easements.

The properties are served by surface water diversions into the Joggles Ditch and include additional acres to which water rights owned by sellers are appurtenant (but those water rights are not included in the option agreement). The land use information for each parcel is provided in Table 2A-7. For additional information, see Lyon County Document No. 440852, recorded April 10, 2009 (Lyon County 2009a, 2009b).

Table 2A-7. Option 6 Land Use Information – David M. and Sherry L. Little

Assessor Parcel Number	Acres	Land Use Code	Land Use Name
014-321-04	560	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
014-321-05	640	605	Agricultural deferred with Improvements but no residences
Total	1,200		
Source: Lyon County 2009a, 2009b			

Option 7 – Tibbals

Option 7 involves the potential acquisition of water rights appurtenant to up to 220 acres of land along the West Walker River in the Mason Valley. The option agreement includes up to 1.840 cfs of decreed natural flow direct diversion rights, up to 180.2 af/yr of associated storage rights, and associated floodwaters. Related interests include ditch and drain rights and easements.

The land use designation for the parcels in this option is agricultural, and the parcels are served by surface water diversions into the D & GW Ditch. The land use information for each parcel is provided in Table 2A-8. For additional information, see Lyon County Document No. 445149, recorded July 10, 2009 (Lyon County 2009c, 2009b).

Table 2A-8. Option 7 Land Use Information – Tibbals

Assessor Parcel Number	Acres	Land Use Code	Land Use Name
012-371-11	40.0	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
012-371-18	325.160	602	Rural-Agricultural deferred with Residence
Total	365.160		
Source: Lyon County 2009c, 2009b			
Parcel 012-371-11 is now 012-371-19.			

Option 8 – Sovereign Enterprises

Option 8 involves the potential acquisition of water rights appurtenant to 160 acres of land along the West Walker River in the Smith Valley. The option agreement includes up to 329.5 af/yr of New Land storage rights and associated floodwaters. Related interests include ditch and drain rights and easements.

The land use designations for the parcels in this option are agricultural and vacant single family, and the parcels are served by surface water diversions into the Sorani Ditch. The land use information for each parcel is provided in Table 2A-9. For additional information, see Lyon County Document No. 445148, recorded July 10, 2009 (Lyon County 2009c, 2009b).

Table 2A-9. Option 8 Land Use Information – Sovereign Enterprises

Assessor Parcel Number	Acres	Land Use Code	Land Use Name
010-481-45	178.730	602	Rural-Agricultural deferred with Residence
010-481-46	20.020	180	Vacant-Minor Improvements-No usable structures
010-481-47	20.020	120	Vacant Single Family
010-481-48	20.000	120	Vacant Single Family
010-481-49	20.000	120	Vacant Single Family
Total	258.77		
Source: Lyon County 2009c, 2009b			

Option 9 – Sciarani

Option 9 involves the potential acquisition of water rights appurtenant to 1,140 acres of land along the mainstem Walker River in Mason Valley. The option agreement includes up to 9.251 cfs of decreed natural flow direct diversion rights, up to 893.3 af/yr of associated storage rights, and associated floodwaters. Related interests include ditch and drain rights and easements.

The land use designation for the parcels in this option is agricultural, and the parcels are served by surface water diversions into the Dairy, Joggles, Nichol Merrit, SAB, and Sciarani Ditches. The land use information for each parcel is provided in Table 2A-10. For additional information, see Lyon County Document No. 446251, recorded August 3, 2009 (Lyon County 2009c, 2009b).

Table 2A-10. Option 9 Land Use Information – Sciarani

Assessor Parcel Number	Acres	Land Use Code	Land Use Name
014-241-35	653.500	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
014-401-18	476.560	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
Total	1,130.06		
Source: Lyon County 2009c, 2009b			

Option 10 – Desert Pearl Farms

Option 10 involves the potential acquisition of water rights appurtenant to 1,042 acres of land along the mainstem Walker River in Mason Valley. The option agreement includes up to 11.290 cfs of decreed natural flow direct diversion rights, up to 428.9 af/yr of associated storage rights, associated floodwaters, and any associated supplemental groundwater rights still available at close of escrow. Related interests include ditch and drain rights and easements.

The land use designation for the parcels in this option is primarily vacant single family, and the parcels are served by surface water diversions into the Campbell Ditch. The land use information for each parcel is provided in Table 2A-11. For additional information, see Lyon County Document No. 446252, recorded August 3, 2009 (Lyon County 2009b, 2009c).

Table 2A-11. Option 10 Land Use Information – Desert Pearl Farms

Assessor Parcel Number	Acres	Land Use Code	Land Use Name
014-241-01	682.000	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
001-531-02	390.610	600	Rural-Agricultural deferred VACANT (does not include federal leased land)
001-641-01	0.745	240	Vacant common area, etc.
001-641-02	0.535	120	Vacant Single Family
001-641-03	0.506	120	Vacant Single Family
001-641-04	0.506	120	Vacant Single Family
001-641-05	0.506	120	Vacant Single Family
001-641-06	0.525	120	Vacant Single Family
001-641-07	0.526	120	Vacant Single Family
001-641-08	0.506	120	Vacant Single Family
001-641-09	0.502	120	Vacant Single Family
001-641-10	0.633	120	Vacant Single Family
001-641-11	0.643	120	Vacant Single Family
001-641-12	0.537	120	Vacant Single Family
001-641-13	0.538	120	Vacant Single Family
001-641-14	0.537	120	Vacant Single Family
001-641-15	0.536	120	Vacant Single Family
001-641-16	0.534	120	Vacant Single Family
001-641-17	1.824	170	Other unbuildable roads, legal restrictions, cemetery, extreme terrain, etc.
001-641-18	0.527	120	Vacant Single Family
001-641-19	0.546	120	Vacant Single Family
001-641-20	0.546	120	Vacant Single Family
001-641-21	0.525	120	Vacant Single Family
001-641-22	0.524	120	Vacant Single Family
001-641-23	0.523	120	Vacant Single Family
001-641-24	0.561	220	Vacant-Manufactured Homes Converted to Real Property
001-642-01	0.538	230	Vacant-Personal Property Manufactured Home on Unsecured Roll
001-642-02	0.529	120	Vacant Single Family
001-642-03	0.529	120	Vacant Single Family
001-642-04	0.528	220	Vacant-Manufactured Homes Converted to Real Property
001-642-05	0.527	180	Vacant-Minor Improvements-No usable structures

Assessor Parcel Number	Acres	Land Use Code	Land Use Name
001-642-06	0.532	180	Vacant-Minor Improvements-No usable structures
001-643-01	13.796	120	Vacant Single Family
Total	1,103.98		
Source: Lyon County 2009c, 2009b.			

References Cited

Lyon County. 2009a. County Recorder, Lyon County Document Inquiry. Documents 414044, 423957, 423956, 429982, 436766, 437886, and 440852. Available: < <http://www1.lyon-county.org:403/cgi-bin/diw200>>. Accessed: January through June 2009.

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Lyon County. 2009c. County Assessor, Real Property Inquiry. Available: < <http://www1.lyon-county.org:403/cgi-bin/diw200>>. Document 445149, 445148, 446251, and 446252. Accessed: November 2009.

Appendix 2B Estimated Yield and Associated Funding

Appendix 2B Estimated Yield and Associated Funding

The upstream analysis in Revised DEIS Chapter 3, Water Resources, evaluates potential changes to the existing water balance based on historic average diversions, groundwater withdrawals, consumptive use by crops, and other variables. In order to relate these changes to the face value and assumed cost of offered agricultural water rights (i.e., the amounts specified on Walker River Irrigation District [WRID] water cards and the cost of acquiring those cards based on the option agreements described in Appendix 2A), it is important to be able to convert from one metric to the other (i.e., from “paper water” to “wet water” and vice versa).

This Revised DEIS discloses impacts that would result from a full funding level and those that would result from funding in the amount of \$56 million. To accomplish this, it was necessary to estimate the following values described in the appendix:

- the expected cost of water rights acquired by purchase or lease,
- the expected yield of acquired water rights, and
- the estimated cost of conserved water based on conveyance system improvements (e.g., lining or piping of earthen canals).

Average Yield of Acquired Water Rights at Existing Points of Diversion

Surface water rights in the Walker River Basin do not typically yield the maximum amount specified by the face value of those rights because of the varying availability of water for diversion, limitations on the ability to put water to beneficial use, and the exercise of water rights with more senior dates of priority.

Surface water rights offered by individual willing sellers in much of the Walker River Basin are described on provisional WRID water cards. A typical water card will specify the card owner’s decreed natural flow direct diversion rights – typically an array of such rights with varying dates of priority (measured in cubic feet per second [cfs]) and associated storage rights (measured in acre feet [af]). Storage rights are of two kinds: those that supplement decreed natural flow direct diversion rights (decree rights) with priority dates of 1874 or later; and those used on New Lands that lack appurtenant decree rights. The amount of supplemental storage water assigned to decree rights increases with a more recent (more junior) date of priority. New Lands do not include any decree rights and are thus assigned the largest volumes (af) of storage water on a per-acre basis.

While the information set forth on provisional water cards is not a substitute for adequate title analysis (to confirm ownership) nor other appropriate and necessary due diligence, the cards have been used by most willing sellers to represent the water rights they believe they own, and to indicate which of those rights (if not all) they are willing to sell. They form, as such, the basis for the analysis herein.

The maximum face value of each individual water right (and thus of each water card composite) can be calculated or inferred as described below.

- For decree rights, multiply decree cfs by 1.9835 to give the maximum possible volume (af) per day, then multiply the result by the length of the decreed irrigation season (i.e., 245 days in Mason Valley, Smith Valley, and the East Walker above Mason Valley in Nevada); 199 days in Bridgeport and Antelope Valleys; and 180 days on the Walker River Indian Reservation) to yield the maximum possible af per season (what WRID describes as the “diversion rate expanded”).
- For supplemental storage, use *total acre feet required* as reported on the WRID water cards (however, care should be taken not to add this amount to the maximum face value calculated for decree rights because if the latter were fully available there would be no need, and no basis, for the use of supplemental storage).
- For New Land storage, use *total acre feet required* as reported on the WRID water cards.

The yield from particular water rights (or water cards) will vary depending on the types of rights offered and their associated priority dates (where applicable). The average annual expected yield of an individual surface water right (and thus of each water card composite) can be estimated using an approach similar to that described in Appendix C of the Great Basin Land and Water Study (Yardas 2007). The calculations described therein were based on the methods described in a 1969 Federal Land Bank Study, but more recent data were included in the Great Basin Land and Water Study analysis based on 1) U.S. Board of Water Commissioners daily data on decreed right priorities served for 1970 through 2005; and 2) WRID reservoir storage water apportionment (and in some years re-apportionment) data for 1976 through 2005.

The Great Basin Land and Water Study used the following steps and assumptions to estimate the expected average yield of a water right:

- calculated average days available for decree rights by priority date over a 158-day irrigation season (April 1 to September 5, thought to represent an average frost-free period for this area) for the years 1939 through 2005;
- the resulting estimates of days served by priority date were then used in conjunction with calculated af-per-acre equivalents (based on the water

card acreage and cfs values for each priority date), including a 15% downward adjustment to ensure that the resulting water availability estimates across all dates of priority did not exceed the per-acre duties or factors that appear on each water card (i.e., 3.2076 af/acre for low-duty land and 4.2768 af/acre for high-duty land);

- calculated a weighted-average storage apportionment of 90.7% for 1939 through 1969 (100% assumed) and 1970 through 2005 (82.8% based on WRID apportionment and re-apportionment data);
- made separate calculations for low duty and high duty rights along the East Walker, West Walker, and mainstem Walker River to yield expected af/acre by priority date in each instance; and
- determined the average availability of flood (permit, excess, or surplus) water separately, then associated that water with New Land parcels (because flood water does not become available for diversion unless all demands for water under decree rights have been satisfied).

For this Revised DEIS, average expected annual water deliveries associated with each of the existing option agreements for decree and storage water rights (Appendix 2A) were estimated for each water card offered (and for all water cards offered by each willing seller) using the yield analysis tool described above along with the additional adjustments described below.

- Average days available by decreed date of priority were adjusted to consider a full 245-day irrigation season along the mainstem Walker River (where most of the water cards under option are located) based on U.S. Board of Water Commissioners summary data for decreed right priorities served for the most recent 25 years for which data were available (i.e., 1978 through 1979 and 1983 through 2005). One cannot simply assume from these data that there was sufficient flow in the River to serve all rights with priorities equal or senior to the priority date listed on any given day; yet over time, the frequency with which a given date of priority has been served provides a reasonable means for estimating how often, on average, that same date of priority is likely to be served in the future.
- The 15% duty or factor discount described above was retained to ensure that the revised estimates of available water for each date of priority were not overstated; however the per-acre duty limits assumed by the Great Basin Land and Water Study probably do not apply in practice, and/or should be used only when constraining rather than as a fixed percentage reduction across all dates of priority.
- The average availability of storage water (both supplemental and New Land) was estimated at 70% of face value based on the 35-year period 1970 through 2005 analyzed in the Great Basin Land and Water Study (i.e., 82.8% of face value based on the 158-day analysis above), less 15%

for assumed losses between the upstream storage reservoirs and existing points of diversion. (The assumed 15% loss factor was inferred from the reported apportionment data; it may or may not represent actual physical losses.)

- While associated flood water was included in individual option agreements, it was not included in the current analysis because 1) flood waters do not appear anywhere on the individual water cards, and 2) the allocation of that water is controlled by WRID under separate state-issued certificates of appropriation (though individual water users could reasonably assign their equitable interests in flood water subject to WRID's confirmation of such assignment).

Based on the above methodology, the maximum face value of all optioned decree rights is approximately 32,065 af per season, with an expected average yield of approximately 15,099 af per season (i.e., 47% of maximum face value). When supplemental storage is included, the expected average yield increases to 16,488 af per season, or approximately 51% of maximum face value. Finally, with New Land storage water included, maximum face value increases to approximately 34,130 af per season, while total expected average yield increases to about 17,933 af per season, or roughly 53% of the maximum face value across all cards and water types combined. Thus, based on the 41 water cards currently under option, average expected yield relative to maximum face value would be 51 to 53% on average, with an expected range for individual water cards of 33 to 64% for cards where both decree and storage water rights have been offered.

Relationship between Project Funding and Increased Inflow

The sections below describe the estimates of how much additional water could reach Walker Lake with a funding level of \$56 million and how much it would cost to fund the full project as analyzed in the Revised DEIS. Table 2B-1 provides a summary of these values.

Table 2B-1. Yield Estimates for Full and Partial Project Funding

Alternative	Full Project		\$56 Million	
	Yield at Lake Analyzed in Revised DEIS	Cost Estimate (millions)	Estimated Yield at Point of Diversion	Estimated Yield at Lake
1	Average 50,000 af/yr in perpetuity	\$385 ^{a,b}	11,900 af/yr ^c	7,300 af/yr ^{d,e}
2 ^f	50,000 af/yr for 20 years	\$385	82,000 af/yr for 3 years	50,000 af/yr for 3 years
3 ^g	32,300 af/yr in perpetuity ^h	\$408	14,000 af/yr	4,400 af/yr ⁱ

Note: As a result of rounding, some calculations may appear to be imprecise.

- a. This value is based on the cost estimate of approximately \$4,000 per acre-foot for wet water and the assumptions and results of the Full Transfer Scenario (i.e., the assumption that all acquired water could be left in the river and that approximately 82,000 af/yr at points of diversion would be needed to increase Walker Lake inflow by 50,000 af/yr). The cost estimate is lower for the Partial Consumptive Use Scenario (approximately \$343 million) based on an estimate of 57,000 af/yr needed to increase Walker Lake inflow by 50,000 af/yr, an acquisition cost estimate of \$10,870/water-righted acre, and an estimated need to acquire water rights appurtenant to 26,810 acres (average transfer amount of about 2.14 af/acre, see Chapter 3).
- b. This value was used to estimate the duration of Alternative 2 assuming the same full funding amount as was estimated for Alternative 1 as well as conventional use of federal appropriations (i.e., no endowments or interest earnings).
- c. Value based on the assumptions described for note a. This value would be lower for the Partial Consumptive Use Scenario (average 9,400 af/yr) based on the average transfer amount of about 2.14 af/acre and the acquisition cost estimate of \$10,870 for water rights appurtenant to 1 acre.
- d. Value based on the assumptions described for note a. This value would be higher for the Partial Consumptive Use Scenario (average 8,200 af/yr) based on the estimate of 87.3% of acquired water reaching Walker Lake (57,000 af/yr at points of diversions resulting in 50,000 af/yr at Walker Lake).
- e. This value was used to estimate lake effects associated with \$56 million in funding.
- f. The duration estimates for Alternative 3 are based on an assumed cost of \$200 per af at the points of diversion and the Alternative 1 Full Transfer Scenario estimates for full funding and instream flow losses. If the results from the Partial Consumptive Use Scenario were used, duration may be 25% longer.
- g. These values are based on the higher of two estimated costs per af derived from the Mason Valley WMA water conservation investment program (i.e., \$3,410 per af). See text.

- h. See Chapter 3 for derivation of this value. In order to attain inflow of 32,300 af/yr at Walker Lake without crop shifting, it was estimated that approximately 102,000 af/yr of savings are needed at the points of diversion.
- i. Value based on the estimate that only 32% of the conserved water would reach Walker Lake (i.e., 32,300 af/yr out of 102,000 af/yr [see Revised DEIS Chapter 3]).

Alternative 1 (Purchase Alternative)

The following information and assumptions were used to estimate how much additional water might reach Walker Lake on average if Acquisition Program funding under Alternative 1 were limited to funding of \$56 million.

- Approximately 15% of acquisition funds would not be available for payments directly to willing sellers. This 15% set-aside would be reserved for transactional support activities and other related program costs such as title research, appraisals, insurance, annual assessments, change approvals, and related due diligence activities.
- Acquired surface water rights would yield, on average, approximately 52% of their maximum face value across all types and priorities at existing points of diversion based on analysis of 41 provisional water cards currently under option (Appendix 2A) and excluding up to 7,000 af/yr of geothermal groundwater under option.
- Average unit acquisition costs are based on the negotiated offer prices (all subject to appraisal, title confirmation, and other contingencies) described in the University's public summaries of recorded provisional water card option agreements. While it is likely that appraised values will be less than the purchase prices negotiated by University due the economic downturn since 2007 and various chain of title issues, the values reported by the University are used in this Revised DEIS. These values are used because any revisions would be uncertain at this time, and this way the analysis remains conservative (i.e., it ensures that the expected costs of the Acquisition Program are not understated, and/or that the expected flow increases associated with a given amount of funding are not overstated).
- The Nevada State Engineer (NSE) and the U.S. District Court would allow the transfer of *up to* the full amount of the available water associated with acquired water rights (i.e., the average amount of water diverted per irrigated acre) as described in the Full Transfer Scenario in Chapter 3, Water Resources. In addition, however, Chapter 3 of this Revised DEIS includes a Full Consumptive Use Scenario and a Partial Consumptive Use Scenario to illustrate potential impacts should future change approvals be limited to a consumptive use component.
- Various estimated physical losses would occur between the existing points of diversion and Walker Lake (see Chapter 3, Water Resources).

By the end of 2009, the University had secured options to acquire land, water appurtenant to the land, and related interests involving up to 65.984 cfs of decree rights and up to 4,052.2 af of storage water rights at an aggregate negotiated cost of approximately \$72.0 million (see Appendix 2A, Table 2A-1). This total excludes the potential acquisition of rights and interests in geothermal effluent

under Option 2A-B, and results in a blended average direct acquisition cost of approximately \$2,100 per af of maximum face value. (In order to avoid understating the potential impacts of the Acquisition Program relating to agricultural lands and production, the impact assessment for irrigated lands in this Revised DEIS assumes that the Homestretch geothermal option would not be implemented. Please see Reclamation's Draft Environmental Assessment for the Homestretch Pilot Project, forthcoming in 2010, for issues and analysis related specifically to Option 2A.) If exercised in full at negotiated purchase prices, the current water card options would yield, on average, approximately 17,900 af/yr of water at existing points of diversion, which equates to an average expected "wet water" cost of about \$4,000 per af. On an acre basis, the average cost for the water appurtenant to the 6,625 acres under option agreement would be about \$10,870 per acre.

In Chapter 3, water resources for Alternatives 1 and 2 are evaluated using a Full Transfer Scenario (which assumes, among other things, that all acquired water could be left in the river) and two Consumptive Use Scenarios (which assume that only the consumptive-use portion of a water right would be left in the river). The Full Transfer Scenario is based on volumes of water and has a high estimate for instream flow losses, whereas the Consumptive Use Scenarios are based on water transferred from water-righted acres and have relatively low instream flow losses. The instream flow losses are greater for the Full Transfer Scenario because it is expected to affect groundwater recharge, whereas the Consumptive Use Scenarios are not. Under the Full Transfer Scenario, approximately 82,000 af/yr of surface water would need to be acquired from willing sellers in Mason Valley, Smith Valley, and the East Walker area in order to provide, on average, 50,000 af/yr of additional inflow to Walker Lake. Under the Consumptive Use Scenarios, approximately 57,000 af/yr of surface water would need to be acquired in order to provide, on average, 50,000 af/yr of additional inflow to Walker Lake.

In the discussions that follow, the emphasis is placed on the yield and cost estimates associated with the Full Transfer Scenario, but results are also presented for the Partial Consumptive Use Scenario (which assumes less water is available for downstream transfer than the Full Consumptive Use Scenario). The cost and yield estimates for the Full Transfer Scenario were used in the Revised DEIS.

From the cost estimate above of approximately \$4,000 per af, it can be inferred that \$47.6 million in direct acquisition funding (i.e., \$56 million less 15% set-aside per the assumptions outlined above) would yield, on average, approximately 11,900 af/year at existing points of diversion. Based on the instream loss rates for the Full Transfer Scenario as described in Chapter 3, Water Resources, this estimate would, in turn, result in approximately 7,300 af/yr of additional inflow at Walker Lake, on average. Under the Partial Consumptive Use Scenario, water from approximately 4,400 water-righted acres could be purchased, which would

result in an approximate average of 9,400 af/yr at the points of diversion and an average annual increase in Walker Lake inflow of 8,200 af/yr.

The upstream analysis in Chapter 3, Water Resources, indicates that under the Full Transfer Scenario approximately 82,000 af/yr would need to be acquired to deliver additional average inflow of 50,000 af/yr at Walker Lake. Applying the relationship between funding levels and water acquisitions described above—and again excluding geothermal effluent from consideration—suggests that up to \$385 million in 2008 dollars (inclusive of the 15% set-aside assumed above) would be needed under Alternative 1 to purchase enough water to result in an average increase in Walker Lake inflow of 50,000 af/yr. Results for the Partial Consumptive Use Scenario suggest a lower full funding amount of \$343 million as a result of the lower physical river losses assumed for the Consumptive Use Scenarios (lower river losses more than counteract the reduced yield at the points of diversions).

Alternative 2 (Leasing Alternative)

Under Alternative 2 (Leasing Alternative), the duration of increased inflow at Walker Lake using existing funding would depend on the cost of leasing water. Based on the effective costs of participating in the Walker River Paiute Tribe (WRPT) 2008 land fallowing program, and the negotiated offer price for water purchased and delivered under the Homestretch geothermal pilot project, annual lease costs under Alternative 2 were estimated to average approximately \$200 per af at existing points of diversion. With \$56 million in current funding, less 15% set-aside as assumed above, approximately 240,000 af could be purchased at a one-time lease price of \$200 per af.

As noted previously, the upstream analysis in Chapter 3, Water Resources, indicates that an estimated 82,000 af/yr would need to be acquired to deliver 50,000 af/yr to Walker Lake under the Full Transfer Scenario, in which case current funding would only last for about 3 years. Alternatively, if \$56 million were used to purchase 11,900 af/yr to gain 7,300 af/yr at Walker Lake (the inflow estimated for Alternative 1 with \$56 million in funding), Alternative 2 would last for approximately 20 years.

Alternative 2 with a funding level of \$56 million would provide average inflow to Walker Lake of 50,000 af/yr for 3 years instead of 7,300 af/yr for 20 years. The decision to use one approach instead of the other makes little difference over the long term because neither provides sustained benefits to Walker Lake. Relative to the No Action Alternative, 3 years of an average increase in inflow of 50,000 af/yr provides a slightly greater but shorter term increase in lake level than 20 years of inflow of 7,300 af/yr. In this regard, water leasing may be most valuable as a bridge strategy that helps to restore Walker Lake in the near term while more permanent acquisitions take hold.

If the full funding amount calculated for Alternative 1 (i.e., up to \$385 million, less a 15% set-aside for related costs) were available, annual leasing sufficient to provide increased inflow averaging 50,000 af/yr could be sustained for approximately 20 years. For the Partial Consumptive Use Scenario, the estimated full funding amount for Alternative 1 is less, but the amount of water needed at the points of diversion is also less (approximately 57,000 af/yr). As a result, under the assumptions of the Partial Consumptive Use Scenario, the duration of Alternative 2 may be 25% longer than under the assumptions of the Full Transfer Scenario.

Alternative 3 (Efficiency Alternative)

Under the Efficiency Alternative, it is assumed that sufficient funding would be available to attain the estimated increase in water efficiency as defined in Chapter 3, Water Resources. The actual cost of Alternative 3 would depend on the measures and methods selected to attain such increases, but would likely include significant investments in conveyance infrastructure (e.g., lining or piping of earthen ditches and laterals that are not already lined or piped). As noted in Chapter 2, Alternatives, there is also considerable potential for generating conserved water by reducing crop evapotranspiration (ET) while keeping irrigated lands in production by switching to low-water-use alternative crops; however, for the reasons explained therein, such measures have not been included in the Revised DEIS analysis. Based on the assumptions of the Alternative 3 analysis in Chapter 3 (no crop switching and an increase in water use efficiency from approximately 50% under existing conditions to 75% under Alternative 3), Alternative 3 was estimated to yield an average increase in Walker Lake inflow of 32,300 af/yr (17,700 af/yr short of the Acquisition Program objective).

Under the 2004 water conservation investment program funded by Reclamation at the Mason Valley WMA, a long-term best efforts commitment was made to provide 2,500 to 3,500 af/yr of conserved water for conveyance to Walker Lake in approximately 3 out of 5 years running. This equates to a long-term average of 1,500 to 2,100 af/yr at a point of delivery (or discharge) at or near the Wabuska gage. If approximately 50% of this amount of savings can be reliably provided over time, the program's \$2.36 million capital cost equates to roughly \$2,250 to 3,150 per af of water conserved expressed in 2004 dollars, or about \$2,430 to \$3,410 per af in 2008 dollars using a 2% annual price escalator.

Using the above prices, \$47.6 million in existing funds (i.e., \$56 million less the 15% set-aside) would allow for acquisition of 14,000 to 19,600 af/yr of conserved water on average at existing points of diversion. Based on the instream loss rate estimated for Alternative 3 in Chapter 3 (102,000 af/yr at points of diversion resulting in 32,300 af/yr at Walker Lake), approximately 4,400 to 6,200 af/yr of additional inflow could be provided within the limits of \$56 million in funding.

Applying the upper end of the price range (\$3,410 per af) to the upper-bound estimate for conserved water (without crop switching) of 102,000 af/yr at existing points of diversion (see Chapter 3, Water Resources) and assuming a 15% set-aside, a total Alternative 3 investment cost of approximately \$408 million can be inferred. Because Alternative 3 as analyzed would only provide about 32,300 af/year of increased inflow to Walker Lake, the full costs of Alternative 3 would be substantially greater than \$408 million if lake inflow was increased by an additional average 17,700 af/yr by implementing crop switching or other measures needed to reach the Acquisition Program objective of 50,000 af/year additional inflow to Walker Lake.

References

Yardas, D. 2007. Great Basin Land and Water Study: Issues and Opportunities for Acquiring Water from Willing Sellers to Increase Walker Lake Inflows. April. Great Basin Land Water, Truckee, CA. Submitted to the Natural Resource Conservation Service, U.S. Department of Agriculture, Reno, Nevada, Grant Agreement No. 68-9327-5-08.

Appendix 4A Vegetation Community and Cover Types

Appendix 4A Vegetation Community and Cover Types

The following sections describe the 28 vegetation community and cover types that have been mapped in the study area (Figure 4-1). These descriptions have been adapted from the legend descriptions for the Southwest Regional GAP map (U.S. Geological Survey National GAP Analysis Program 2005). Information provided by the Southwest Regional GAP map identifies areas of individual vegetation communities as small as approximately 0.25 acre.

Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland

The Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland (riparian) community often occurs as a mosaic of multiple communities that are tree-dominated with a diverse shrub component. The variety of plant associations connected to this community type reflects elevation, stream gradient, floodplain width, and flooding events. Dominant trees may include mountain alder (*Alnus incana*), water birch (*Betula occidentalis*), narrow-leaved cottonwood, black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), Fremont's cottonwood (*Populus fremontii*), red willow (*Salix laevigata*), Goodding's willow (*Salix gooddingii*), and Douglas-fir (*Pseudotsuga menziesii*). Dominant shrubs include silver sagebrush, American dogwood (*Cornus sericea*), narrow-leaved willow (*Salix exigua*), arroyo willow (*Salix lasiolepis*), Lemmon's willow (*Salix lemmonii*), and yellow willow (*Salix lutea*). Herbaceous layers often are dominated by species of sedge (*Carex*) and rush (*Juncus*) and perennial grasses and mesic forbs such tufted hairgrass, slender wheatgrass, fowl mannagrass (*Glyceria striata*), western blue flag (*Iris missouriensis*), false lily of the valley (*Maianthemum stellatum*), or meadow rue (*Thalictrum fendleri*). Introduced forage species such as creeping bentgrass (*Agrostis stolonifera*), Kentucky bluegrass (*Poa pratensis*), Timothy (*Phleum pratense*), and the weedy annual cheatgrass (*Bromus tectorum*) are often present in disturbed stands. These are disturbance-driven communities that require flooding, scour, and deposition for germination and maintenance. Livestock grazing is a major influence in altering structure, composition, and function of the community.

Invasive Southwest Riparian Woodland and Shrubland

The Invasive Southwest Riparian Woodland and Shrubland (invasive riparian) community type includes areas that are dominated by introduced riparian woody species such as tamarisk (*Tamarix* spp.) and Russian olive (*Elaeagnus angustifolius*).

Great Basin Pinyon-Juniper Woodland

The Great Basin Pinyon-Juniper Woodland (pinyon-juniper woodland) community type occurs at lower elevations of dry mountain ranges of the Great Basin region and eastern foothills of the Sierra Nevada. These woodlands occur on warm, dry sites on mountain slopes, mesas, plateaus, and ridges. These woodlands are dominated by a mix of singleleaf pinyon pine and Utah juniper (*Juniperus osteosperma*), pure or nearly pure occurrences of singleleaf pinyon pine, or solely by Utah juniper. Desert mountain mahogany is a common associate. Understory layers are variable, including shrubs such as greenleaf manzanita (*Arctostaphylos patula*), low sagebrush (*Artemisia arbuscula*), black sagebrush (*Artemisia nova*), big sagebrush, desert mountain mahogany, littleleaf mountain mahogany (*Cercocarpus intricatus*), blackbrush, and bunch grasses such as needlegrass (*Hesperostipa comata*), Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Pseudoroegneria spicata*), Great Basin wildrye, and muttongrass (*Poa fendleriana*).

Rocky Mountain Montane Dry–Mesic Mixed Conifer Forest and Woodland

The Rocky Mountain Montane Dry–Mesic Mixed Conifer Forest and Woodland (dry–mesic mixed conifer forest) community type includes mixed-conifer forests occurring on all aspects at elevations ranging from 1,200 to 3,300 meters. Rainfall averages 40 to 60 centimeters per year with summer “monsoons” contributing substantial moisture during the growing season. The composition and structure of overstory are dependent on the temperature and moisture relationships of the site and the successional status of the occurrence. White pine (*Pinus flexilis*) is common in Nevada. Douglas-fir forests occupy drier sites, and ponderosa pine is a common codominant. As many as seven conifers can be found growing in the same occurrence, and a number of cold-deciduous shrub and grass species are common, including bearberry manzanita (*Arctostaphylos uva-ursi*), dwarf mahonia (*Mahonia repens*), Oregon boxwood (*Paxistima myrsinites*), mountain snowberry (*Symphoricarpos oreophilus*), fivepetal cliffbush (*Jamesia americana*), and Arizona fescue (*Festuca arizonica*).

Rocky Mountain Montane Mesic Mixed Conifer Forest and Woodland

The Rocky Mountain Montane Mesic Mixed Conifer Forest and Woodland (mesic mixed conifer forest) communities are mixed-conifer forests that occur predominantly in cool ravines and on north-facing slopes at elevations ranging from 1,200 to 3,300 meters. Occurrences of this community are found on cooler and more mesic sites than Rocky Mountain Montane Dry–Mesic Mixed Conifer

Forest and Woodland. Douglas-fir is a common canopy dominant, but ponderosa pine may be present. This community type includes mixed conifer/quaking aspen (*Populus tremuloides*) stands. A number of cold-deciduous shrub species can occur, including mountain alder (*Alnus incana*), water birch (*Betula occidentalis*), American dogwood (*Cornus sericea*), fivepetal cliffbush, mallow ninebark (*Physocarpus malvaceus*), New Mexico locust (*Robinia neomexicana*), thinleaf huckleberry (*Vaccinium membranaceum*), and whortleberry (*Vaccinium myrtillus*). Herbaceous species include fringed brome (*Bromus ciliatus*), Geyer's sedge (*Carex geyeri*), Ross's sedge (*Carex rossii*), dryspike sedge (*Carex siccata*), screwleaf muhly (*Muhlenbergia virescens*), bluebunch wheatgrass (*Pseudoroegneria spicata*), sprucefir fleabane (*Erigeron eximius*), Virginia strawberry (*Fragaria virginiana*), smallflowered woodrush (*Luzula parviflora*), sweetcicely (*Osmorhiza berteroi*), heartleaf groundsel (*Packera cardamine*), western meadow-rue (*Thalictrum occidentale*), and Fendler's meadow-rue (*Thalictrum fendleri*).

Great Basin Xeric Mixed Sagebrush Shrubland

The Great Basin Xeric Mixed Sagebrush Shrubland (xeric mixed sagebrush shrubland) community type occurs in the Great Basin on dry flats and plains, alluvial fans, rolling hills, rocky hillslopes, saddles, and ridges. Sites are dry, often exposed to desiccating winds, with typically shallow, rocky, non-saline soils. Shrublands are dominated by black sagebrush (mid and low elevations), low sagebrush (higher elevation); they may be co-dominated by Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) or yellow rabbitbrush (*Chrysothamnus viscidiflorus*). Other shrubs that may be present include spiny saltbush (*Atriplex confertifolia*), ephedra, goldenbush (*Ericameria* spp.), spiny hopsage, (*Lycium shockleyi*), bud sage (*Picrothamnus desertorum*), greasewood, and horsebrush species (*Tetradymia* spp.). The herbaceous layer is likely sparse and composed of perennial bunch grasses such as Indian rice grass, desert needlegrass (*Achnatherum speciosum*), Thurber's needlegrass (*Achnatherum thurberianum*), squirreltail (*Elymus elymoides*), or one-sided bluegrass (*Poa secunda*).

Inter-Mountain Basins Big Sagebrush Shrubland

The Inter-Mountain Basins Big Sagebrush Shrubland (big sagebrush shrubland) widespread community type typically occurs in broad basins between mountain ranges, plains and foothills. Soils are typically deep, well-drained, and non-saline. These shrublands are dominated by basin big sagebrush and/or Wyoming big sagebrush. Scattered juniper, greasewood, and saltbush species may be present in some stands. Rubber rabbitbrush (*Ericameria nauseosa*), yellow rabbitbrush, bitterbrush, or mountain snowberry (*Symphoricarpos oreophilus*) may codominate disturbed stands. Perennial herbaceous components typically

contribute less than 25% vegetative cover. Common grass species include Indian rice grass, blue grama (*Bouteloua gracilis*), thickspike wheatgrass (*Elymus lanceolatus*), Idaho fescue, needlegrass, Great Basin wildrye, James's galleta (*Pleuraphis jamesii*), western wheatgrass (*Pascopyrum smithii*), one-sided bluegrass, or bluebunch wheatgrass.

Inter-Mountain Basins Big Sagebrush Steppe

This Inter-Mountain Basins Big Sagebrush Steppe (big sagebrush steppe) community is dominated by perennial grasses and forbs with basin big sagebrush, Wyoming big sagebrush, silver sagebrush (*Artemisia cana* ssp. *cana*), and/or bitterbrush dominating or codominating the open to moderately dense (10 to 40% cover) shrub layer. Spiny saltbush, yellow rabbitbrush, rubber rabbitbrush, greasewood, horsebrush (*Tetradymia* spp.), or prairie sagewort (*Artemisia frigida*) may be common, especially in disturbed stands. Associated grasses can include Indian rice grass, plains reedgrass (*Calamagrostis montanensis*), streambank wheatgrass (*Elymus lanceolatus* ssp. *lanceolatus*), junegrass (*Koeleria macrantha*), one-sided bluegrass, western wheatgrass, needlegrass, green needlegrass (*Nassella viridula*), blue grama, and bluebunch wheatgrass. Thread-leaf sedge (*Carex filifolia*) and needleleaf sedge (*Carex duriuscula*) are also important. Common forbs are spiny phlox (*Phlox hoodii*), sandwort (*Arenaria* spp.), prickly pear (*Opuntia* spp.), scarlet globemallow (*Sphaeralcea coccinea*), purple prairie clover (*Dalea purpurea*), dotted blazing star (*Liatris punctata*), and milkvetch (*Astragalus* spp.). Areas with deeper soils more commonly support basin big sagebrush but have largely been converted for other land uses. Soils are typically deep and non-saline, often with a surface layer of lichen, moss, and other small plants (microphytic crust).

Inter-Mountain Basins Montane Sagebrush Steppe

The Inter-Mountain Basins Montane Sagebrush Steppe (montane sagebrush steppe) community type includes sagebrush communities occurring at montane and subalpine elevations. Climate is cool, semi-arid to subhumid. This community occurs primarily on deep-soiled to stony flats, ridges, nearly flat ridgetops, and mountain slopes and generally occurs on relatively flat areas with fine soils and some source of subsurface moisture. It is composed primarily of mountain sagebrush and other sagebrush species such as snowfield sagebrush (*Artemisia spiciformis*). Bitterbrush may codominate or even dominate some stands. Other common shrubs include snowberry species (*Symphoricarpos* spp.), service berry species (*Amelanchier* spp.), rubber rabbitbrush, wild crab apple (*Peraphyllum ramosissimum*), wax currant (*Ribes cereum*), and yellow rabbitbrush. Most stands have an abundant perennial herbaceous layer (more than 25% cover), but this community also includes mountain big sagebrush shrublands. Common grasses include Arizona fescue, Idaho fescue, needlegrass, muttongrass,

slender wheatgrass (*Elymus trachycaulus*), California brome grass (*Bromus carinatus*), one-sided bluegrass, spike fescue (*Leucopoa kingii*), tufted hairgrass (*Deschampsia caespitosa*), pine grass (*Calamagrostis rubescens*), and bluebunch wheatgrass. In many areas, frequent wildfires maintain an open, herbaceous-rich steppe condition, although at most sites, shrub cover can be unusually high for a steppe community (more than 40%), with the moisture providing equally high grass and forb cover.

Inter-Mountain Basins Semi-Desert Shrub-Steppe

The Inter-Mountain Basins Semi-Desert Shrub-Steppe (semi-desert shrub-steppe) community type typically occurs at lower elevations on alluvial fans and flats with moderate to deep soils. This semi-arid shrub-steppe typically is dominated by grasses (more than 25% cover) with an open shrub layer. Characteristic grasses include Indian rice grass, blue grama, saltgrass, needlegrass, James' galleta, one-sided bluegrass, and alkali sacaton. The woody layer is often a mixture of shrubs and dwarf-shrubs. Characteristic species include shadscale, big sagebrush, Greene's rabbitbrush (*Chrysothamnus Greenei*), yellow rabbitbrush, ephedra (*Ephedra* spp.), common rabbitbrush, matchweed (*Gutierrezia sarothrae*), and winterfat. Big sagebrush may be present but does not dominate. This community may be open shrubland with patchy grasses or patchy open herbaceous layer. Disturbance may be important in maintaining the woody component. Microphytic crust is very important in some stands.

Inter-Mountain Basins Mixed Salt Desert Scrub

The Inter-Mountain Basins Mixed Salt Desert Scrub (mixed salt desert scrub) is an extensive community type that includes open-canopied shrublands of typically saline basins, alluvial slopes, and plains. Substrates are often saline, medium- to fine-textured, alkaline soils but include some coarser-textured soils. The vegetation is characterized by a typically open to moderately dense shrubland composed of one or more saltbush species such as spiny saltbush, shadscale, cattle saltbush (*Atriplex polycarpa*), or spinescale saltbush (*Atriplex spinifera*). Other shrubs present to codominate may include Wyoming big sagebrush, yellow rabbitbrush, rubber rabbitbrush, Nevada jointfir (*Ephedra nevadensis*), spiny hopsage, winterfat (*Krascheninnikovia lanata*), desert thorn (*Lycium* spp.), bud sagebrush (*Picrothamnus desertorum*), or horsebrush species. The herbaceous layer varies from sparse to moderately dense and is dominated by perennial grasses such as Indian rice grass, blue grama, streambank wheatgrass (*Elymus lanceolatus* ssp. *lanceolatus*), western wheatgrass, James's galleta, big galleta (*Pleuraphis rigida*), one-sided bluegrass, and alkali sacaton. Various forbs are also present.

Mojave Mid-Elevation Mixed Desert Scrub

The Mojave Mid-Elevation Mixed Desert Scrub (mixed desert scrub) community type is common on lower piedmont slopes in the transition zone into the southern Great Basin. The vegetation in this community is quite variable. Codominants and diagnostic species include blackbrush, California buckwheat (*Eriogonum fasciculatum*), Nevada jointfir, spiny hopsage, spiny menodora (*Menodora spinescens*), beargrass (*Nolina* spp.), buckhorn cholla (*Opuntia acanthocarpa*), Mexican bladdersage (*Salazaria mexicana*), Parish's goldeneye (*Viguiera parishii*), and Mojave yucca (*Yucca schidigera*). Desert grasses, including Indian rice grass, desert needlegrass, Porter's muhly (*Muhlenbergia porteri*), James's galleta, big galleta (*Pleuraphis rigida*), and one-sided bluegrass, may form an herbaceous layer. Scattered Utah juniper (*Juniperus osteosperma*) or desert scrub species also may be present.

Inter-Mountain Basins Greasewood Flat

The Inter-Mountain Basins Greasewood Flat (greasewood flat) community type typically occurs near drainages on stream terraces and flats or may form rings around more sparsely vegetated playas. Sites typically have saline soils and a shallow water table and flood intermittently but remain dry for most growing seasons. The water table remains high enough to maintain vegetation, despite salt accumulations. This community usually occurs as a mosaic of multiple communities, with open to moderately dense shrublands dominated or codominated by greasewood. Shadscale, spiny saltbush, or winterfat may be present to codominant. Occurrences often are surrounded by mixed salt desert scrub. The herbaceous layer, if present, is usually dominated by grasses. There may be inclusions of alkali sacaton, saltgrass (where water remains ponded the longest), or spikerush (*Eleocharis palustris*) herbaceous types.

Inter-Mountain Basins Active and Stabilized Dune

The Inter-Mountain Basins Active and Stabilized Dune (dune) community type occurs in basins and is composed of unvegetated to moderately vegetated (less than 10 to 30% plant cover) active and stabilized dunes and sandsheets. Species occupying these environments often are adapted to shifting sands and form patchy or open grasslands, shrublands, or steppe composed of Indian rice grass (*Achnatherum hymenoides*), sand sage (*Artemisia filifolia*), basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*), shadscale (*Atriplex canescens*), ephedra (*Ephedra* spp.), blackbrush (*Coleogyne ramosissima*), common rabbitbrush (*Ericameria nauseosus*), sand wildrye (*Leymus flavescens*), chokecherry (*Prunus virginiana*), scurf pea (*Psoralidium lanceolatum*), bitterbrush (*Purshia*

tridentata), alkali sacaton (*Sporobolus airoides*), fourpart horsebrush (*Tetradymia tetrameres*), or crinklemat (*Tiquilia* spp).

North American Arid West Emergent Marsh

North American Arid West Emergent Marsh (emergent marsh) may occur in depressions in the landscape (ponds, kettle ponds), as fringes around lakes, and along slow-flowing streams and rivers (such riparian marshes also are referred to as sloughs). Marshes are frequently or continually inundated, with water depths up to 2 meters. Water levels may be stable, or may fluctuate 1 meter or more over the course of the growing season. Water chemistry may include some alkaline or semi-alkaline situations, but the alkalinity is highly variable even within the same complex of wetlands. Marshes have distinctive soils that typically are mineral but also can accumulate organic material. The vegetation is characterized by herbaceous plants that are adapted to wet soil conditions. Common emergent and floating vegetation includes species of tule (*Scirpus*) and/or bulrush (*Schoenoplectus*), cattail (*Typha*), rush, pondweed (*Potamogeton*), smartweed (*Polygonum*), pond lily (*Nuphar*), and canarygrass (*Phalaris*). This community type may include areas of relatively deep water with floating-leaved plants, such as duckweed (*Lemna*), pondweed, and water shield (*Brasenia*), and submergent and floating plants, such as water milfoil (*Myriophyllum*), coon's tail (*Ceratophyllum*), and waterweed (*Elodea*).

Inter-Mountain Basins Playa

The Inter-Mountain Basins Playa (playa) community type is composed of barren and sparsely vegetated playas (generally less than 10% plant cover) found in the intermountain western U.S. Salt crusts are common, with small saltgrass beds in depressions and sparse shrubs around the margins. These communities are intermittently flooded. The water is prevented from percolating through the soil by an impermeable subsurface soil layer and is left to evaporate. Soil salinity varies greatly with soil moisture and greatly affects species composition. Characteristic species may include iodine bush (*Allenrolfea occidentalis*), greasewood (*Sarcobatus vermiculatus*), spiny hopsage (*Grayia spinosa*), Lemmon's alkaligrass (*Puccinellia lemmonii*), Great Basin wildrye (*Leymus cinereus*), saltgrass (*Distichlis spicata*), and saltbush (*Atriplex* spp.).

Inter-Mountain Basins Semi-Desert Grassland

The Inter-Mountain Basins Semi-Desert Grassland (semi-desert grassland) is a widespread community type that occurs on dry plains and mesas. These grasslands occur in lowland and upland areas and may occupy swales, playas, mesatops, plateau parks, alluvial flats, and plains, but sites typically are xeric.

Substrates are often well-drained sandy or loamy-textured soils derived from sedimentary parent materials but are quite variable and may include fine-textured soils derived from igneous and metamorphic rocks. These grasslands typically are dominated or codominated by Indian rice grass, three awn (*Aristida* spp.), blue grama, needlegrass, muhly (*Muhlenbergia* spp.), or James's galleta and may include scattered shrubs and dwarfshrubs of species of sagebrush, saltbush, blackbrush (*Coleogyne*), ephedra, matchweed (*Gutierrezia*), or winterfat.

Invasive Annual Grassland

The Invasive Annual Grassland (annual grassland) community type includes areas that are dominated by introduced annual grass species such as oat (*Avena* spp.), brome (*Bromus* spp.), and Mediterranean grass (*Schismus* spp.).

Invasive Perennial Grassland

The Invasive Perennial Grassland (perennial grassland) community type includes areas that are dominated by introduced perennial grass species such as crested wheatgrass (*Agropyron cristatum*), smooth brome (*Bromus inermis*), Lehmann lovegrass (*Eragrostis lehmanniana*), pennisetum species (*Pennisetum* spp.), bulbous blue grass (*Poa bulbosa*), Kentucky blue grass (*Poa pratensis*), and intermediate wheatgrass (*Thinopyrum intermedium*).

Invasive Annual and Biennial Forbland

The Invasive Annual and Biennial Forbland (forbland) community type includes areas that are dominated by introduced annual and/or biennial forb species such as saltlover (*Halogeton glomeratum*), common red sage (*Kochia scoparia*), and Russian thistle (*Salsola* spp.).

Inter-Mountain Basins Cliff and Canyon

The Inter-Mountain Basins Cliff and Canyon (basin cliff and canyon) community type is found from foothill to subalpine elevations and includes barren and sparsely vegetated landscapes (generally less than 10% plant cover) of steep cliff faces, narrow canyons, smaller rock outcrops, and unstable scree and talus slopes below cliff faces. Widely scattered trees and shrubs may include two needle pinyon pine (*Pinus edulis*), white pine (*Pinus flexilis*), single leaf pinyon pine, juniper (*Juniperus* spp.), big sagebrush (*Artemisia tridentata*), bitterbrush, desert mountain mahogany (*Cercocarpus ledifolius*), ephedra, cream bush (*Holodiscus discolor*), and other species often common in adjacent plant communities.

Sierra Nevada Cliff and Canyon

The Sierra Nevada Cliff and Canyon (Sierra cliff and canyon) community type includes barren and sparsely vegetated areas (less than 10% plant cover) of steep cliff faces, narrow canyons, and smaller rock outcrops. This type also includes unstable scree and talus slopes typically occurring below cliff faces. Scattered vegetation may include California red fir (*Abies magnifica*), Douglas-fir, lodgepole pine (*Pinus contorta* var. *murrayana*), ponderosa pine, Jeffrey pine (*Pinus jeffreyi*), quaking aspen, or single leaf pinyon pine (*Pinus monophylla*), Utah juniper (*Juniperus osteosperma*), and littleleaf mountain mahogany (*Cercocarpus ledifolius*) at lower elevations. There may be shrubs, including species of manzanita (*Arctostaphylos*) or ceanothus (*Ceanothus*).

Open Water

The open water cover type includes areas of open water, generally with less than 25% cover of vegetation or soil.

Agriculture

Agriculture is an aggregated land cover type that includes both pasture/hay areas and cultivated crops. Pasture/hay cover consists of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Cultivated crops are areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and perennial woody crops such as orchards and vineyards. Agriculture also includes all land being actively tilled. Most areas mapped as agriculture are irrigated, and patchy playa wetland vegetation may occur at the wettest edges of the fields. In this chapter, agricultural land refers to land mapped with agriculture as its cover type. See Chapter 7, Land Use and Agriculture, for additional information about agricultural land use.

Barren Lands, Non-Specific

The Barren Lands, Non-Specific (barren) cover type includes barren areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits, and other accumulation of earthen material. Generally, vegetation accounts for less than 15% of total cover.

Recently Mined or Quarried

The Recently Mined or Quarried (mined) cover type includes areas where open pit mining or quarries are visible in the imagery used for the Southwest Region GAP mapping (images acquired between 1999 and 2001), and are 2 hectares or greater in size.

Developed (Open Space, Low Intensity)

The Open Space cover type includes areas with a mixture of structures and associated landscaping but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.

The low intensity cover type includes areas with a mixture of structures and associated landscaping. Impervious surfaces account for 20 to 49% of total cover. These areas most commonly include single-family housing units.

Developed (Medium–High Intensity)

The Developed (Medium Intensity) cover type includes areas with a mixture of constructed materials and vegetation. Impervious surface accounts for 50 to 79% of the total cover. These areas most commonly include single-family housing units. Developed (High Intensity) cover type includes highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80 to 100% of the total cover.

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Appendix 4B Noxious Weeds of Nevada

Appendix 4B Noxious Weeds of Nevada

Common Name	Scientific Name
Category A Weeds:	
African rue	<i>Peganum harmala</i>
Austrian fieldcress	<i>Rorippa austriaca</i>
Austrian peaweed	<i>Sphaerophysa salsula</i> / <i>Swainsona salsula</i>
Camelthorn	<i>Alhagi camelorum</i>
Common crupina	<i>Crupina vulgaris</i>
Dalmation toadflax	<i>Linaria dalmatica</i>
Dyer's woad	<i>Isatis tinctoria</i>
Eurasian water-milfoil	<i>Myriophyllum spicatum</i>
Giant reed	<i>Arundo donax</i>
Giant salvinia	<i>Salvinia molesta</i>
Goats rue	<i>Galega officinalis</i>
Houndstongue	<i>Cynoglossum officinale</i>
Hydrilla	<i>Hydrilla verticillata</i>
Iberian starthistle	<i>Centaurea iberica</i>
Klamath weed	<i>Hypericum perforatum</i>
Leafy spurge	<i>Euphorbia esula</i>
Malta starthistle	<i>Centaurea melitensis</i>
Mayweed chamomile	<i>Anthemis cotula</i>
Mediterranean sage	<i>Salvia aethiopsis</i>
Purple loosestrife	<i>Lythrum salicaria</i> , <i>L. virgatum</i> and their cultivars
Purple starthistle	<i>Centaurea calcitrapa</i>
Rush skeletonweed	<i>Chondrilla juncea</i>
Sow thistle	<i>Sonchus arvensis</i>
Spotted knapweed	<i>Centaurea masculosa</i>
Squarrose star thistle	<i>Centaurea virgata</i> var. <i>squarrosa</i>
Sulfur cinquefoil	<i>Potentilla recta</i>
Syrian bean caper	<i>Zygophyllum fabago</i>
Yellow starthistle	<i>Centaurea solstitialis</i>
Yellow toadflax	<i>Linaria vulgaris</i>

Common Name	Scientific Name
Category B Weeds:	
Carolina horse-nettle	<i>Solanum carolinense</i>
Diffuse knapweed	<i>Centaurea diffusa</i>
Medusahead	<i>Taeniatherum caput-medusae</i>
Musk thistle	<i>Carduus nutans</i>
Russian knapweed	<i>Acroptilon repens</i>
Sahara mustard	<i>Brassica tournefortii</i>
Scotch thistle	<i>Onopordum acanthium</i>
White horse-nettle	<i>Solanum elaeagnifolium</i>
Category C Weeds:	
Black henbane	<i>Hyoscyamus niger</i>
Canada thistle	<i>Cirsium arvense</i>
Green fountain grass	<i>Pennisetum setaceum</i>
Hoary cress	<i>Cardaria draba</i>
Johnson grass	<i>Sorghum halepense</i>
Perennial pepperweed	<i>Lepidium latifolium</i>
Poison hemlock	<i>Conium maculatum</i>
Puncture vine	<i>Tribulus terrestris</i>
Saltcedar (tamarisk)	<i>Tamarix</i> spp.
Water hemlock	<i>Cicuta maculata</i>
Category A: Weeds not found or limited in distribution throughout the state; actively excluded from the state and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; control required by the state in all infestations. Category B: Weeds established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur. Category C: Weeds currently established and generally widespread in many counties of the state; actively eradicated from nursery stock dealer premises; abatement at the discretion of the state quarantine officer. Source: Nevada Department of Agriculture. 2008a. Noxious Weed List. Last revised: February 8, 2008. Available: <http://agri.nv.gov/nwac/PLANT_No WeedList.htm>. Accessed: June 10, 2008>.	

Figure 4B-1 shows the locations of weed management areas (WMAs) in Nevada, including the Walker River Basin WMA (Nevada Cooperative Weed Management Areas, 2006).

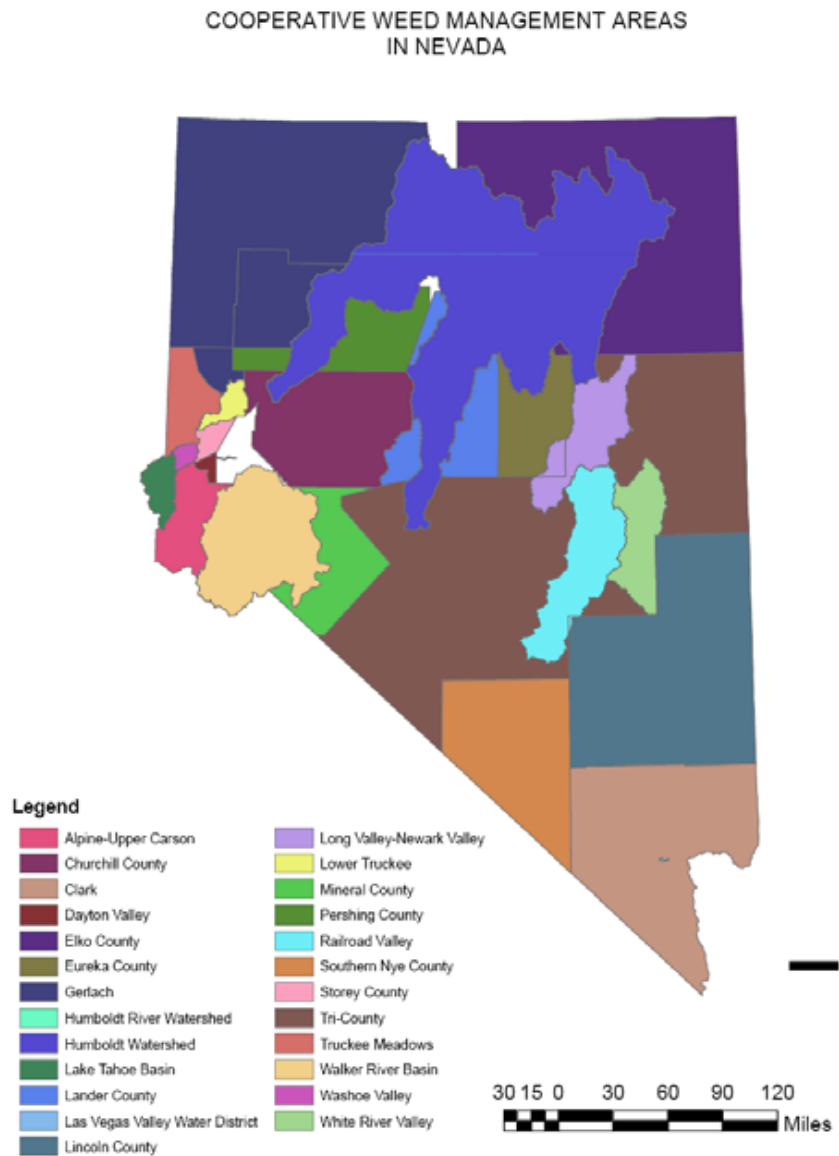


Figure 4B-1. Weed Management Areas in Nevada

Appendix 15A Climate Change Technical Information

Appendix 15A Climate Change

Technical Information

Global Climate Change and the Greenhouse Effect

Global climate change is a phenomenon exacerbated by anthropogenic emissions of GHGs into the atmosphere through combustion of fossil fuels and other GHG-producing activities such as deforestation and land use change. The phenomenon known as the *greenhouse effect* keeps the earth's atmosphere near the surface warmer than it would be otherwise and allows successful habitation by humans and other forms of life.

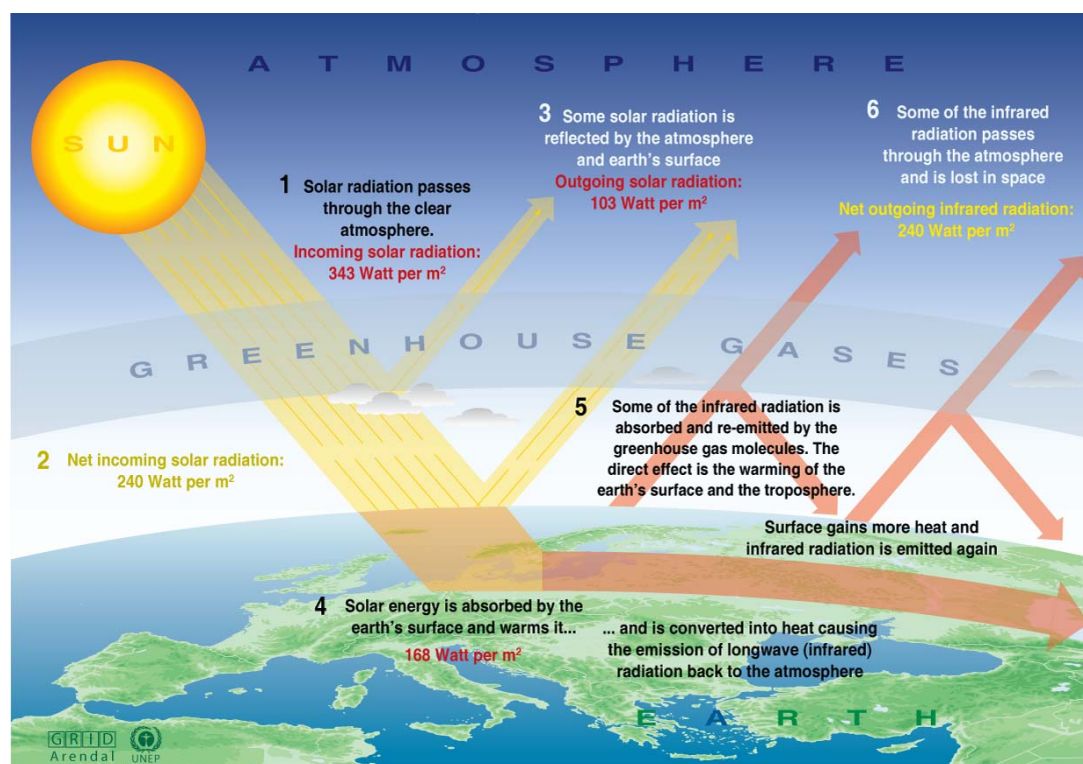
GHGs play a critical role in maintaining the earth's radiation budget by trapping some of the longwave infrared radiation emitted from the earth's surface, which would otherwise escape to space (Figure 15A-1). GHGs affect the radiative forcing of the atmosphere (the change in net irradiance at the tropopause¹ after allowing for stratospheric temperatures to readjust to radiative equilibrium, but with surface and tropospheric temperatures and state held fixed at the unperturbed values), which is used to assess and compare the anthropogenic and natural drivers of climate change. Principal GHGs contributing to this process are water vapor, CO₂, N₂O, CH₄, O₃, and certain anthropogenic HFCs and PFCs.

Fossil fuel combustion and deforestation release carbon from the geosphere and biosphere into the atmosphere. Such carbon had historically been stored underground in sediments or in surface vegetation. With the accelerated increase of fossil fuel combustion and deforestation since the industrial revolution of the 19th Century, concentrations of GHGs have increased exponentially in the atmosphere. Such emissions of GHGs in excess of natural ambient concentrations enhance the natural greenhouse effect. This enhanced greenhouse effect has contributed to *global warming*, an increased rate of warming of the earth's surface temperature. Specifically, increases in GHGs lead to increased absorption of longwave infrared radiation by the earth's atmosphere and warm the lower atmosphere further, thereby increasing evaporation rates and temperatures near the surface (Figure 15A-1).

Global warming is expected to affect weather patterns, sea level, ocean acidification, chemical reaction rates, precipitation rates, and other climate phenomena in a manner commonly referred to as *climate change*. Climate change is a global problem, and GHGs are global pollutants that do not result in pollution

¹ The tropopause is the upper boundary of the troposphere (the layer of the atmosphere closest to earth's surface) and is usually characterized by an abrupt change in lapse rate from positive (decreasing temperature with height) to neutral or negative (temperature constant or increasing with height).

hotspots, unlike criteria air pollutants (such as ozone precursors) and toxic air contaminants that are pollutants of more regional and local concern.



Source: UNEP/GRID-Arendal, http://maps.grida.no/go/graphic/greenhouse_effect.

Figure 15A-1: The Greenhouse Effect

The Intergovernmental Panel on Climate Change Temperature Prediction

IPCC was established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socio-economic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. IPCC predicts substantial increases in temperatures globally of between 1.1 and 6.4°C (Intergovernmental panel on Climate Change 2007a).

Greenhouse Gases and Global Emissions

The GHGs listed by IPCC (CO_2 , CH_4 , N_2O , HFCs, PFCs, and SF_6) are documented in this section, in order of abundance in the atmosphere. Water vapor, although the most abundant GHG, is not included because natural concentrations and fluctuations far outweigh anthropogenic influences.

To simplify reporting and analysis, methods have been set forth to describe emissions of GHGs in terms of a single gas. The most commonly accepted method to compare GHG emissions is the global warming potential (GWP) methodology. IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of CO₂e, which compares the gas in question to that of the same mass of CO₂ (CO₂ has a GWP of 1 by definition). For example, a high GWP represents high longwave infrared absorption and long atmospheric lifetime compared to CO₂. A time horizon must be selected to convert GHG emissions to equivalent CO₂ emissions to account for chemical reactivity and lifetime differences among various GHG species. The standard time horizon for climate change analysis is 100 years. Generally, GHG emissions are quantified in terms of metric tons of CO₂e emitted per year.

The atmospheric residence time of a gas is equal to the total atmospheric abundance of the gas divided by its rate of removal (Seinfeld 2006). The atmospheric residence time of a gas is, in effect, a half-life measurement of how long a gas is expected to persist in the atmosphere when taking into account removal mechanisms such as chemical transformation and deposition.

Table 15A-1 lists the GWP of each GHG, its lifetime, and abundance in the atmosphere in ppt. Units commonly used to describe the concentration of GHGs in the atmosphere are ppm, ppb, and ppt, referring to the number of molecules of the GHG in a sampling of 1 million, 1 billion, or 1 trillion molecules of air. Collectively, HFCs, PFCs, and SF₆ are referred to as high GWP gases. CO₂ is by far the largest component of worldwide CO₂e emissions, followed by CH₄, N₂O, and high GWP gases in order of decreasing contribution to CO₂e. Table 15A-2 lists the anthropogenic contribution of GHGs in terms of CO₂e in 2004.

Table 15A-1. Lifetimes, Global Warming Potentials, and Abundances of Significant Greenhouse Gases

Gas	Global Warming Potential (100 years)	Lifetime (years)	1998 Atmospheric Abundance (ppt ¹)
CO ₂	1	50–200	365,000,000
CH ₄	21	9–15	1,745
N ₂ O	310	120	314
HFC-23	11,700	264	14
HFC-134a	1,300	14.6	7.5
HFC-152a	140	1.5	0.5
CF ₄	6,500	50,000	80
C ₂ F ₆	9,200	10,000	3
SF ₆	23,900	3,200	4.2

Sources: Intergovernmental Panel on Climate Change 1996, 2001.

Note: CF₄ and C₂F₆ are PFCs.

¹ ppt is a mixing ratio unit indicating the concentration of a pollutant in parts per trillion by volume.

Table 15A-2. Global Anthropogenic Greenhouse Gas Emissions in 2004 (CO₂ Equivalent)

Gas	Source	GHG Emissions (Gt CO ₂ e/year)	CO ₂ Equivalent Percentage
CO ₂	Deforestation, decay of biomass	8.5	17.3
CO ₂	Fossil fuel use	27.7	56.6
CO ₂	Other	1.4	2.8
CH ₄	Agriculture, natural gas combustion, coal mining,	7.0	14.3
N ₂ O	Agriculture, industry, transportation	3.9	7.9
High GWP gases (includes HFCs, PFCs, and SF ₆)	Consumer products, refrigerants, aluminum production, semiconductor manufacturing	0.5	1.1
All GHGs		49.0	100

Sources: Olivier et al., 2005, 2006 in Intergovernmental Panel on Climate Change 2007b (page 103, 110-111).

Gt = gigaton; GWP = global warming potential

Carbon Dioxide

CO₂ is the most important anthropogenic GHG and accounts for more than 75% of all anthropogenic GHG emissions. Its long atmospheric lifetime (on the order of decades to centuries) ensures that atmospheric concentrations of CO₂ will remain elevated for decades after mitigation efforts to reduce GHG concentrations are promulgated (Olivier et al. 2005, 2006 in Intergovernmental Panel on Climate Change 2007b).

Increasing concentrations of CO₂ in the atmosphere are largely attributable to emissions from fossil fuel combustion, gas flaring, cement production, and land use changes. About 75% of the current radiative forcing is likely due to anthropogenic CO₂ emissions that are the result of fossil fuel combustion (and to a very small extent, cement production), and approximately 25% of the current radiative forcing is the result of land use change (Intergovernmental Panel on Climate Change 2007a).

Anthropogenic emissions of CO₂ have increased concentrations in the atmosphere most notably since the industrial revolution. The concentration of CO₂ has increased from about 280 to 379 ppm over the last 250 years, an increase of over 35% (Intergovernmental Panel on Climate Change 2007a). IPCC estimates that the present atmospheric concentration of CO₂ has not been exceeded in the last 650,000 years and is likely the highest ambient concentration in the last 20 million years (Intergovernmental Panel on Climate Change 2007a).

Methane

CH₄, the main component of natural gas, is the second largest contributor to anthropogenic GHG emissions, and has a GWP of 21 (Association of Environmental Professionals 2007, Intergovernmental Panel on Climate Change 1996).

Anthropogenic emissions of CH₄ are the result of growing rice, raising cattle, combusting natural gas, and mining coal (National Oceanic and Atmospheric Administration 2005). Atmospheric CH₄ has increased from a preindustrial concentration of 715 to 1,775 ppb in 2005 (Intergovernmental Panel on Climate Change 2001). Although it is unclear why, atmospheric concentrations of CH₄ have not risen as quickly as anticipated (National Oceanic and Atmospheric Administration 2005).

Nitrous Oxide

N₂O is a powerful GHG, with a GWP of 310 (Intergovernmental Panel on Climate Change 1996). Anthropogenic sources of N₂O include agricultural processes, nylon production, fuel-fired power plants, nitric acid production, and vehicle emissions. N₂O also is used in rocket engines, racecars, and as an aerosol spray propellant. Agricultural processes that result in anthropogenic N₂O

emissions are fertilizer use and microbial processes in soil and water (Association of Environmental Professionals 2007).

N₂O concentrations in the atmosphere have increased from preindustrial levels of 270 to 319 ppb in 2005, an 18% increase (Intergovernmental Panel on Climate Change 2001).

Hydrofluorocarbons

HFCs are anthropogenic chemicals used in commercial, industrial, and consumer products (U.S. Environmental Protection Agency 2006). HFCs generally are used as substitutes for ozone-depleting substances in automobile air conditioners and refrigerants. As seen in Table 15A-2, HFCs, in order from most abundant to least, include HFC-134a (35 ppt), HFC-23 (17.5 ppt), and HFC-152a (3.9 ppt).

Concentrations of HFCs, which have high GWPs, have risen from zero to current levels (Table 15A-2). Because these chemicals are human-made, they do not exist naturally in ambient conditions.

Perfluorocarbons

The most abundant PFCs are CF₄ and C₂F₆. These human-made chemicals are emitted largely from aluminum production and semiconductor manufacturing processes. PFCs are extremely stable compounds that are destroyed only by very high-energy ultraviolet rays. These chemicals thus have a very long lifetime, as shown in Table 15A-2 (U.S. Environmental Protection Agency 2006).

PFCs have large GWPs and have risen from zero to current levels (Table 15A-2).

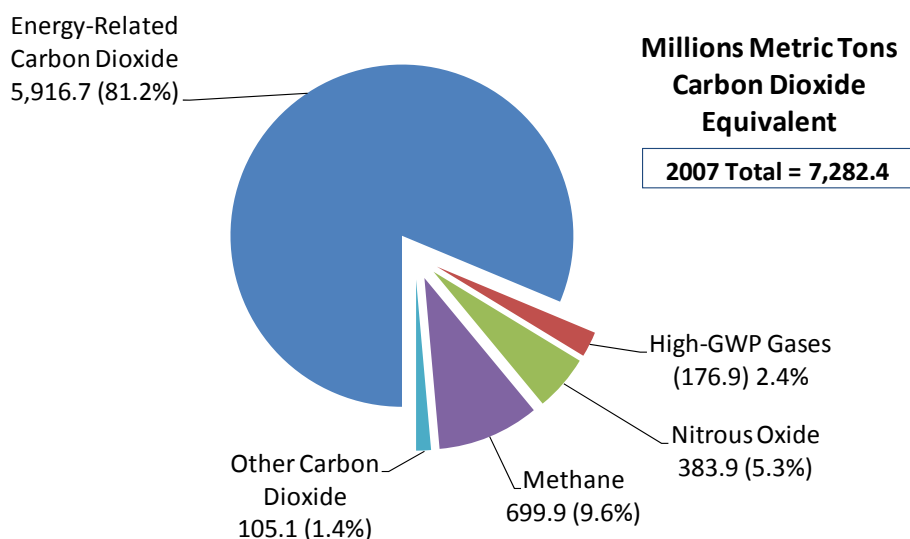
Sulfur Hexafluoride

SF₆, another human-made chemical, is used as an electrical insulating fluid for power distribution equipment, in the magnesium industry, in semiconductor manufacturing, and also as a trace chemical for the study of oceanic and atmospheric processes (U.S. Environmental Protection Agency 2006). In 1998, atmospheric concentrations of SF₆ were 4.2 ppt and steadily increasing in the atmosphere.

SF₆ is the most powerful of all GHGs listed in IPCC studies, with a GWP of 23,900 (Intergovernmental Panel on Climate Change 1996).

United States Greenhouse Gas Emissions

Total United States greenhouse gas emissions in 2007 were 1.4% above the 2006 total. (U.S. Department of Energy, Energy Information Administration 2008) Figure 15A-2 presents the proportionate emissions of the major United States GHG emissions in 2007.



Source: U.S. Department of Energy, Energy Information Administration 2008

Note: High-GWP Gases include HFCs, PFCs, and SF₆.

Figure 15A-2: United States Greenhouse Gas Emissions by Gas, 2007

Total emissions growth—from 7,179.7 mmt CO₂e in 2006 to 7,282.4 mmt CO₂e in 2007—was largely the result of a 75.9-mmt CO₂e increase in CO₂ emissions. There were larger percentage increases in emissions of other GHGs, but their absolute contributions to total emissions growth were relatively small: 13.0 mmt CO₂e for CH₄, 8.2 mmt CO₂e for N₂O, and 5.6 mmt CO₂e for high GWP gases (U.S. Department of Energy, Energy Information Administration 2008).

The increase in United States CO₂ emissions in 2007 resulted primarily from two factors: unfavorable weather conditions, which increased demand for heating and cooling in buildings; and a drop in hydropower availability that led to greater reliance on fossil energy sources (coal and natural gas) for electricity generation, increasing the carbon intensity of the power supply. (Energy Information Administration 2008) The increase in CH₄ emissions resulted from energy sources, waste management, and agriculture. The increase in N₂O is attributed primarily to an increase of emissions from nitrogen fertilization of agricultural soils.

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