Bluewater Valley News

Newsletter of the Bluewater Valley Downstream Alliance

http://www.bvdownstreamalliance.org/

January 2011

Bluewater Valley Downstream Alliance: An Introduction

The Bluewater Valley Downstream Alliance (BVDA) is a group of citizens from neighboring communities north of Milan and Grants, New Mexico where groundwater and soil have been contaminated by uranium mining and milling activities that began in the 1950s. Our membership includes 6th-generation New Mexicans; families with a historically rural culture; former underground uranium miners; ranchers; farmers; environmentalists; business owners and wage earners. Please visit our webpage or contact us at contact1@bvdownstreamalliance.org to find out who we are, what we are doing and why.

Officers and Staff

Candace Head-Dylla, President,
cuh148@psu.edu
Jonnie Head, Vice-President, 505-287-3496
jonnie@jonniehead.com
Dave Arnold, Secretary,
info@bvdownstreamalliance.org
Gray Kershner, Treasurer,
kersh47@hotmail.com

Technical Assistance Grant Staff

Candace Head-Dylla, Coordinator,
1-505-401-4349/505-287-5019
Candace@bvdownstreamalliance.org

Paul Robinson, Technical Advisor,
1-505-262-1862
sricpaul@earthlink.net

Chris Shuey, Technical Advisor,
1-505-262-1862
sric.chris@earthlink.net

EPA Region 6 Contacts

Janetta Coats, TAG Project Officer
(214)665-7308 or toll free: 1-800-533-3508
coats.janetta@epa.gov

Sai Appaji, Homestake Remedial Project Manager
appaji.sairam@epa.gov
1-214-665-3126

Purpose of the BVDA Newsletter

The BVDA Newsletter has been prepared as part of a Technical Assistance Grant (TAG) Program. This first edition of the newsletter includes:

- Introduction to BVDA and the TAG;
- Status of the Risk Assessment Study being conducted in the Bluewater Valley;
- Summary of proposed future activities related to the EPA's Homestake Remedial System Evaluation (RSE) Final Report; and
- Proposed schedule for Third Five-Year Review of the Status of the Homestake Superfund Site remediation.

Technical Assistance Grant Awarded

The U.S. Environmental Protection Agency (EPA) Region VI awarded BVDA a Technical Assistance Grant (#1-00F09401) in November 2010. BVDA has contracted with Southwest Research and Information Center (SRIC) in Albuquerque to provide technical assistance and advice. The technical advisors will assist BVDA members in analyzing and interpreting documents generated throughout the Superfund process at the Homestake Mining Company/Barrick Gold uranium mill tailings disposal site located about seven miles north of Milan, N.M.. Through the TAG, the contractor will ensure that BVDA members are informed about all aspects of site clean-up activities, enabling them to participate more effectively in EPA's decision-making process including:

- Scheduling tasks and meeting with community experts;
- Commenting Quality Assurance and Quality Control ("QA/QC") aspects of key reports;
- Assessing and explaining the basis for the statistical sampling for current cleanup targets;
- Engaging a health expert from CDC/ ATSDR to analyze and explain health effects related to living next to the HMC site based on findings of the Risk Assessment being conducted by USEPA;
- Interpreting results from the health expert(s)' findings from the EPA risk assessment and sharing those results with the community;

- Developing a plan, in conjunction, with BVDA to share results of contract activities with the community
- Supporting BVDA members as they share findings with other groups, including helping to prepare press releases and website postings.

Risk Assessment Study Begun

In September 2010, EPA began a year-long risk assessment study to address health risks facing Bluewater Valley residents that may be associated with the Homestake Superfund Site. The study is called "Screening Human Health Risk Assessment for Homestake Mining Co. Grants, New Mexico."

This risk assessment is being conducted to address concerns of the BVDA members and their neighbors. EPA states that the purpose of the study is to ". . .address concerns raised by the public living within the Area of Concern (AOC) as identified by NMED for water hook ups which includes the residential subdivisions (Murray Acres, Pleasant-Valley Estates, Broadview Acres, Valle Verde, and Felice Acres) located adjacent to the Homestake Mining Co." EPA summarizes the reasons for the community's concerns as follows:

"Residents live across the road from the Homestake Mining Co. at a distance of approximately 0.5 miles from the on-site groundwater remediation project. The public is concerned that they are exposed to unacceptable levels of radioactive contaminants through the inhalation and ingestion routes of intake. They alleged that the contaminants are transported into their homes through the spray mist from the evaporation ponds associated with the groundwater remediation activities, through emissions from the tailing piles, through emissions from the land application [of contaminated groundwater], and through their use of contaminated groundwater used for domestic uses. They are also concerned with consumption of produce in areas irrigated with contaminated groundwater and consumption of livestock meat exposed to groundwater in the area. Homestake Mining Company currently meets NRC [Nuclear Regulatory Commission] emission criteria; however, EPA is conducting this study independently to ensure compliance with CERCLA" (Comprehensive Environmental Response, Compensation and Liability Act, or the Superfund law).

The Risk Assessment Scope of Work includes both 1) identification of existing information and 2) data acquisition. Data acquisition includes:

- Gamma radiation scanning of the Homestake property using a surface vehicle
- Gamma scanning of outdoor structures
- Residential soil sampling
- Soil sampling around the center-pivot and flood irrigation areas
- Vegetation sampling
- Water sampling
- Indoor and outdoor air monitoring for radon gas.

Risk Assessment Progress So Far

EPA convened a Homestake Superfund Site Update Meeting in Grants, N.M., on November 8, 2010, to provide an update on the Risk Assessment Study. The following summary of progress to date relies on the EPA's Scope of Work for the study and information presented at the November meeting.

EPA's data acquisition program for the Risk Assessment began in September 2010 and will continue for a full year, until September 2011. Residents were asked by EPA personnel or EPA contractors in Summer and Fall 2010 to sign access agreements to allow environmental sampling and monitoring to be conducted in and around their homes as part of the Risk Assessment. While granting access is purely voluntary, BVDA is encouraging residents to give EPA access to their properties to ensure that most of the affected community is included in the Risk Assessment.

EPA has begun the "Identification of Existing Information" including:

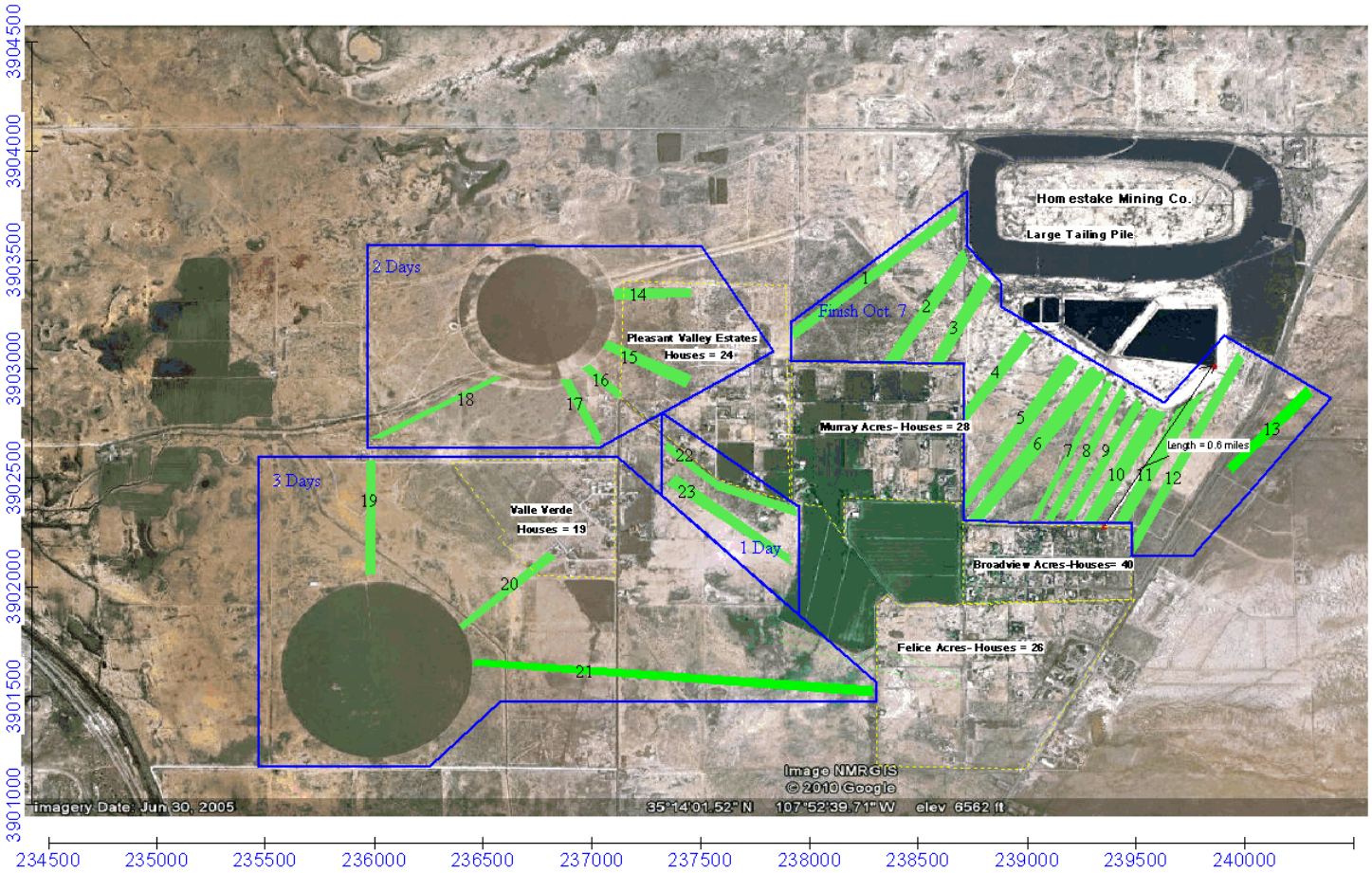
- Review Homestake's semi-annual and annual Environmental Monitoring Reports;
- Identificationof data gaps associated with development of the risk assessment;
- Review of the 1989 Record of Decision (ROD) regarding radon emissions for the site;
- Evaluation of any additional data provided by ATSDR, NMED, or NRC;.

- Review of background data to determine if it is appropriate for use in an EPA risk assessment; and
- Identification of additional background data that may be needed.

Gamma scanning using a surface vehicle involves collection of gamma radiation data in the area between the Homestake tailings piles and the residential areas using a gamma radiation detector mounted on the front of a small truck. Gamma scanning using a surface vehicle-mounted detector has also begun in the areas where water from the Homestake site was released during a Spring 2010 flood, at the center-pivot irrigation plot west of the Large Tailings Pile, and on lands located north of the Homestake site.

"The intent of this scanning is to evaluate the possibility that radioactive contamination originating from the evaporation ponds or the site as a whole has been deposited on residential soil. This scanning will consist of four straight line patterns that resemble stripes. Three of the stripes will originate at the evaporation ponds and tailing piles and will terminate in. . .Pleasant-Valley Estates, Murray-Acres, and Broadview-Acres."

In November, EPA presented Google Earth images showing the location of the scanned areas. The map of gamma scammed areas closest to the residential areas is shown below.



Residential sampling of soil, vegetation, water, radon and gamma radiation has begun at 50 to 75 homes in the three subdivisions. Radon gas and gamma radiation sampling includes both indoor and outdoor sampling programs. EPA will collect, from each residential property:

- Two ten-point composite surface soil samples from each residential yard for uranium metal toxicity analysis (non-radiation), and
- One twenty-point composite surface soil sample collected from each residential yard for total metals, gamma spectroscopy, and uranium and thorium analyses.

Residential radon sampling is being conducted at 50 to 75 homes using two Track Etch detectors

inside homes and one Track etch detector placed outside of each home. These detectors will generate four quarterly samples to cover all four seasons of the year.

Residential gamma sampling includes (1) surveying surface soils outside of homes using a gamma radiation detector mounted on a baby buggy (see photo below), and (2) surveying walls and floors inside homes using hand-held gamma detectors.

Outdoor radon sampling is also being conducted quarterly at nine monitor stations located in all four directions around the Homestake site (see map below). and upgradient of that site. These radon monitors supplement monitoring conducted at eight stations operated by Homestake as part of its NRC-approved air monitoring program.

Background Area Sampling. EPA is conducting radon, soil and water sampling at about 30 homes in the village of Bluewater, N.M., located about 10 miles west of the Homestake site to establish background soil, water and radon conditions for comparison with monitoring results for the residential areas near the Homestake site. EPA selected Bluewater as a background location because it has geology, home construction and subdivision-type neighborhoods similar to those found in the residential areas near the Homestake site, but is relatively isolated from and therefore less impacted by uranium mines and mills.

What Questions Will the Risk Assessment Address?

The Risk Assessment is designed to address several concerns raised by area residents:

- Who is potentially exposed to the radionuclides and heavy metals being sampled for?
- What are the exposure pathways that result in exposures?
- What radioactive substances and chemicals are associated with potential exposures of people and the environment?
- Where are those potential exposures occurring?
- How much of the radioactive substances or chemicals are involved in human health and environmental exposures?

What Questions Will the Risk Assessment Not Address?

The Risk Assessment is not designed identify:

- Past exposures to radioactive substances or chemicals
- Correlations, or “links”, between current health issues and environmental media.
- Individuals with health problems
- Health impacts in the communities studied.

How Will Risk Be Computed in the Risk Assessment?

Three factors will be used to calculate risk:

- Baseline exposure in background area (E_B);
- Exposure from Homestake Site (E_H) ; and
- Exposure from upgradient areas (located generally north of the HMC site). (E_U).

Accordingly, total Risk (TR) will be evaluated by the formula: $TR = E_B + E_H + E_U$.

When Will the Risk Assessment Be Completed?

Based on the current schedule, USEPA plans to complete the Risk Assessment Report in March 2012. Sample collection will occur from September 2010 to September 2011, and data analysis thereafter. The Risk Assessment will be distributed at least six months after completion of data analysis. EPA will make periodic progress reports to the community on the Risk Assessment and other EPA Superfund activities at the HMC site. BVDA and its TAG contractors will review and comment on drafts of the Risk Assessment report, and communicate those comments to the community.

Remedial System Evaluation (RSE) Process for the Homestake Superfund Site

The RSE process is a non-regulatory element of EPA's Superfund program that allows the agency to hire independent experts to review and evaluate the effectiveness of groundwater remediation and waste management plans at existing Superfund sites. EPA may use the findings of RSE studies to make changes in approved remediation plans to increase effectiveness of remedial measures, thereby reducing both the costs and time needed to achieve remediation goals.

In the case of the Homestake Superfund Site, EPA initiated an RSE process in 2008 that resulted in a draft final report issued by an EPA contractor in December 2008. Based on stakeholder comments, EPA determined that a review of additional issues regarding the Homestake groundwater remediation system was needed. In 2009 contracted with the U.S. Army Corps of Engineers (USACE) prepare an addendum to the 2008 RSE draft final report. The RSE Addendum Final Report by the USACE team was released in December 2010. EPA is not legally obligated to accept or implement any of the USACE team's recommendations.

BVDA supported the original and supplemental RSE process because together they afforded the first opportunity for an independent third party to assess the effectiveness of Homestake's groundwater remediation program, whose origins date back to 1975. While BVDA does not necessarily agree with all findings and recommendations of the USACE RSE Final Report, its purpose, conclusions and recommendations are provided virtually verbatim in this newsletter (with minimal editing) to give residents an overview of possible regulatory and remediation changes that could be made at the HMC site.

Remedial System Evaluation Final Report Released

The Remedial System Evaluation Addendum Final Report ("RSE Final Report"), titled "Focused Review of Specific Remediation Issues," was released by the USACE team contracted to EPA on December 23, 2010. The RSE Final Report is posted on the NMED Homestake Superfund Site page at http://www.nmenv.state.nm.us/gwb/NMED-GWQB-SOS-HomestakeMine.htm. With the RSE Final Report completed, several actions by regulatory agencies with authorities over the Homestake site are expected to happen in the next two months:

(i) EPA will prepare a letter to NRC and NMED documenting Region 6's response to the RSE Final Report by mid-January, 2011.

(ii) NRC, NMED, and EPA will meet to discuss EPA's response letter regarding implementation of RSE recommendations and/or follow-on action items by mid-February.

(iii) EPA will continue to coordinate the RSE Advisory Group, which includes representatives of BVDA, SRIC and Pueblo of Acoma, so it can remain active and receive updates on the regulatory agencies' plans for responding to the RSE Final Report.

RSE Final Report: Purpose

The RSE Final Report addresses seven tasks:

1. Evaluate the capture of contaminant plumes in the alluvial and Chinle aquifers;

2. Evaluate the overall strategy of using fresh water to flush contaminants from the Large Tailings Pile (LTP) and then discharging the resulting waste water to on-site evaporation ponds. and to identify and compare alternatives to tailings flushing;

3. Assess potential modifications to the current groundwater treatment plant to improve capacity;

4. Evaluate the projected evaporation rates for the existing on-site ponds and a new evaporation pond (EP3) being built northwest of the LTP and how those may affect restoration activities at the site;

5. Assess the adequacy of the monitoring network at the site;

6. Evaluate the current practice of irrigating crop lands with untreated water derived from the groundwater remediation system; and

7. Evaluate the smaller of the two tailings piles at the site as a potential source of contamination and the future need for a more protective cap than a typical radon barrier.

RSE Final Report: Major Conclusions

1. Ground water quality restoration is very unlikely to be achieved by 2017 with the current remediation strategy.

2. Flushing of the LTP is unlikely to be fully successful at removing most of the original pore fluids or to remediate the contaminant mass present in the pile due to heterogeneity of the waste materials in the pile.

3. Long screened intervals in monitor wells complicate the interpretation of water quality in and below the large tailings pile. (The “screened interval” is a metal screen at the bottom of the well bore that allows fluids to flow into the well but prevents sands and silts from entering the well.)

4. The vicinity of the former mill site due east of the LTP may be an additional source of contaminants.

5. Control of the contaminant groundwater plumes seems to depend on both hydraulic capture and dilution.

6. There may have been widespread impacts on the general water quality (e.g., ions such as sulfate) of the alluvial aquifer since mill operations began, but the limited amount of historical data precludes certainty in this conclusion.

7. Upgradient water quality has declined over time, primarily in the western portion of the San Mateo Creek drainage, and this may be affecting contaminant concentrations in the alluvial groundwater north and northwest of the LTP.

8. Groundwater modeling has generally been done in accordance with standard practice. The seepage modeling likely overestimates the efficiency of flushing of the tailings.

9. The control of a uranium plume in the Middle Chinle aquifer may be incomplete.

10. There are no readily apparent site-related impacts to the San Andres aquifer, though monitoring data are limited. San Andres well 0943, located at the western end of Broadview Acres, had an increase in uranium concentrations in 2002, but concentrations since then have been relatively stable.

11. There is no indirect evidence of leakage from the evaporation and collection ponds, though the interpretation of water level and concentration data are complicated by the significant injection and extraction conducted in the immediate vicinity of the ponds.

12. Current constraints to treatment plant operations include the evaporative capacity of the ponds, clarifier operations, and possibly reverse osmosis (RO) capacity.

13. Evaporation rates for the ponds at the site are likely to be 65 to 80 gallons per minute (gpm) on an annual basis when accounting for climatic conditions and salinity of the pond contents.

14. The groundwater monitoring program at the site is extensive but not clearly tied to remedial objectives. There may be redundancies in the network in a number of locations in the alluvial aquifer. Additional monitoring points are necessary in the Upper and Middle Chinle aquifers to better define plume extent and migration. Monitoring frequency is irregular but generally from semi-annual to annual. Air particulate monitoring appears adequate to assess anticipated effluent releases from the site; however, there is a need to confirm assumptions. The potential for release of radon from the Small Tailings Pile (STP) and from the evaporation ponds located immediately south of the LTP should be assessed.

15. Irrigation with contaminated water has resulted in accumulation of site contaminants in the soil of the irrigated land. These accumulations are unlikely to migrate to the water table over time, however.

16. Water used for irrigation could be successfully treated with a two-step ion- exchange process.

RSE Final Report: Recommendations

1. The flushing of the large tailings pile should be ended. If this is not adopted, a pilot test of the potential for rebound in concentrations should be conducted in a portion of the LTP. Monitoring should be conducted in depth-specific wells with short screen lengths.

2. Simplification of the extraction and injection system is necessary to better focus on capture of the flux from under the piles and to significantly reduce dilution as a component of the remedy.

3. Further evaluate capture of contaminants west of the northwestern corner of the LTP.

4. If not previously assessed, consider investigating the potential for contaminant mass loading on the groundwater in the vicinity of the former mill site.

5. Additional collection of geochemical parameters, including dissolved oxygen and oxidation reduction potential, of the groundwater beneath and downgradient of the LTP should be done to characterize the geochemical environment and the role that reducing conditions induced by the flushing have had in immobilization of the selenium (and the potential that cessation of the flushing may lead to less reducing conditions and release of the selenium).

6. If the field pilots to reduce uranium concentrations in the groundwater through adsorption or in-situ precipitation are approved and the results from the pilots are promising, apply these methods in a larger scale to applicable portions of the LTP and the groundwater.

7. Further investigate the extent of contaminants, particularly uranium, in the Upper and Middle Chinle aquifers and resolve questions regarding dramatically different water levels among wells in the Middle Chinle.

8. Consider geophysical techniques, such as electrical resistivity tomography, to assess leakage under the evaporation ponds.

9. Assure that decommissioning of any potentially compromised wells screened in the San Andres Formation is completed as soon as possible.

10. Consider construction of a slurry wall around the site to control contaminant migration from the tailings piles. The decision for implementing such an alternative would depend on the economics of the situation. Note that HMC has reportedly considered a slurry wall in the past, and not found the economics favorable. We recommend revisiting this issue in light of current conditions.

11. Relocation of the tailings should not be considered further by any means given the risks to the community and workers and the greenhouse gas emissions that would be generated during such work.

12. Consider either the pretreatment of high concentration wastes in the collection ponds as is currently being pilot tested, or adding RO capacity to increase treatment plant throughput and reduce discharge to the ponds.

13. Review operational capabilities of the current spray evaporation equipment and consider potential optimizations to increase the rate and efficiency of evaporation.

14. Select area for additional evaporative capacity if determined to be needed after optimization of the treatment and evaporative spraying systems and operations.

15. Develop a comprehensive, regular, and objectives-based monitoring program.

16. Quantitative long-term monitoring optimization techniques are highly recommended.

17. Adjust Air Monitoring Program to perform sampling of radon decay products to confirm equilibrium assumption, consider use of multiple radon background locations to better represent the distribution of potential concentrations and assess the radon gas potentially released from the evaporation ponds, especially during active spraying.

18. Though risks appear minimal with the current irrigation practice, consider treatment of contaminated irrigation water via ion exchange prior to application as a means to remove contaminant mass from the environment.

BVDA and SRIC Participation in the RSE Process

Both BVDA and SRIC submitted written comments on drafts of the USACE RSE Final Report in May and July 2010, and summarized those comments at the RSE Advisory Committee meeting in November 2010. The TAG Technical Advisors will review EPA's letter to NRC and NMED regarding RSE Final Report recommendations, and those agencies' responses to that letter with BVDA. EPA's letter conveying recommendations based on the RSE Final Report, and both the NRC and NMED responses to the EPA letter conveying recommendations in the RSE Final Report, will be summarized in a future issue of the BVDA Newsletter.

Third Five-Year Review Update

EPA has begun a third Five-year Review of the remediation program at the Homestake Superfund Site. This review is required by the Superfund law and is separate from the non-regulatory RSE review summarized above. EPA has contracted with the U.S. Army Corps of Engineers to conduct the Third Five-Year Review.

EPA annnounced a schedule for the Third Five-Year Review at the Novmeber 8, 2010 Superfund Update Meeting, as follows:

- Notification – October 2010
- Review Start – November 2010
- Site Visit – Dec. 2010/January 2011
- Draft to EPA – May 2011
- Final Report – September 2011

EPA states that the purpose of a five-year review is to evaluate the implementation and performance of the remedy being conducted at the Homestake site to determine if the remedy is or will be protective of human health and the environment. "Protectiveness" is generally defined in the Superfund-based National Contingency Plan (NCP) by the risk range and the hazard index (HI). The evaluation of the remedy and the determination of protectiveness in the Five-year Review should be based on and sufficiently supported by data and observations.

The 2006 Second Five-year Review of the Homestake Superfund Site remedy is available at: http://www.epa.gov/earth1r6/6sf/pdffiles/hmc_2nd_5_year_review.pdf. The 2001 First Five-year Review is available at and http://www.epa.gov/earth1r6/6sf/pdffiles/hmc_5yr_0109.pdf.

Place Stamp Here

Bluewater Valley Downstream Alliance
PO Box 1651
Grant, NM 87020