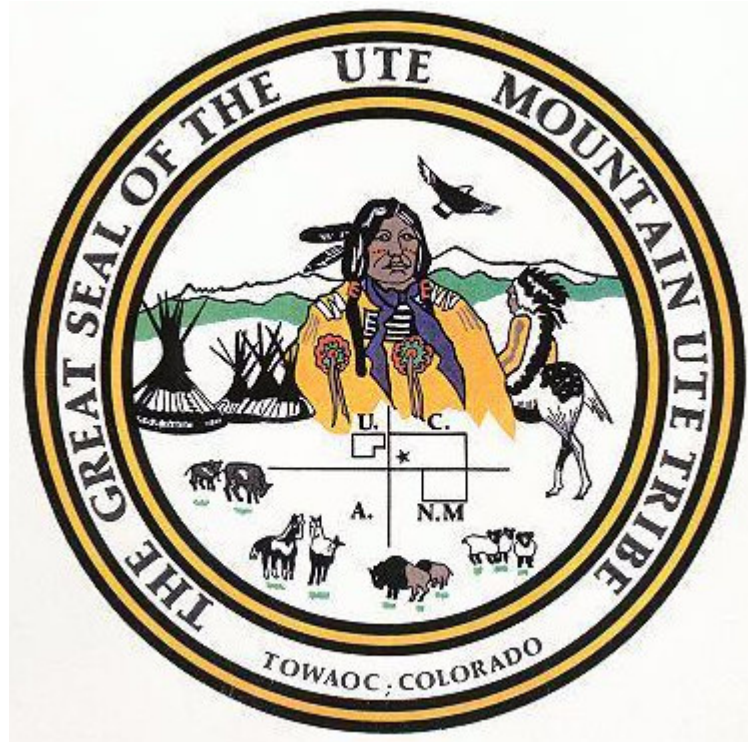


Ute Mountain Ute Tribe

Ground Water Protection Plan



March 2004

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And the Ute Mountain Ute Tribe's Environmental Programs Department

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Tribal Liaison

The purpose of naming a tribal liaison is to have a single contact point responsible for the transmittal and receipt of official correspondence and information. The single contact for all formal communication concerning the Ground Water Protection Plan between the States of Colorado, New Mexico, and Utah, and the Southern Ute Tribe, the Navajo Nation, and the U. S. Environmental Protection Agency for the Ute Mountain Ute Tribe is:

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I. Introduction and Goals for Ground Water Protection and Management

Water is the lifeblood of the Ute people. It was this water and the lush environment of the Montezuma valley that brought the Ute people to the area they call home today. For over 100 years, the Ute Mountain Ute Tribe has called its reservation surrounding Sleeping Ute Mountain home.

Hundreds of years ago, long after the cliff dwellers left their canyon top and cliff dwellings, native people came from the south into the vast area we call Colorado, Utah, and New Mexico. These people, now known as Utes, lived here long before the Spanish explorers arrived with their large expeditions and herds of horses. The Ute families, bands, and encampments were spread out across this large area. Their customs were very similar and all spoke the same language even though they didn't often see each other.

The Utes believed that the mountains were put there by Manitou. He was the Great Spirit who lived all alone in the center of the sky. He grew lonesome and wanted to create something new so he made a hole in the sky and swept all the stones and dirt from the sky's floor through the hole.

Manitou looked down and saw the great mountains he had made from the dirt and rocks. Some of the dirt became the rolling plains that stretched as far as he could see. He was so pleased with his landscape that he poured down snow and rain to make the earth more beautiful. Manitou created the trees, flowers and finally the Ute Indians to live in this new world.

The Utes believe that Manitou had also made all of the animals as well as the birds. It is said he made the birds by taking handfuls of leaves and throwing them in the air. Then the leaves became birds and flew away.

But the worst thing of all happened. The animals soon began to fight and kill each other and that made Manitou mad, so he created the strongest animal to rule over all the others to see that they lived in peace. This was the grizzly bear, the king of all beasts.

Ute Legend of the Sky People

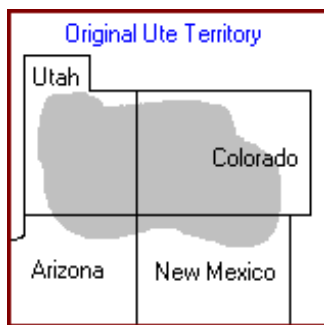
The Ute Mountain Ute Tribe's reservation lies in southwest Colorado, southeast Utah, and northern New Mexico. There are two communities on the Ute Reservation; the tribal headquarters in Towaoc, Colorado and the small community at White Mesa, Utah. This area known as the Four Corners is rich in culture and history. The area has been inhabited for 1000s of years. "The Ancestral Pueblo People" or ancient ones called this area home long before the arrival of current day people. They left the area long before the Ute Bands and the Plains Indians roamed the mountains and vast plains, now Eastern Colorado. Historical chronicles document early settlers coming to the lush, fertile

Montezuma Valley drawn by the availability of water. Water is this valley's history and future.

The Ute Mountain Ute Tribe has lived on this Reservation for over 100 years, and through economic development, planning, and use of natural resources, they are building for the future. Groundwater and the replenishment of rivers and streams, as mountain snows melt and flow to near surface waters and the deep aquifers, is critical to the long-term vitality of the Tribe. Using that water wisely and protecting it for present and future generations is an important goal of the Tribe. Pesticides, heavy metals, hazardous and toxic substances, and pathogens are some of the threats that can degrade the Tribe's ground and surface water resources. As the Tribe plans and builds for the future, this plan will assist in management and protection of its vital water resources. Ground and surface water will be maintained free of levels of contaminants at levels that threaten public health or the environment.

Historically, the Ute people roamed throughout Colorado, Utah, and northern New Mexico in a hunter-gatherer society, moving with the seasons for the best hunting and harvesting. By the 1600s, seven distinct Bands of Utes each with their own territory lived in the region. Beginning in 1670, the Ute Nation signs a treaty with Spain and acquires the horse and their future begins to change.

Figure I-1



As dealings with the government adversely impact the Ute Nation in the late 1800's, treaties with the United States force the three bands of Southern Utes into southwestern Colorado.

Figure I-2

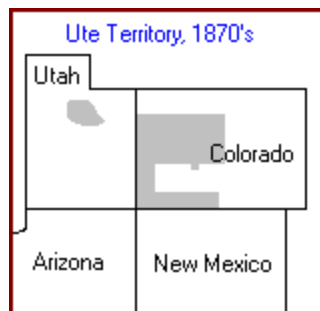
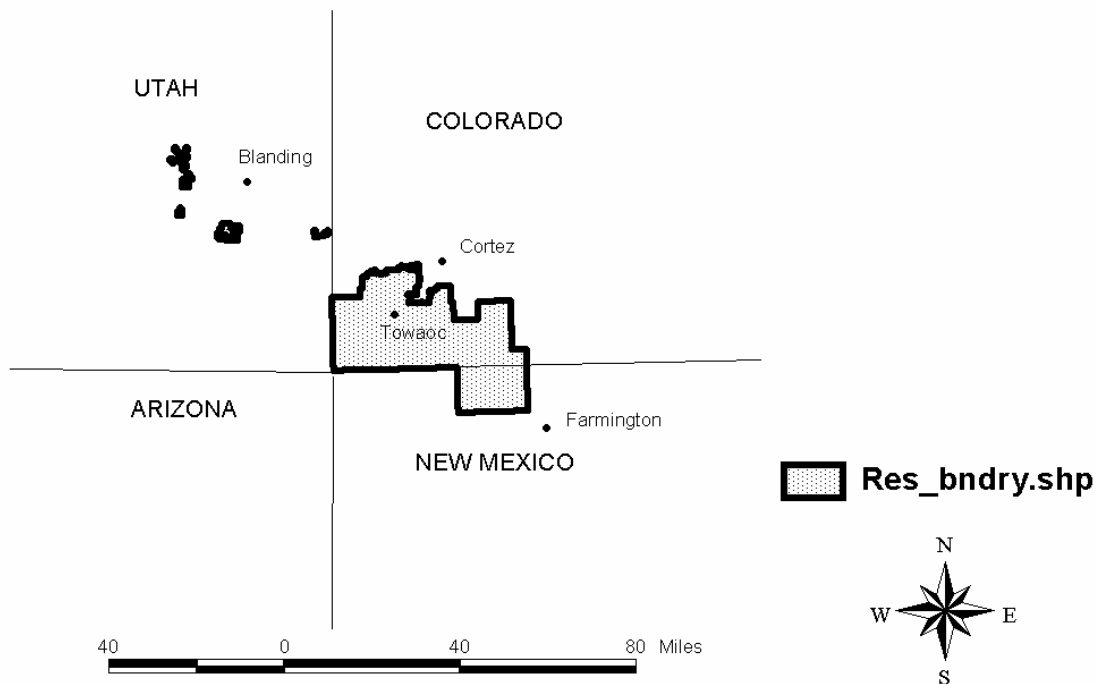


Figure I-3
Present Day Trust Lands of the Weeminuche Band

Ute Mountain Ute Reservation



The bands within the Ute Nation divided and today the homelands for the *Weeminuche*, or Ute Mountain Ute Tribe, total about 597,000 acres in southwestern Colorado, southeastern Utah, and northern New Mexico. These lands are held in trust for the benefit for the entire Tribe. In addition, when the U. S. government recognized that waters belonging to the Tribe were taken illegally and this therefore limited the agricultural potential of the reservation, a series of seven ranches were purchased for the benefit of the Tribe located in Colorado and Utah (See Table 1, p.11-12). Towaoc is the largest community and home of the tribal government. The White Mesa community of the Tribe lives in Utah. The majority of lands in White Mesa are allotted to tribal members, with the rest belonging to the entire Tribe.

After over 100 years of very limited access to surface water resources, the Colorado Ute Water Settlement Act of November 3, 1988 brought an end to years of

legal battles for the Tribe's water rights. Under that agreement, the Ute Mountain Ute Tribe brought the first piped drinking water to the reservation and irrigation water to the Farm & Ranch project. This project is mandated as part of the Dolores Project (McPhee Dam).

Today the tribe employs over 900 people in its enterprises and departmental programs. These employees include tribal members, other Native Americans, and Anglos, thus making the tribe the second largest employer in the Four Corners area. There are approximately 2,000 enrolled members in the Tribe with a large percent being in their twenties or younger.

Because the Ute Mountain Tribe is so young, the members must be ready to take up the reins of leadership for the future of the Tribe. As the Tribal membership grows, the planning for the 21st century has to be done with care to enable the Tribe to grow economically with the times, but retain and preserve the culture and ways of the Ute Mountain Ute Tribe. The achievements, goals, and objectives of the Tribe for the future will be carried out by the strong wills of its future leaders.

Economic vitality is critical to the future of the Tribe. The Tribe has a number of Tribal enterprises working to enhance the economic future for the Tribe and its members. The Tribal lands are on what's known as the Colorado Plateau, a high desert area with deep canyons carved through the mesas. This is a harsh land and there are no cities to provide services for the Tribe. So the Tribe must be self-sufficient by looking for other means of implementing progress and creating successful enterprises to serve the needs of the tribal members as well as create a healthy economy in which to live. The natural resources of the land provide the Tribe income. These resources include oil and gas, grazing land for cattle and sheep, and land and water for the new Farm & Ranch Enterprise south of the Sleeping Ute Mountain.

Recognizing the unique cultural heritage entrusted to the Tribe, a Tribal park has been set-aside to preserve this heritage. Guided tours are provided at the park. An RV park was opened in 1994, a casino in 1992. Other tribal enterprises include a pottery outlet, a truck stop gas station and a construction company; the Weeminuche Construction Authority. A number of tribal members graze sheep and cattle on the Reservation.

In modern society, many chemicals are used ranging from pesticides and petroleum products to cleaners and solvents. The Tribe recognizes that the pervasive nature of these types of contaminants necessitates balanced management. While it is not possible to extract gas and oil without some exposure to toxic chemicals, through management of produced waters and responses to spills the risk can be minimized. Similarly, the Tribe believes that proper management at Farm and Ranch and across the entire reservation can avoid ground water contamination by pesticides.

Special care must be exercised in some areas on the reservation. While weed control to protect the native vegetation of the Tribal Park might be appropriate, it requires

an additional level of scrutiny and concern. Other areas, such as Sleeping Ute Mountain, and its culturally important springs require more protection and, thus, exposure to toxic chemicals such as pesticides or oil/gas development wastes only under the most tightly controlled conditions.

In the very old days, the Sleeping Ute Mountain was a Great Warrior God. He came to help fight against the Evil Ones who were causing much trouble.

A tremendous battle between the Great Warrior God and the Evil Ones followed. As they stepped hard upon the earth and braced themselves to fight, their feet pushed the land into mountains and valleys. This is how the country of this region came to be as it is today.

The Great Warrior God was hurt, so he lay down to rest and fell into a deep sleep. The blood from his wound turned into living water for all creatures to drink.

When the fog or clouds settle over the Sleeping Warrior God, it is a sign that he is changing his blankets for the four seasons. When the Indians see the light green blanket over their "God", they know it is spring. The dark green blanket is summer, the yellow and red one is fall, and the white one is winter.

The Indians believe that when the clouds gather on the highest peak, the Warrior God is pleased with his people and is letting rain clouds slip from his pockets. They also believe that the Great Warrior God will rise again to help them in the fight against their enemies.

Ute Mountain Ute Legend of Sleeping Mountain

Statement of Goals for the Ground Water Protection Plan

The overall goal of the Ground Water Protection Plan is to identify the vulnerability of three major aquifers found on the reservation: the shallow aquifers along streams, rivers and above the underlying shale; the Morrison Formation; and the Navajo/Entrada Sandstone aquifers; and to organize a balanced protection strategy for them.

By understanding the vulnerability of the aquifers and their connection to surface waters, a plan and prevention measures can be identified to protect each aquifer based upon its unique quality from a host of potential toxic or hazardous substances.

While the overall goal of the plan is to protect the ground and surface water resources of the Ute Mountain Ute Tribe, the reservation has been divided into eight

regions each with special needs and concerns, and the Tribe's off-reservation ranches are also considered an additional management sector.

Descriptions and Management Goals for Tribal Groundwater Regions:

- **Towaoc**

As the major community, the goal is assure the highest level of protection for springs flowing into the community.

All groundwater should be protected from contamination associated with urban land uses.

The transfer station and the closed landfill need to be monitored to assure leachate is not contaminating ground or surface water.

The community wastewater treatment lagoons and storm water run-off needs to be managed in a manner to assure ground and surface water is not contaminated.

Any storage of petroleum products needs to be managed so as to avoid contamination of ground or surface water.

Pesticide storage needs to assure that no pesticides migrate from the storage area.

Pesticide use needs to assure that pesticides do not run-off or infiltrate ground water.

Hazardous and toxic substances either used, stored, or transported need to be managed so as to avoid contamination of ground or surface water.

An emergency response plan needs to be in place to prevent contamination of ground or surface water in the event of a spill or other emergency

- **Ute Mountain**

The Ute Mountain area is important spiritually, culturally and as the major watersheds for high quality water. This area should receive the highest level of protection.

Springs and plant gathering areas should be maintained free of pesticides or other contaminants.

The use of any pesticide or toxic substance on the mountain should be prohibited unless, after a site specific environmental review, the Council

determines that its use is justified; it will not cause undue environmental harm; and the use is beneficial to the Tribe and its members.

Forest fire suppression and rehabilitation efforts and forestry management practices on Ute Mountain need to be conducted in a manner that does not jeopardize the natural resources of this culturally significant area. The Bureau of Indian Affairs (BIA) Fire Management and Fuels Reduction staff who carry out these activities are required to comply with the stipulations of the National Environmental Policy Act (NEPA). Groundwater protection is one aspect of NEPA environmental assessment review, and the Environmental Programs Dept. will review management plan proposals for conformity with the Tribal Ground Water Protection Plan.

- **Mancos Creek Farm**

The Mancos Creek Farm is an important resource for the Tribe that depends upon scant irrigation water for its existence. It is the goal of management for this area to protect the creek and its riparian area from contamination by fertilizers, pesticides and animal waste.

Pesticides need to be stored in manner that assures protection of ground and surface water along Mancos Creek.

Toxic and hazardous substances will not be stored or disposed of at the Mancos Creek farm area. Chemical storage, such as that for fuels and equipment maintenance supplies, will be conducted in a manner that employs appropriate spill prevention controls and countermeasures and emergency response plans.

- **Tribal Park/ Mancos Canyon**

The Tribal Park, a designated land area set aside for cultural and ecological tourism, including Mancos Canyon and tributaries is an important cultural and natural resource for the Tribe and the nation. While pesticides may be used to support tourism and ranching, the use shall be restricted to those that pose a minimum risk to the park and its cultural resources.

The Mancos Canyon and Mancos Creek is an important resource of the Tribe. The functioning of the stream and its interconnected ground water needs to be protected from pesticides, petroleum discharges or releases of hazardous and toxic substances.

Unless a pesticide or other toxic substance is to be used within the park, it shall be prohibited from the area.

A plan to address any releases of toxic or hazardous substances shall be in place for the entire Reservation and shall include a specific section addressing contamination of ground or surface water within the park.

The Tribe will request that Mesa Verde National Park develop a joint protection strategy that addresses the use and migration of pesticides as well as other toxic or hazardous substances that impact the Mancos Canyon and the Tribal Park. As with the BIA, managers and employees at Mesa Verde National Park are required to conform with NEPA.

- **Southern Mesas & New Mexico lands on Reservation**

Ranching, existing and potential oil and gas development, coal mining, and farming, throughout the Middle San Juan River watershed and southern mesas area pose a moderate threat to ground and surface water and cultural resources from pesticides, petroleum releases and other toxic substances. A commercially certified applicator was hired to treat these areas to comply with federal laws and ensure water quality protection.

Measures shall protect the surface and ground water resources in the San Juan River watershed. Also, management should be conducted in a way that does not contaminate cultural resources with chemicals that may degrade the integrity of those resources. For example, roadside herbicide treatment along several miles of mesa top roads was undertaken in 2003, contracted by the BIA.

Pesticide or other contamination that threatens public health or the environment shall be monitored and managed by the Tribe.

Coal mining, if undertaken, and other mineral development shall be managed in manner that avoids contamination of ground water beyond the area directly impacted by the mining.

- **West of Ute Mountain—Farm and Ranch Enterprise/ Lands with Oil and Gas leases**

The area west of the mountain is home to two major tribal enterprises: The Farm and Ranch Enterprise and several mineral development leases, overseen by the Tribe's Energy Department, the Bureau of Indian Affairs, and the Tribe's new Red Mountain Energy Company.

Pesticides and fertilizers are important to the economic vitality of Farm and Ranch. While the ideal goal is to completely protect ground and surface water from any chemical infiltration, some level of contamination

shall be acceptable in shallow groundwater, provided the contamination is managed within the farm area and has no adverse affect on wildlife.

Pesticide contamination shall be managed within the farm area. Intercepted irrigation return water shall be reused when possible within the farm boundaries and pesticide levels reduced through pesticide degradation processes.

Fertilizers will be managed to assure that nitrogen levels that threaten public health or water quality do not adversely impact deep ground water or surface water.

Oil and gas development will be managed to avoid contamination of ground or surface water, threatening wildlife or affecting public health. Mineral development leases stipulate that lessees, operators, and other field staff and subcontractors diligently conform to the laws of the Tribe and federal environmental laws. A violation of those laws is considered a breach of contract and can invoke severe civil penalties for water and soil pollution, waste of mineral resources, and subsequent loss of Tribal royalties.

Produced waters associated with oil and gas extraction shall be properly disposed of in a manner that will not threaten ground or surface water. Underground injection controls (UIC's) are regulated and inspected by federal inspectors. Nonconformity with UIC regulations causes notices of noncompliance that, if not addressed, can have significant associated civil penalties and may also be grounds for breach of contract.

- **White Mesa, UT & Allen Canyon Area**

The Utah lands of the Ute Mountain Ute Reservation include the White Mesa Community and parcels of trust lands, northwest of the Colorado and New Mexico part of the reservation, from the Colorado border into the Abajo Mountains. Allen Canyon, a deep mountainous canyon was the original home to the Allen Canyon Utes who then became the White Mesa Utes. Allen Canyon and its tributaries are in the Cottonwood Wash watershed, which is rich with cultural resources and Ute history. The Cottonwood Wash watershed has had significant uranium mining in the past and is littered with abandoned mines and processing sites. Some water resources in the area have been tainted with mining-related pollution including radioactive mine runoff. An abandoned mine clean-up has been undertaken as an interagency/ inter-governmental project and is proceeding with the Tribe's concurrence.

The White Mesa Community has two community supply wells that are drilled deep into the Navajo/Entrada sandstone formation. The quality of

the water is fair, with only organoleptic concerns resulting from sulfur, iron and manganese. The distribution system ties together both wells, includes a chlorine disinfection system, and feeds a 100,000 gallon storage tank. While there is no bacteria in the source water, the chlorine is a preventative measure because of weak pressure in some of the terminal lines and a history of leakage and back flows.

Three miles north of the White Mesa Community is the White Mesa Uranium Mill. It is not on Tribal land, and it is owned and operated by International Uranium Corporation. The people of White Mesa have always had suspicions about groundwater impacts from the mill since it began operating in 1979. While no groundwater contamination has been monitored in the sole-source aquifer the community depends on, it is a major environmental concern for the people there. The mill has been monitoring a shallow groundwater aquifer that has been polluted by chloroform from a mill leak or disposal in the 1980's. This issue adds to the concerns for the long-term effects of the mill on groundwater resources around the mesa. Several springs have been identified as flowing from the shallow aquifer that are used by cattle, wildlife, and possibly by Tribal Members. The impact to wildlife could indirectly impact traditional hunting practices and could impact the culture of the White Mesa Community.

The same aforementioned shallow aquifer is the most vulnerable to pollution from the extensive waste stream generated by the mill, which is stored in lined tailings cells. The cells have a comprehensive monitoring system, and the mill staff consistently reassure the Tribe that the risk to their community wells is minimal because of the monitoring program they run and the geology—there is approximately 1000 feet of confining layer between the shallow aquifer and the sole-source aquifer. This does not account for shallow groundwater contamination and its impacts, though. Furthermore, the mill will eventually close its doors, disassemble the mill, place contaminated components in the tailing cells, and cover them with overburden material. International Uranium Corporation or whoever owns the mill at the time of closure and remediation will be required to monitor the premises for 10 years, then the Dept. of Energy will take over environmental monitoring. The toxic materials will never be removed from the site, though. The long-term implications on the White Mesa Community are obvious. They will continue to live next to that toxic waste forever. The vulnerable shallow groundwater will continue to be at severe risk of contamination, and if a fracture to a deeper aquifer is formed or if one already exists, the community aquifer could be affected. While this is unlikely on one of the most seismically stable regions on the continent, no one knows what geologic events may take place in the 10,000 or more years that the cells are designed to be effective, and then what may happen thereafter.

In order to provide a measure of security to the White Mesa Community, two ground water monitoring wells have been drilled into an intermediate aquifer at the contact between the Burro Canyon and Brushy Basin formations, approximately 85-100 feet deep. This is below the Mancos/Dakota confining layers under the shallow aquifer, and above the confining layer that protects the sole-source aquifer. These wells will provide information about any mill-related contamination of groundwater with a margin of safety for protecting the sole-source of the community water. Baseline data will be collected starting in 2004 to establish background water chemistry conditions. Springs that flow from the Burro Canyon/Brushy Basin contact will also be monitored to track ground water flow and contamination that may adversely affect wildlife or Tribal welfare.

- **Ranches—6 CO, 1 UT**

The Tribe owns and manages seven ranches located off the main reservation area in Colorado and Utah (See Table 1—Some of these ranches are adjacent to each other and considered to be one ranch, but listed separately in Table 1). These ranches include numerous high quality springs, seeps and creeks. One of the ranches provides high quality trout habitat. While the intended use is ranching, the Tribe has a goal to protect, maintain and enhance the quality of the ground and surface water on these areas.

Pesticides shall be stored, used and disposed of in a manner that will not adversely impact ground or surface water.

Petroleum products or other toxic substances for use on the ranches shall be stored and used in a manner that will not adversely impact ground or surface water.

**Table I-1
Tribal Ranches Beyond Exterior Boundaries Reservation**

Name	Location	Land (acres)	Est. Irrigation (acres)	Use
Pine Crest	2 mi. south of U. S. Hwy 50 between Montrose and Gunnison, CO	18,749	800	Ranching/forestry
Neilson's	CO. Route 140 near Hesperus CO east La Plata River	1,717	600	Ranching/forestry
Dunn/Henderson	Off CO Route 140 near Hesperus	4,423	500	Ranching
Adams	CO Route 184 near Summit Reservoir north of Mancos	1,628	150-200	Ranching
Perkins	Southwest Blanding Utah	1,630	160	Ranching
Minerich	13.5 mi. south of U. S. Hwy	160	0	Ranching

	50 between Montrose and Gunnison, CO			
Covey	South of U. S. Hwy 160 between Hesperus & Mancos, CO	200	170	Ranching
Pyle	South of U. S. Hwy 160 between Hesperus & Mancos, CO	2,880	190	Ranching
Safley	South of U. S. Hwy 160 between Hesperus & Mancos, CO	236	113	Ranching
Gravel Park	Contiguous with Reservation	2,000	NA	Ranching
Burns Cattle	Hwy 160/666 north of Commercial Center	180	NA	Ranching
Zwicker	County RD A, Montezuma County, CO	190	NA	Ranching

- **Reservation (in General)**

The disposal of any pesticide, toxic or hazardous substance except as expressly permitted by the Tribe shall be prohibited.

The transportation of any pesticide, toxic or hazardous substance shall be the responsibility of the party responsible for manufacturing, transporting or owning the substance and any release shall be the strict, joint and severe liability of all parties responsible for the substance.

The area contains a number of naturally occurring chemicals that can adversely impact the use, enjoyability and environmental quality of the ground and surface water on the Reservation. These chemicals include but are not limited to leached arsenic, selenium, iron, manganese, sulfur and calcium-sulfate dominated salts, varying in different aquifers, respectfully. It is the goal of the Tribe to manage ground water in a manner that minimizes adverse impacts associated with the leaching and migration of these chemicals and does not threaten present or future uses of the Tribe's resources.

In no case shall a pesticide contamination in ground water or surface water be allowed to exceed a maximum contaminant level, a health advisory or a water quality criterion.

Sources and Management Goals

It is the goal of the Tribe, through this plan, to address potential contamination of ground or surface water from activities associated with:

- Farming—fertilizers, pesticides, naturally-occurring leached chemicals (Se, As, salt)
- Ranching—nitrogen
- Mining—prospective underground coal mining
- Oil and Gas extraction—Underground injection, reconditioned wells of inferior quality, land farming, and spills in general
- Storage and Preparation Issues—Mancos Creek Farm, F&R Enterprise (facility design)
- Roads—BIA, other state or federal, and Weeminuche Construction BMP's
- Urban/Suburban—sewer lagoons, septic tanks, underground storage tanks, and general runoff infiltration

It is also the Tribe's goal to:

- Determine legal authority for a FIFRA program and cooperative agreement with EPA for groundwater protection.
- Create Task Force:
 - Recognize Task Force key members and contact
 - Convene and provide background
 - Plan roles of members and responsibilities
 - Determine BMP's for specific land use practices in concert with the Nonpoint Source Pollution Management Plan
- Plan for implementation/enforcement, future staffing, funding, etc.

II. Roles and Responsibilities

a. Roles and Responsibilities of Ute Mountain Ute Tribal Government, Departments and Enterprises

Ute Mountain Ute Tribal Council

The seven member Tribal Council is the Tribal governing body responsible for adopting ordinances, codes, management programs and educational initiatives necessary to implement the Groundwater Protection Plan and its pesticide regulatory program component.

Environmental Programs Department

The Ute Mountain Ute Environmental Programs Department administers a number of Tribal environmental programs. These programs include solid waste, air quality, open burning, pesticides, surface water, ground water, Brownfields, general environmental compliance assistance and environmental education. The Environmental Programs Department is responsible for implementing the Groundwater Protection Plan.

This includes regulatory, non-regulatory and educational efforts. The Department maintains water resource and water quality information; underground storage tank information; spill prevention, controls and countermeasures information for the oil and gas leases; and implements most environmental programs on the reservation. The Environmental Programs Department, through its Water Pollution Prevention Program, currently monitors surface and ground water. The Tribe is considering whether to add a pesticide inspection program. A pesticide program would provide pesticide applicator training, assure compliance with a pesticide code, and implement a tribal worker safety program. Any specific groundwater and pesticide restrictions or special use regulations could be implemented through a pesticide program or other tribal environmental codes. Compliance assistance will also continue to be sought through the Environmental Programs Department for various entities that may require it.

The Environmental Programs Department is the primary Department of the Ute Mountain Ute Tribe responsible for implementation of the Groundwater Protection Plan. The Water Quality Specialist is the direct contact and individual directly responsible for implementing the Groundwater Protection Plan. Scott Clow, the current Water Quality Specialist, is the initial liaison and contact for the implementation of this plan. The Water Quality Specialist is also responsible for non-pesticide related surface and ground water regulation and management.

The Environmental Programs Department reports directly to the Tribal Council for support of environmental program implementation, and is responsible for implementation of environmental programs on the Ute Mountain Ute Indian Reservation. The Environmental Programs Department includes pesticide enforcement and water quality protection as well as a number of other environmental programs. The small size and close working relationship of the Environmental Programs Department staff facilitates cooperation and coordination between environmental media. This close working relationship and coordination with Tribal Leaders will continue in the implementation of the Ground Water Protection Plan.

The Environmental Programs Department has long relied upon the assistance of federal agencies and the state to assist the Tribe in achieving environmental protection objectives. The United States government through the Bureau of Indian Affairs and other federal agencies has a trust responsibility and a treaty obligation set forth in treaties and in federal law with the Ute Mountain Ute Tribe. The Tribal Council and the Environmental Programs Dept. work with a number of these agencies to assure protection of natural resources.

Protecting groundwater requires a linkage between environmental resources, economic returns from agricultural crops, and the use of pesticides that pose the minimal risk to human health and the environment. The Tribe recognizes that in order to successfully address each of these areas of concern, expertise and cooperation is required between the Tribe and other resource agencies.

Natural Resources Department

The Natural Resources Department is responsible for management of the Mancos Creek Farm on the Reservation and the ranches that are held in trust for the Tribe but located outside of the exterior Reservation boundaries. This management includes periodic timber sales on the ranches located Gunnison and Hesperus, Colorado. The Colorado State Division of Forestry provides technical assistance with these activities. The Natural Resources Dept. also helps manage cattle herds for the Tribal Members, including fencing projects, vaccinations, and transportation to and from the various ranches. The Natural Resources Dept. helps the Tribe with water resource development, such as the numerous wind-powered wells and solar-powered wells on the reservation, livestock ponds and drinkers. In 1994, the Natural Resources Dept. began working on a project that resulted from a U.S. Department of Energy grant to convert old windmills that needed maintenance to solar powered wells. Many of these wells still exist and provide livestock water across the reservation. Some windmills still exist for livestock watering.

TRIBAL ENTERPRISES

The Farm and Ranch Enterprise

The Farm and Ranch Enterprise operates the largest crop-related activity on the Reservation. Farm and Ranch manages the Tribe's irrigation project with the potential for 7,634 acres of farmland (UMU, 199b). The farm includes a state-of-the-art water management plan that includes a series of water management activities for use on the farm. A ground water monitoring program in cooperation with the Environmental Programs Department is a part of these water management activities. During the past few years, a drought has significantly curtailed the use of irrigation water.

Farm and Ranch uses precision farming technology, including: GPS/GIS computing systems for crop yield information, application of fertilizers and pesticides; center pivot irrigators; telemetry for those center pivots; and canal management. By implementing the use of such technology, Farm and Ranch has reduced the impact on the shallow groundwater table significantly in the past 5 years. Farm and Ranch strives to make their workplace safe and interesting, hosting multiple worker safety and agronomic workshops every year. They also are interested in enhancing wildlife habitat by storing and reusing water within the project boundaries. With the level of technology employed at Farm and Ranch and the cooperative relationship it has with the Environmental Programs Dept., management of pesticides and protection of groundwater at Farm and Ranch will be relatively easy.

Farm and Ranch also operated a 1,200 head cattle operation prior to the drought conditions of 2001-2002, and may expand its range capacity in the future.

Weeminuche Construction Authority

The WCA is a commercial construction enterprise owned and operated by the Ute Mountain Ute Indian Tribe. WCA provides comprehensive construction services to a wide range of clients including federal, state, and local municipalities, agricultural operations, building and heavy construction. The WCA is responsible for road maintenance on the Reservation through a 638 contract with the Bureau of Indian Affairs.

Ute Mountain Casino, RV Park and Hotel/Conference Center

The Tribe's economic development includes a casino and RV Park that have been operating approximately 10 years. The casino has undergone two renovations during that period, and a third is ongoing. The Sleeping Ute RV Park is adjacent to the casino. Recently, the Tribe has begun construction of a hotel and conference center that will be connected to the casino that should be operational by April or May of 2004. The effects of these enterprises on groundwater are mainly through wastewater management using the Tribe's existing evaporative lagoon system. A new pipeline and lift station from the economic development area was constructed in conjunction with a sewer lagoon expansion project in 1999-2000. Tribal environmental staff anticipates that additional capacity will be needed to accommodate the hotel when it comes online. Chemical use at these facilities has not been investigated.

Ute Mountain Travel Center

Also located in the economic development area in Towaoc, the Ute Mountain Travel Center is a new truck stop and convenience store/ fast food outlet. The travel center opened in 2000. Underground storage tank management is monitored by a Veederroot leak detection/tank level system. Wastewater is routed to the same system as the Casino, RV Park, and hotel. Chemical use other than fuel storage has not been investigated for this facility. EPA conducts periodic UST inspections at the Travel Center.

White Mesa Travel Center

The White Mesa Community has an enterprise that is similar to the Ute Mountain Travel Center and managed by the same supervisor. The White Mesa Travel Center does not have accommodations for truckers and does not have the fast food component, but is also a very successful enterprise, serving its rural community and passers-by with food, fuel and gift items. The UST management is also monitored by a Veederroot leak detection/tank level system, and EPA conducts inspections as part of their periodic compliance tour.

Tribal Park Enterprise

The Tribal Park Enterprise was founded to manage preservation and tourism of Ancestral Puebloan (Anasazi) and Ute historical sites in and around the Mancos Canyon

and Mesa Verde. Bordering Mesa Verde National Park, the Ute Mountain Tribal Park is a more pristine, less visited ecological and archeological destination. The Tribal Park is managed by Tribal staff, and roads are maintained by Weeminuche Construction, under contract with the BIA. Some herbicides have been applied along the main roads in the park, and the current Tribal Park Director, Veronica Cuthair, has indicated that some poison ivy had been treated in one location. Chemical uses besides these two and routine motor vehicle issues uses are limited if not nonexistent.

b. Roles and Responsibilities of Cooperating Federal and State Agencies

U. S. Environmental Protection Agency

The Environmental Protection Agency is responsible for implementing the nation's environmental laws. Protecting ground water is one of the fundamental responsibilities of EPA required by a number of federal environmental protection statutes. This includes the Federal Insecticide, Fungicide and Rodenticide Act, the Clean Water Act, the Safe Drinking Water Act, the Resource Conservation and Recovery Act, and the Comprehensive Environmental Response, Compensation and Liability Act. It is EPA's responsibility to determine the federal regulatory approach, issue guidance and regulations, and to provide technical and financial support. The agency maintains a number of databases, conducts technical studies on pesticides and determines whether to restrict the use of any pesticides due to concerns regarding leaching in groundwater. The agency is directly responsible for providing technical assistance in the development of various tribal environmental management plans across the country, including any pesticide specific management plans. In addition, EPA is responsible for oversight of pesticide and groundwater plans as well as every environmental law.

U. S. Geological Survey

The USGS is responsible for investigating and assessing the nation's land, water, energy, and mineral resources. The USGS conducts nationwide assessments of quality, quantity and use of the water resources. The USGS conducts cooperative studies on the Ute Mountain Ute Reservation of groundwater and surface water. The USGS Water Resource Appraisal is being used in the development of the vulnerability assessment and to identify sensitive areas.

U. S. Fish and Wildlife Service

The Fish and Wildlife Service is responsible for migratory birds, endangered species, inland sport fisheries, and specific fishery and wildlife research activities. This includes the primary responsibility for enforcing the Endangered Species Act. The FWS will be asked to comment on any pesticide management plan that could affect threatened or endangered species. The Fish and Wildlife Service has assisted the Tribe in fisheries management and some environmental compliance issues in the past.

Bureau of Indian Affairs

The Bureau of Indian Affairs manages all leases of individual Tribal and Trust lands for the Tribe. The BIA, in conjunction with the Energy and Tax Administration, is responsible for overseeing the approximately 50,000 acres of land being utilized for oil/gas production. In addition, the Bureau has the primary responsibility for maintaining the trust responsibility of the United States government towards the Tribe. The BIA is charged to facilitate, with maximum involvement of Indians and Alaska Native people, the full development of Tribal natural resource potential. Protecting tribal property is the most clearly defined and important aspect of the federal government's trust responsibility. Treaty rights are, by law, property rights. The Bureau of Indian Affairs also manages criminal enforcement and prosecution on the reservation. In the event of an egregious negligence of FIFRA or the Toxic Substances Control Act, criminal prosecution through the Bureau of Indian Affairs may become necessary.

Farm Services Agency

The FSA plays a central role in the transfer of payments for major USDA commodity support programs. Beginning with the 1985 Food Security Act, cross-compliance provisions require recipients of FSA assistance to prepare and implement conservation plans. Water quality has steadily increased in importance to FSA. The 2002 Farm bill expands this effort requiring the ASCS and the SCS to promote cost-sharing for special integrated crop management practices designed to protect ground water from agricultural chemicals. The FSA also provides cost-share assistance through the Agricultural Conservation Program (ACP) for implementing a variety of water quality oriented best management practices. The FSA is a source of information agronomic information, an important source of information for the determination of vulnerable areas. The BMPs identified in this plan can utilize FSA cost-sharing money, and any information or education effort can be targeted to farmers through the FSA.

Natural Resources Conservation Service

The primary responsibility of the NRCS is to develop and implement a National Soil and Water Conservation Program through a cooperative program with landowners and operators. The NRCS provides technical assistance to individuals, other USDA entities and to soil and water conservation districts for the development and implementation of management practices. The NRCS has standards and specifications for proper pesticide use practices. The NRCS will assist in information collection and education efforts. The NRCS provides voluntary planning and application assistance to landowners in the sound implementation of conservation practices. Soil surveys are available for the Reservation. The NRCS has information available that the Tribe can use to protect ground water from pesticide contamination. The NRCS also has assisted the Tribe for several years with on-the-ground project cost shares through its Environmental Quality Incentive Program (EQUIP). The most extensive of these has provided water

storage, pipelines and drinkers for livestock to better manage range.

Colorado State University Cooperative Extension Service

The Cooperative Extension Service is the educational bureau of the U. S. Department of Agriculture and the Colorado land grant university. Activities of the Cooperative Extension Service are coordinated through local county extension agents. The Cooperative Extension Service provides the certification training for pesticide applicators on the Reservation. They also provide assistance in implementing integrated pest management programs and low-input sustainable agriculture techniques. The Extension Service has developed standard pesticide application rates. The Service will provide assistance in plan implementation through assistance with information and educational efforts.

c. Roles and Responsibilities of the Groundwater Protection Task Force

The Ute Mountain Ute Tribe Environmental Programs Department has formed a groundwater protection task force to assist the Tribe in developing a plan to protect the groundwater resources on the Ute Mountain Ute Indian Reservation. The initial focus of the task force is on pesticides and ground water. Tribal personnel and agency representatives participate on the task force. Each member of the task force assists through the provision of technical expertise, resource data, coordination, and monitoring assistance. The Task Force meets periodically to discuss issues and coordinate activities. The Environmental Programs Department convenes these meetings. A number of federal agencies have been contacted for information to assist the Tribe in developing the plan. Since the Tribe has a closed reservation, a decision was made to rely upon Tribal program managers to develop the plan

The entities represented on the task force are: the Ute Mountain Ute Tribal Council, Environmental Programs Department, Natural Resources Department, Farm and Ranch Enterprise, Tribal Energy and Tax Commission, Planning Department, Housing Authority, Public Works Department, Tribal Park Enterprise, and Weeminuche Construction Authority; along with the Natural Resources Conservation Service and the Bureau of Indian Affairs representatives. A number of federal agencies have also been consulted. These include the U. S. Environmental Protection Agency, the U. S. Geological Service, the U. S. D. A. Natural Resources Conservation Service and Farm Services Agency, and the Bureau of Indian Affairs.

A series of tools will be used to build upon the cooperative working relationships that either exist or are being developed through the task force. These tools will include Memorandums of Agreement; specific working agreements between an agency and the Tribe; and periodic task force meetings.

The participation of each of these entities provides assistance that the Tribe needs

to develop and enforce a comprehensive strategy to protect groundwater.

III. Legal Authority and Responsibilities

a. Tribal Sovereign Authority Under U. S. Law

The Ute Mountain Reservation (the “Reservation”) is located in the southwestern corner of Colorado with portions in New Mexico and Utah. The Reservation is approximately 933 square miles or 597,288 acres. The Colorado and New Mexico portions of the Reservation are one block of contiguous lands that are owned in trust by the United States for the benefit of the Tribe. The Utah portion of the Reservation is non-contiguous with the Colorado and New Mexico portions of the Reservation and includes land that is held in trust for the Tribe and land that has been allotted and is held in trust by the United States for the benefit of individual Tribal members. There are no lands within the boundaries of any portion of the Ute Mountain Reservation that are owned in fee by non-Indians.

The boundaries of the contiguous acreage of the Reservation in the States of Colorado and New Mexico and the non-contiguous acreage in the State of Utah are defined in the following federal laws, Executive Orders, and treaties between the Ute Mountain Tribe (or Weeminuche Band of Utes) and the United States of America:

1. Treaty of October 7, 1863
2. Treaty of March 2, 1868
3. Act of April 29, 1874
4. Executive Order No. 22, 1875
5. Executive Order of February 7, 1879
6. Act of June 15, 1880
7. Act of July 28, 1882
8. Executive Order of August 4, 1882
9. Act of May 14, 1884
10. Act of February 8, 1887
11. Act of February 20, 1895
12. Presidential Proclamation of April 13, 1899
13. Act of June 29, 1906 (38 Stat. 82)
14. Act of March 1, 1907
15. Act of June 30, 1913 (38 Stat. 77, 81-2)
16. Executive Order of November 12, 1915
17. Departmental Order of July 17, 1937, authorized by Act of June 18, 1934 (48 Stat. 984)
18. Order of Restoration of November 13, 1937
19. Act of June 28, 1938
20. Order of September 14, 1938

21. Act of August 12, 1953
22. *Ute Mountain Tribe v. Navajo Tribe*, 409 U.S. 809 (1972)

The land in Utah held by the United States in trust for either the Tribe or Tribal members qualifies as land over which the Tribe may assert jurisdiction for purposes of administering a pesticide management and ground water program (See map below). Although not within the boundaries of Tribe's 1895 Reservation, the property in Utah has been subject to Tribal jurisdiction and recognized as part of the Reservation. See Constitution and Bylaws of the Ute Mountain Tribe of Ute Mountain Reservation in Colorado, New Mexico, Utah approved June 6, 1940, and subsequently amended. (underlining added); see also Article II, Section 1 of the Constitution and Bylaws of the Ute Mountain Tribe (providing that "the governing body of the Ute Mountain Tribe of the Ute Mountain Reservation, which includes Allen Canyon, shall be known as the 'Ute Mountain Tribal Council.'" (underlining added).

In addition to the above described land, the Tribe owns nine parcels of fee land, eight located in Colorado and one in Utah, that are not contiguous to the above described Reservation land. Such lands are included in this pesticide and groundwater management plan.

The Ute Mountain Ute Tribe is a recognized sovereign Indian Nation. As a sovereign nation the federal government has a trust responsibility and a treaty responsibility to protect the natural resources of the Tribe. Once a valid tribal interest, such as the Ute Mountain Ute Tribe's interest in protecting groundwater, is established, a presumption arises that the Tribe has regulatory and adjudicatory jurisdiction unless that jurisdiction is affirmatively limited by federal law. No specific treaty provision or federal statute affirmatively limits the Tribe's authority in this instance.

The Constitution and By-laws of the Tribe and subsequent Tribal resolutions establish jurisdiction and regulatory authority. The exercise of Tribal sovereignty in the protection of groundwater and regulation of the use of pesticides, potentially toxic substances, is consistent with the interests of the U.S. federal government. The Ute Mountain Ute Tribe operates under a constitution and a federal corporate charter consistent with the Indian Reorganization Act of June 18, 1934 and approved in 1940. The Tribal Council governs the Ute Mountain Ute Tribe. The Tribal Council consists of a Chairman, Vice-Chairman, a Secretary, Treasurer and three additional Councilpersons all of whom are elected by the tribal membership; seven leaders in total. The Tribal Council Chairman serves as the administrative head of the Tribe. The Tribal Chairman, Officers and Council serve a term of three years at-large without regard to residence in any district, except for the White Mesa Councilperson who is elected by residents in White Mesa.

The establishment of a permanent home for the Ute Mountain Ute is founded on the terms and principles established in treaties entered into in 1863 and 1868. These principles provide the underpinnings for the Tribe's desire and interest in protecting its natural resources from degradation. The Ute Mountain Ute Tribe and the United States

established the principle promoting self-sufficiency. Article 2 of the treaty of 1868 reiterated the importance of the Tribe's lands.

ARTICLE 2. The United States agree that the following district of country, to wit: Commencing at that point on the southern boundary-line of the Territory of Colorado where the meridian of longitude 107° west from Greenwich crosses the same; running thence north with said meridian to a point fifteen miles due north to where said meridian intersects the fortieth parallel of north latitude; thence due west to the western boundary-line of said Territory; thence south with said western boundary-line of said Territory to the southern boundary-line of said Territory; thence east with said southern boundary-line to the place of beginning, shall be, and the same is hereby, set a part for the absolute and undisturbed use and occupation of the Indians herein named, and for such other friendly tribes or individual Indians as from time to time they may be willing, with the consent of the United States to admit among them; and the United States now solemnly agree that no persons, except those herein authorized so to do; and except such officers, agents, and employees of the Government as may be authorized to enter upon Indian reservations in discharge of duties enjoined by law shall ever be permitted to pass over, settle upon, or reside in the Territory described in this article, except as herein otherwise provided.

Treaty of 1868

United States citizenship was extended to each Ute Mountain Ute in 1924, assuring that each Tribal member also shares the protections provided by the U. S. Constitution.

The Ute Mountain Ute Tribe is a sovereign Indian nation organized pursuant to the Act of June 18, 1934 [48 Stat. 984, as amended]. The Tribe is governed pursuant to a Constitution approved June 6, 1940. The constitution establishes the Tribe's jurisdiction over the territory within the original confines of the Ute Mountain Ute Indian Reservation boundaries, as defined by the Act of April 9, 1874 (18 Stat. L. 36), and the subsequent agreements thereafter that are listed above. The overall purpose of the constitution is to establish a more perfect tribal organization, promote the general welfare, develop better school facilities, conserve and develop Tribal lands and resources, and secure to the Tribe and its posterity the power to exercise certain rights of home rule not inconsistent with the Federal, State, and local laws, applicable to Indian tribes. The constitution established a Council to govern the affairs of the Tribe. The Tribal Council is given broad powers to manage and protect the resources of the Ute Mountain Ute Reservation. The Constitution authorizes the Tribal Council to preserve, develop and increase Tribal resources while holding the land in tact for the benefit of the Tribe:

Preamble

We, the people of the Ute Mountain Tribe of the Ute Mountain reservation, in Colorado, New Mexico and Utah, under the jurisdiction of the Consolidated Ute Agency, Ignacio, Colorado, in order to exercise the rights of self-government, to administer our tribal affairs, to preserve, develop and increase our tribal resources, do ordain and establish this Constitution.

Article VII- Land

The reservation land now unallotted shall remain tribal property and shall not be allotted to individuals in severalty, but assignment of land for private use may be made by the Tribal Council in conformity with ordinances which may be adopted on this subject and approved by the Secretary of the Interior.

This protection includes maintaining those resources, safe from chemicals in toxic amounts.

The Tribe has plenary territorial and geographical civil jurisdiction [Worcester v. Georgia, 31 U. S. (6Pet.) 515,557,8 L. Ed. 483 (1832); White Mountain Apache tribe v. Bracker, 448 U. S. 136, 151, 100 S. Ct. 2578. 2587-88, 65 L. Ed. 2d. 665 (1980)].

It derives authority from its inherent sovereignty, particularly, but not limited to, circumstances where it is necessary to protect tribal self-government and to control internal relations. The Tribe's political integrity, economic security, and health and welfare are at stake in the protection of groundwater. It retains inherent sovereign power to exercise broad civil authority and has protectable federal interest in ground water protection [Montana v. United States, 450 U. S. 544, 566, 101 S. Ct. 1245, 1258, 67 L. Ed. 2d. 493 (1981); South Dakota v. Bourland, 508 U. S. 679, 695-697, 113 S. Ct. 2309, 2320, 124 L. Ed. 2d 606 (1993); Brendale v. Confederated tribes and Bands of the Yakima Indian Nation, 492 U. S. 408, 426-27, 109 S. Ct. 2994, 3005-3006, 106 L. Ed. 2d. 343 (1989) (plurality)]. It retains inherent sovereign authority [Iowa Mutual Insurance Co. v. LaPlante, 480 U. S. 9, 107 S. Ct. 971, 94 L. Ed. 2d 10 (1987); National Farmers Union Ins. Cos. v. Crow Tribe of Indians, 471 U. S. 845, 105 S. Ct. 2447, 85 L. Ed. 2d 818 (1985); Marrion v. Jicarilla Apache Tribe, 455 U. S. 130, 137, 102 S. Ct. 894, 901-902, 71 L. Ed. 2d 21 (1982); and Williams v. Lee, 358 U. S. 217, 79 S. Ct. 269, 3 L. Ed. 2d 251 (1959)]. See also 25 U. S. C. section 1301(2)-(3). The state has no jurisdiction over the territory and geography of the Ute Mountain Ute Tribe under 28 U. S. C. section 1360.

The Tribe has ground water rights [Winters v. United States, 207 U. S. 564, 567 (1908); see in Re General Adjudication of All rights to County Water in the Gila River sys. and Source, 15 Indian L. Rep. 5099 (Ariz. Super. Ct., Maricopa County 1988)]. The law of waters should be a single, integrated body of jurisprudence. [See National Water Commission, Water policies for the Future, 230, 233 (1973)]. There is a presumption

that Indians enjoy all beneficial interests in reservation resources [United States v. Shoshone Tribe of Indians. 304 U. S. 111 (1938)].

The Colorado Ute Indian Water Rights Final Settlement Agreement of November 3, 1988 further defined the Tribe's water rights, including ground water quantities. The Tribe owns the right to 350 acre-feet of ground water for domestic and livestock wells within the McElmo Creek basin in Colorado, and 1,500 acre-feet on the rest of the main reservation in Colorado for the same purposes, with 1868 priority on those rights. Also the Tribe has rights for industrial groundwater development: 2 acre-feet for oil and gas development and 1 acre-foot for road construction and maintenance, each also with the 1868 priority.

The Ute Mountain Ute Tribe assumes the primary responsibility for responding to contamination. The Ute Mountain Ute Tribe's Constitution provides authority for the Tribe to adopt and enforce codes to protect land and water resources on the Reservation. To this end, "Treatment as State" is being sought for the implementation of Tribally-adopted water quality standards under the Clean Water Act. Codes being developed to implement the Ground Water Protection Plan will be used to respond to contamination of ground water by pesticides and other toxic substances.

The Ute Mountain Ute Environmental Programs Department's Water Pollution Prevention Program conducts water quality sampling, has identified beneficial uses of water resources, and administers the water quality codes as they are developed and adopted by the Tribe. The exercise of Tribal sovereignty in the protection of groundwater and regulation of the use of pesticides, potentially toxic substances, is consistent with the interests of the U.S. federal government.

b. Authorities of Cooperating Federal Agencies:

U. S. Environmental Protection Agency

The primary cooperating federal agency with regulatory responsibility for the protection of water quality and regulation of pesticides and toxic substances is the Environmental Protection Agency. The EPA maintains statutory authority to implement federal environmental statutes in Indian Country, except where a program has been specifically delegated to the Tribe. Currently, the EPA is responsible for implementing the Federal Insecticide, Fungicide, Rodenticide Act (FIFRA) the Federal Water Pollution Control Act as amended by the Clean Water Act (CWA), the Safe Drinking Water (SDWA) [insert TSCA] and CERCLA on the Ute Mountain Ute Reservation. In such cases where a program has been delegated to the Tribe, the E. P. A. maintains oversight authority and assures all Ute Mountain Ute environmental standards for the delegated program meet the minimum federal environmental standards and requirements of the specific federal environmental law. If any more stringent standard is adopted by the Tribe, the EPA enforces that standard for non-delegated programs or supports the enforcement of such standard for any delegated program governed by a Ute Mountain Ute law.

Federal Insecticide, Fungicide and Rodenticide Act

The EPA administers the regulation of pesticides and provides the authority for the Tribe to regulate pesticides on the Reservation. The EPA will identify pesticides that require both generic and specific groundwater protection plans. The Environmental Program will decide whether or not to develop a management plan for any specific pesticide. In any case where the Tribe chooses not to develop the required plan, the use of such pesticide is banned.

Clean Water Act

The Clean Water Act establishes the national goal to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The agency is responsible for publishing and updating ambient water quality criteria and promulgating them when necessary. These criteria provide guidance on environmental effects of pollutants in section 304. They provide the basis for the development of Tribal standards. Similarly, the agency is responsible for developing health based contaminate levels.

The Clean Water Act establishes the need for a point source permit program under section 402, a certification program for federal action under section 401 and non-point control programs under section 319. In addition the Act requires the development of a number of point and non-point pollution assessments as part of the continuing water quality planning process and the identification of water bodies that fail to meet water quality standards after application of point source controls under section 303(d).

Safe Drinking Water Act

The Safe Drinking Water Act establishes the authority for the establishment of sole source aquifers, source water protection and well-head protection areas. Recent amendments to the Safe Drinking Water Act require that the public be provided with an annual "Consumer Confidence Report" informing them of the source and condition of their drinking water. Such reports have been published in the Weenuche Smoke Signals Newspaper in Towaoc, and they are posted around the communities of Towaoc and White Mesa.

Other Federal Environmental Laws

The regulation of underground storage tanks and the treatment, storage, and disposal of hazardous wastes are regulated under authorities in the Resource Conservation and Recovery Act. Any pesticide releases or spills could be addressed through the use of emergency authorities in the Comprehensive Environmental Response, Compensation Liability Act.

Natural Resource Conservation Service & Farm Services Agency

Food Security Act of 1985 as amended (2002)

The Food Security Act of 1985 requires that each agricultural unit participating in the Farm Program develop and implement a Conservation Compliance Plan. The county office for the Natural Resource Conservation Service is responsible for developing these plans in cooperation with the Agricultural Stabilization Conservation Service. The Tribal Ground Water Protection Plan will be coordinated with individual farm conservation plans to the maximum extent possible. The Tribe will work with the NRCS to assure that any special pesticide protection measures or management practices become incorporated into these plans. The use of any restricted use pesticide or requirements for special management and control measures will be controlled by the Tribe under the Pesticide Management Plan or other land or water use protection code. Every attempt will be made to coordinate Tribal pesticide use regulations with farm conservation plans.

2002 Farm Bill

The President's Water Quality Initiative and provisions added in the 1996 Farm Bill reauthorization and strengthened in the 2002 reauthorization require the Farm Services Agency and the NRCS to promote cost-sharing for special integrated crop management practices designed to protect water quality.

In addition, the Natural Resources Conservation Service is responsible for mapping the soils on the reservation.

Cooperative Extension Service

The Cooperative Extension Service as the education arm of the Department of Agriculture plays a critical role in the pesticide program on the Reservation. A key part of the implementation of the Tribe's pesticide and ground water management plan involves education. The local extension agent will assist in providing much of this education and outreach. The Extension Service is also a key source of information for integrated pest management practices and will play a major role in the information and education efforts that are undertaken as part of the plan. The Extension Service provides education and information services nation-wide. They are responsible for information and education concerning pesticide usage, application and ground water protection measures

U. S. Fish and Wildlife Service

The Reservation contains migratory birds, and may contain threatened or endangered species that could be affected by pesticide contamination in groundwater. The Tribe plans to address Fish and Wildlife concerns through their participation and

consultation in the development of the Ground Water Protection Plan. The Fish and Wildlife Service is responsible under the Endangered Species Act to assure the recovery of threatened or endangered species, and for ensuring compliance with the Act. All pesticide and ground water protection efforts will need to conform to the requirements of any recovery plan developed for a threatened or endangered species found on the reservation. The FWS is required to assure that the take of any listed species does not occur unless a permit has been issued or a habitat conservation plan has been approved and is being implemented. The tribe working with the FWS will work to assure the ground water and pesticide plan meets the requirements of the recovery plan for the protected species. The Service is responsible for developing and implementing the North American Migratory Bird Plan. The Tribe will consult in an attempt to incorporate any concerns of the Service in the plan prior to formal adoption. The Service is also responsible for conducting contaminant research of the impacts of pesticides on fish and wildlife resources. The Tribe will incorporate the results of any contaminant studies into the ground water and pesticides plan. The Fish and Wildlife Service will continue to be responsible for the recovery of threatened and endangered species. The Tribe is responsible under its Constitution for protecting and managing fish and wildlife on the Reservation and has a fish and wildlife program.

The protection of biological diversity is an essential part of the maintenance of a healthy ecosystem. Habitat to support the full compliment of biological diversity on the Ute Mountain Ute Reservation depends upon protection from adverse impacts resulting from inappropriate uses of pesticides and other toxic substances. The groundwater and pesticide plan will assure that biological diversity will not be adversely affected through the contamination of ground or surface waters by pesticides.

Bureau of Indian Affairs

The Bureau is the trustee for the United States government for the Tribe. The Bureau is responsible for overseeing all leases on Tribal lands. This includes both the direct use of pesticides on these lands and managing the use of pesticides and toxic substances by lessees. The Ground Water Protection Plan will be coordinated with BIA leasing programs through regulation to assure the groundwater plan is being properly implemented. The Tribe has assumed responsibility for many of the activities the BIA used to perform. The BIA, as the agent for the Secretary of Interior, will continue to act as a trustee for the treaties between the Tribe and the United States. The BIA shall enforce any standard enacted into law by the Tribe on behalf of the Tribe when requested by the Tribal Council.

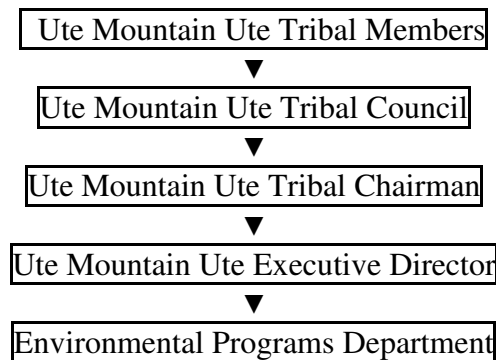
IV. Resources Available To Carry-out The Plan

Overview

As described above, the Ute Mountain Ute Tribe operates under a constitution and a federal corporate charter consistent with the Indian Reorganization Act of June 18, 1934. The Tribal Council governs the Ute Mountain Ute Tribe. The Tribe holds staggered elections every two years with Council members for three-year terms. A vote by a majority of the Tribal Council or a petition including twenty-five percent of the Tribal members will necessitate a referendum by the Tribe regarding any ordinance or resolution enacted by the Council.

The Executive Director for the Tribe administers the Tribe's day-to-day activities. The Environmental Programs Director reports directly to the Executive director for day-to-day management and reports directly to the Tribal Council for environmental policy guidance. The Tribal Council and in turn the larger Council comprised of the entire Tribe establishes Tribal policy through laws, resolutions, ordinances, budget allocations and the authorities established to undertake specific activities for the benefit of the Tribe through the grants of charters from the Tribe.

Table IV-1
Ute Mountain Ute Tribe Organizational Chart



The Environmental Programs Director has the lead responsibility for implementing the Ground Water Protection Plan and the Pesticide Management Plan (PMP) component. The Water Quality Specialist and the Water Pollution Prevention Program will also play a major role in implementation of the plan.

The Ground Water Protection Plan contains a number of new provisions. Some of these provisions involve implementing new programs. Other activities involve shifts in priorities within existing programs. As the Tribe implements the program, new and expanded personnel needs will be identified. Initially, the Environmental Programs Department plans to implement the plan relying upon existing staff and expanded cooperative efforts with Tribal departments and enterprises.

The Tribe plans to develop a pesticide code to supplement this plan and to include the management strategies identified in the Plan. These efforts will include management activities to address storage, handling, chemigation, mixing, site management plans, streamside management, well-head protection, enforcement, monitoring, and release response authority. The Water Pollution Prevention Program's surface and ground water monitoring will be reviewed and modified to ensure consistency with the Ground Water Protection Plan.

Current Program Funding

Current funding for the Tribe's environmental programs comes from grants through the U. S. Environmental Protection Agency, and in-kind matches by the Tribe. The Natural Resources Department and the Farm and Ranch Enterprise rely upon money from the Tribe, federal agencies such as the Natural Resources Conservation Service, Bureau of Reclamation, Bureau of Indian Affairs, and income from their activities, to develop and implement management plans to address issues and concerns raised by this plan.

Costs to develop and implement the plan

The initial plan implementation will require a major education and outreach effort if it is going to be successful in protecting the ground water resources of the Tribe while at the same time allowing for the continued correct and reasonable use of pesticides deemed important to the economic well-being of the agricultural economy of the region. A key component of implementation is the development of a cooperative FIFRA agreement and training for the Tribe to administer FIFRA on the Reservation. New educational materials will need to be developed. Meetings with commercial applicators, farmers, and communities throughout the Reservation will need to be held. New codes or modifications to existing codes will be required. Cooperative agreements with the state, the Cooperative Extension Service, the U. S. Geological Survey, the Natural Resources Conservation Service and the Environmental Protection Agency may be needed to assure cooperation and coordination. Detailed vulnerability maps and susceptibility maps will continue to need to be developed beyond what is being utilized in this Plan. Cooperatively developed 'best management practices' (BMP's) and mechanisms to coordinate farm plan approvals, pesticide-specific plans and land leases will need to be developed. Additional funding will be sought from the EPA from the Office of Pesticides for FIFRA; and the Office of Water for the Clean Water Act and the Safe Drinking Water Act to develop and implement the pesticide-specific component of this Groundwater Protection Plan.

Additional Funding Needs

The Tribe plans to seek a cooperative agreement with EPA to begin a pesticide inspection program to implement FIFRA on the Reservation. It is hoped that funding through EPA's Office of Pesticide Programs will support the hiring of a pesticide inspector within the Environmental Programs Department.

It is expected that a series of management initiatives will be needed based upon this plan to protect ground water on the Reservation. The departments and enterprises responsible for the management activity affected by these initiatives will use a combination of federal and Tribal (income) sources to fund these projects. These sources of additional funding could include EPA non-point source project funding (319 grants), pesticide special project grants, source water protection, and wellhead protection as well as other EPA educational and outreach programs. The Farm Services Agency, NRCS EQUIP Program, Bureau of Reclamation and Bureau of Indian Affairs are other sources for funding the protection measures identified through this plan. It is expected that over the next five years approximately \$1.5 million in project funding will be necessary to implement the plan. In addition, an annual pesticide cooperative agreement of \$50-75K per year will be required.

Administration

The Environmental Programs Department is the primary department responsible for development and implementation of the Groundwater Protection Plan. The Environmental Programs Department is the sole Tribal department responsible for environmental protection on the Ute Mountain Ute Reservation, although other Tribal departments and enterprises are also natural resource stewards. The Environmental Programs Director reports to the Executive Director for the Tribe and the Tribal Council. The administrative structure provides the necessary linkage in the organization of the Tribe to assure that all decisions are coordinated and policies adhered to. This administrative structure is sufficient to implement the plan.

Technical Resources

The Environmental Programs Department will use and rely upon technical assistance from a number of agencies to implement the plan. The Natural Resources Conservation Service is currently providing direct assistance and cost-share assistance to the Tribe. This assistance will continue. In addition, soil scientists, planners, agricultural engineers, agronomists and engineering technicians with the NRCS will be called upon to provide specific technical assistance. The Tribe has had cooperative agreements with the U. S. Geological Survey for assistance with hydrological surveys and assessments in the past. The U. S. Geological Survey currently operates a stream gauge on the Mancos River, funded through a cooperative effort between the Tribe and the Southwest Water Conservancy District. The Environmental Programs Department relies upon technical support from EPA and the U.S. Fish and Wildlife Service on an as needed basis. The Tribe's legal staff provides legal assistance, and other non-staff attorneys are also under contract who are assisting with water quality jurisdictional issues. Mountaintop Associates has provided technical assistance to the Tribe under contract. The Environmental Programs Department will continue to utilize professional assistance in implementing the plan. A professional agronomist is the General Manager the Farm and Ranch Enterprise. He works cooperatively with Environmental Programs Department. Similarly, other Tribal enterprises will provide assistance in the implementation of the

plan.

V. Monitoring **Overview**

A major component of any ground water management plan is the implementation of site specific monitoring as part of the approval of the use of pesticides and toxic substances on the Reservation. This monitoring plan will be specifically tailored to respond to the concerns raised by the use of a pesticide or other groundwater contaminant.

Monitoring well sites will be located in areas remote from point sources of contamination. The wells, when practicable, will be constructed of schedule 40 polyvinyl chloride (PVC) casing and screens. The casing and screens will be flush jointed. Clean, well-sorted, pre-sacked filter pack will be used to cover the screen to assure native materials do not cave in the annulus. Bentonite followed by cement grout will be used to seal the well annulus. Water level measurements will be undertaken using a 2-inch diameter well in the well nest in order to protect the integrity of the 4-inch water quality monitoring wells. A peristaltic pump with dedicated tubing for each well will be used for sampling in order to reduce cross-contamination .

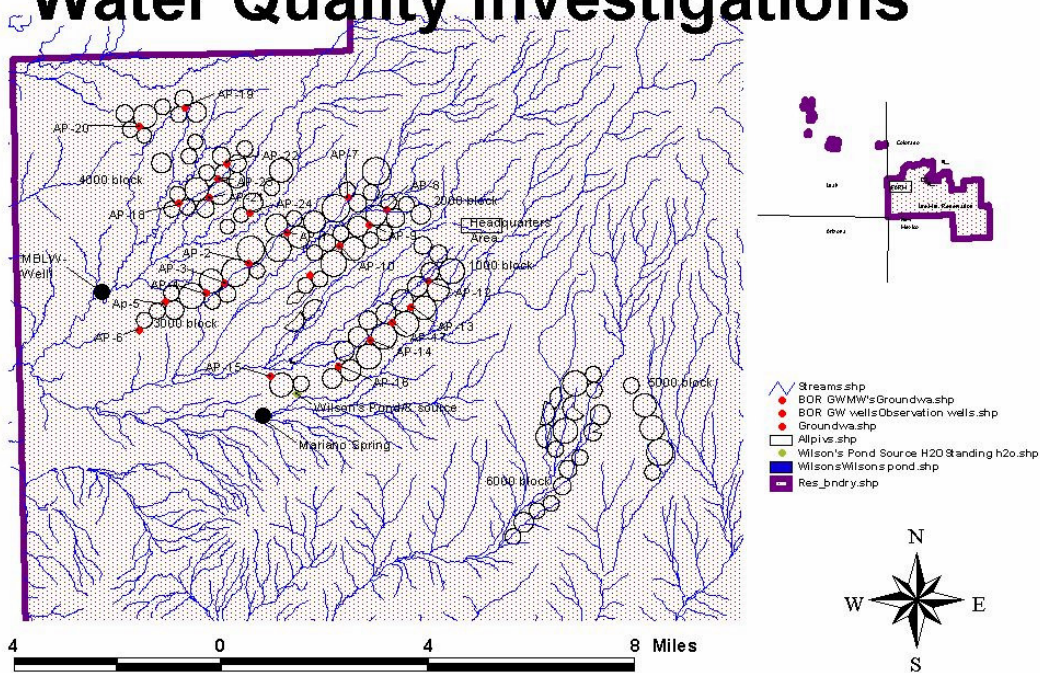
Two levels of monitoring will be used. Systematic regular sampling and analysis of water from all three aquifers for organic and inorganic components will be collected annually to document long-term water quality changes. Sample collection and handling are carried out by qualified staff in accordance with the Ute Mountain Ute Water Pollution Prevention Program Standard Operating Procedures (cross-referenced by the QAPP). The water quality database includes analytical data from ground water and surface water samples, date and time of sample collection, sample location, method of sampling, and monitoring well measurement information.

The Tribe has both surface and ground water monitoring in place. Ground water monitoring occurs on four areas of the Reservation. Each monitoring effort is geared towards addressing a specific need or purpose. The four areas are: (1) monitoring wells up gradient of the two community wells in White Mesa, (2) wells to monitor agricultural return flow migration at Farm and Ranch, (3) monitoring wells around the wastewater treatment lagoons and old landfill areas along Navajo Wash in Towaoc and (4) monitoring wells near the Mancos Creek Farm where EPA completed an emergency response action within and adjacent to the riparian corridor of the river. The White Mesa monitoring is meant to assure that radioactive or other toxically contaminated ground water is not migrating towards the community's sole source of drinking water. The Environmental Programs Department has undertaken ground water monitoring in cooperation with the Farm and Ranch Enterprise for the past several years. This monitoring involved the measurement and sampling of a series of shallow wells down gradient of irrigation center pivots. (See Figure V-1). The purpose of this monitoring effort is to gain a more complete understanding of irrigation related seeps, the types of

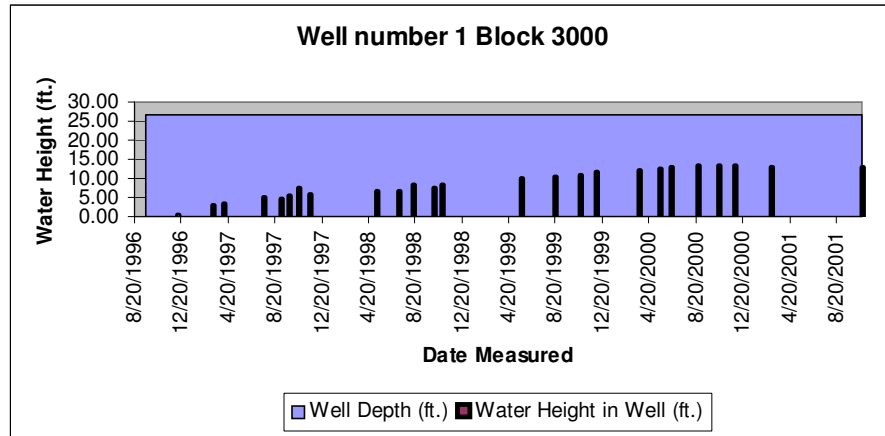
pesticides or nutrients that are escaping the irrigated fields, and to prevent plant hazards due to shallow ground water saturation. This monitoring effort involves ground water that is far from any surface water and separated from any deeper potable aquifer systems. The purpose of the monitoring effort is to provide information that can be used to refine farm management through reuse and more controlled application, reducing both risk to the environment and lower operational costs. These wells are each shallow, having been installed to assist in farm management practices rather than aquifer regulation. Several more of these wells are also being planned for the two sections of the Farm that do not have them.

Figure V-1
Monitoring Wells Near Farm and Ranch Center Pivot Systems

Ute Mountain Farm and Ranch Water Quality Investigations



**Figure V-2
Depth and Water Height in Well**



The third set of ground water monitoring wells are near the wastewater treatment lagoons and old landfill locations (See Appendix B—Supplemental Maps for locations of these wells). Two reference wells are also located upgradient of the target pollution sources. Some of the sewer lagoons are designed to seep while other more modern lagoons are meant to prevent ground water migration. The purpose of these wells is to monitor the migration of pollution into Navajo Wash. The fourth ground water monitoring effort involves a number of wells down gradient of an area at the Mancos Creek Farm where pesticides were discarded and improperly stored. The EPA has undertaken two emergency removal actions at the site over the past 7 years. Since that time, the conditions on the Reservation have been very dry. There has been no ground water in measurable quantities that have been measured in the wells. The concern that during a wetter climatic cycle pesticide contaminated ground water could migrate towards the Mancos River is considered very real. During minor rainstorm events, the farm manager often smells a strong distinctive odor of pesticides indicating a need for possible further removal actions. In addition, more soil sampling is being undertaken at this site.

All analytical pesticide analyses are contracted to a laboratory with a Quality Assurance Plan that meets the requirements of the EPA-approved Ute Mountain Ute Water Pollution Prevention Program Quality Assurance Project Plan.

**Summary V-1
Pesticides and other Synthetic Organic and Radioactive Toxic Substances
Monitored**

The following analytical procedures/ analytes are currently used /analyzed by the contracted laboratory that performs gas chromatography and GC/mass spectroscopy for the Ute Mountain Water Pollution Prevention Program.

EPA-Approved Analytical Method # 507 Analytes:

Atrazine
Alachlor
Butachlor
Metolachlor
Metribuzin
Propachlor
Simazine

EPA-Approved Analytical Method # 508 Analytes:

Aldrin
a-BHC
b-BHC
d-BHC
g-BHC
a-Chlordane
g-Chlordane
4,4'-DDD
4,4'-DDE
4,4'-DDT
Dieldrin
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde

HCCPD (hexachlorcyclopentadiene)

Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Methoxychlor
Toxaphene

PCB's:

Arochlor 1016
Arochlor 1221
Arochlor 1232
Arochlor 1242
Arochlor 1248
Arochlor 1254
Arochlor 1260

EPA-Approved Analytical Method # 515.1 Analytes:

2,4-D
Dalapon
Dicamba
Dinoseb
Pentachlorophenol
Picloram
2,4,5-TP (Silvex)

EPA-Approved Analytical Method # 525.2 Analytes:

(non-pesticides) Benzo(a)pyrene
Bis(2-ethylhexyl)adipate
Bis(2-ethylhexyl)phthalate

EPA-Approved Analytical Method # 625 Analytes:

(non-pesticides) 1-Methylnaphthalene

2-Methylnaphthalene
Acenaphthene
Acenaphthylene
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b&k)flouranthene
Benzo(g,h,i)perylene
Chrysene
Dibenz(a,h)anthracene
Flouranthene
Flourene
Indeno(1,2,3-cd)pyrene
Naphthalene
Phenanthrene
Pyrene

The following analytical prodecures/ analytes are currently used /analyzed by the contracted laboratory that performs **radiochemistry** analyses for the Ute Mountain Water Pollution Prevention Program.

EPA-Approved Analytical Method # 900.0 Analytes:

Gross Alpha
Gross Beta

Pesticide-Specific Management Plan Monitoring

The development of a management plan for any specific pesticide required by EPA to have a Tribal pesticide-specific plan will consider the need for monitoring if the use of the pesticide continues on the Ute Mountain Ute Reservation. Monitoring requirements could be required of the manufacturer, the commercial applicator, or the Tribe. The decision to require monitoring prior to allowing the continued use of a pesticide will be incorporated into an individual Tribal pesticide-specific management plan.

Surface Water

The Tribe has adopted a rotating basin strategy for surface water quality monitoring. This will allow assessment and trend analysis to proceed reservation-wide in a three year period. Every three years the Tribe must review its surface water quality standards for applicability and incorporate changes in criteria to better protect human health and wildlife. Table V-2 shows major water bodies monitored and their tributaries. Surface water monitoring activities have been conducted by the Tribe for 9 years, with various targets, objectives, and monitoring questions. A rotating basin strategy for comprehensive trend monitoring as well as targeted monitoring was begun in 2003.

Table V-2
Rivers and Streams Monitored for Water Quality
Ute Mountain Ute Indian Reservation

Source: Water Pollution Prevention Program

<u>Watershed</u>	<u>Water Bodies</u>	<u>Year to Monitor</u>	<u>State/County</u>
San Juan River:	Middle San Juan-- mainstem	2003-04	New Mexico/San Juan
	Westwater Arroyo	2003-04	New Mexico/San Juan
	Shumway Arroyo	2003-04	New Mexico/San Juan
	Small tributaries to La Plata River	2003-04	New Mexico/San Juan
	Indian Creek	2003-04	CO/Montezuma
	Lower San Juan-- mainstem	2003-04	CO/Montezuma
	Marble Wash	2003-04	CO/Montezuma
	Cowboy Wash	2003-04	CO/Montezuma
	Coyote Wash	2003-04	CO/Montezuma
	Mariano Wash	2003-04	CO/Montezuma
	Cottonwood Wash & tributaries	2003-04	Utah/ San Juan
	Mancos River: (in Middle SJ)	mainstem segments	2005-06
Weber Creek		2005-06	CO/Montezuma
Moorefield Creek		2005-06	CO/Montezuma
Soda Creek		2005-06	CO/Montezuma
Johnson Creek		2005-06	CO/Montezuma
Grass Creek		2005-06	CO/Montezuma
Navajo Creek		2005-06	CO/Montezuma
Ute Creek (southern)		2005-06	CO/Montezuma
Chimney Rock Draw		2005-06	CO/Montezuma
Aztec Wash		2005-06	CO/Montezuma
Navajo Wash (in Mancos)	mainstem segments	2004-05	CO/Montezuma
	Cottonwood Wash	2004-05	CO/Montezuma
McElmo Creek (in lower SJ)	mainstem segments	2003-04	CO/Montezuma
	Ute Creek (northern)	2003-04	CO/Montezuma
	East McElmo Creek	2003-04	CO/Montezuma
	Littlewater Creek	2003-04	CO/Montezuma
	Finley Creek	2003-04	CO/Montezuma
Ranches off Reservation:			
Gunnison R.	Pine Creek	2003-04	CO/Gunnison
	Willow Creek	2003-04	CO/Gunnison
La Plata R.	mainstem	2003-04	CO/La Plata
	Cherry Creek	2003-04	CO La Plata
	others to be determined	2003-04	CO/La Plata
Lost Canyon Cr.	to be determined	2003-04	CO/Montezuma
Recapture Creek	to be determined	2003-04	Utah/ San Juan

VI. Basis For Assessment and Planning

Approach Overview

The Ute Mountain Ute Tribe recognizes that the protection of high quality groundwater while supporting agriculture is critical to the continued cultural, spiritual, and economic well-being of the Tribe. The limited land base necessitates prevention of groundwater pollution as a high priority for the Tribe. Prevention assures protection of existing culture and traditions. It allows the Tribe to devote its scarce economic resources to enhancing self-governance and increasing economic opportunities for all Tribal members. Pollution and loss of the use of these water resources disrupts the connection between the people and their land. This linkage to the lands is critical to the cultural survival of the Tribe and its members.

Maintaining high quality ground and surface water and protecting that water from contamination is the goal and basis for planning the Ute Mountain Ute Tribe's Ground Water Protection Plan. Ground water protection is integrated with surface water and toxic management control efforts by the Tribe. When a well or aquifer is determined to be contaminated with a pesticide, hazardous waste or toxic substance the Tribe will undertake measures to halt any further release of the contaminant, contain the contaminant and take steps to restore the aquifer to a clean and healthful condition. Aquifers and their ground water resources are difficult if not impossible to restore once degraded.

This groundwater plan relies upon a multi- pronged approach. The goal is to prevent pollution that affects natural resources or public health. At the same time farming and ranching are important economic activities on areas within the jurisdiction of the Tribe. The plan attempts to balance the need to protect natural resources and ground water with the goal of achieving sustainable agriculture practices. The ground water protection effort will assure that the reference point for any PMP pesticide (see Section X –subsection, Pesticide Management Plans) is not exceeded while encouraging proper pesticide use.

The plan establishes protection measures relying upon the risk posed, the sensitivity of an area, and the potential for the pesticide or toxic substance to leach and contaminate ground and surface water. This includes the vulnerability of the natural resource and the potential for a given pesticide to adversely impact that resource. The approach recognizes that the site-specific information available may not allow for the implementation of site-specific control measures without the use of additional on-site data. The individual farm and ranch plans will be used to assure that site -specific protection measures including prohibitions are fully implemented to protect vulnerable areas, protect surface waters, and manage the use of any pesticide requiring a Pesticide Management Plan prior to its continued use on the Reservation.

On-going efforts to collect additional data and provide a better understanding of the natural resources of the region will continue. As new information and understanding becomes available, the Ute Mountain Ute Tribe's Environmental Programs Department will update and revise its protection efforts.

In addition to targeting sensitive areas for increased scrutiny, the Environmental Programs Department recognizes that all pesticides and toxic substances, if not properly handled, applied and disposed of, can cause a serious threat to ground and surface water quality, as well as public and environmental health. The Tribe will implement training programs and certification requirements for users, applicators and sellers of pesticides and toxic substances. As new protection methods are developed, the Environmental Programs Department plans to update training and certification requirements. Education is an important component to the overall approach to managing pesticides and other toxic substances.

The vulnerability of groundwater to contamination by pesticides or other toxic substances depends upon a number of natural and cultural factors. The geology of the surface and sub-surface, the timing and intensity of annual rainfall, the type of soil, and proximity to surface water are the primary sensitivity factors the Tribe has identified to delineate vulnerability. Closely related to natural vulnerability is the cultural sensitivity of the resource. The proximity to community and individual wells, the type of agricultural practices utilized, use of irrigation, the crops raised, and the degree of risk posed by the individual pesticide each contribute to this analysis. The proximity of other potential groundwater contaminants to water resources and the land use practices associated with them need to be considered, also.

Developing the Assessment

Much of the natural resources data the Tribe relies upon were developed by various federal agencies. The Environmental Programs Department will continue to rely upon federal agencies for assistance in identifying, refining and assessing resource conditions and to move toward the ability to gather and track more of its own data. The Environmental Programs Department Water Pollution Prevention Program staff collects water quality information. All water samples are analyzed in contracted laboratories or the Program's water quality laboratory in Towaoc, as described in the Water Pollution Prevention Program's EPA-approved Quality Assurance Project Plan.

Cultural Assessment

The Ute Mountain Ute Reservation is located in southwestern Colorado, northwestern New Mexico, and southeastern Utah. The contiguous reservation is located in 4 counties. The Reservation covers about 930 square miles.

THE ANCESTRAL PUEBLOANS

Prehistoric inhabitants of the Four Corners region include the Anasazi or Ancestral Puebloans. They are divided into two distinct eras, the Basketmaker and Puebloan.

The Basketmaker culture lived in the Four Corners Region from 100 B.C. to approximately 600 A.D. The culture was semi nomadic and flourished while hunting and gathering small game and native plants. Rock art, basketry, textiles and a subterranean home called a Pithouse are examples of the unique legacy they left behind.

Corn that had been cultivated on a small scale for many years in Meso-America and the American southwest flourished after 500 A.D. It dramatically changed the lives of the Anasazi introducing them to an agrarian lifestyle referred to as the Puebloan phase. In addition to corn the Puebloans grew beans and squash using a technique called dry land farming. This technique utilized a drought resistant seed that relied on deep soils and moisture from as little as 12 inches of rain per year. Simple terracing allowed the Anasazi to capture infrequent storm water to supplement their water source.

THE UTE MOUNTAIN UTE PEOPLE

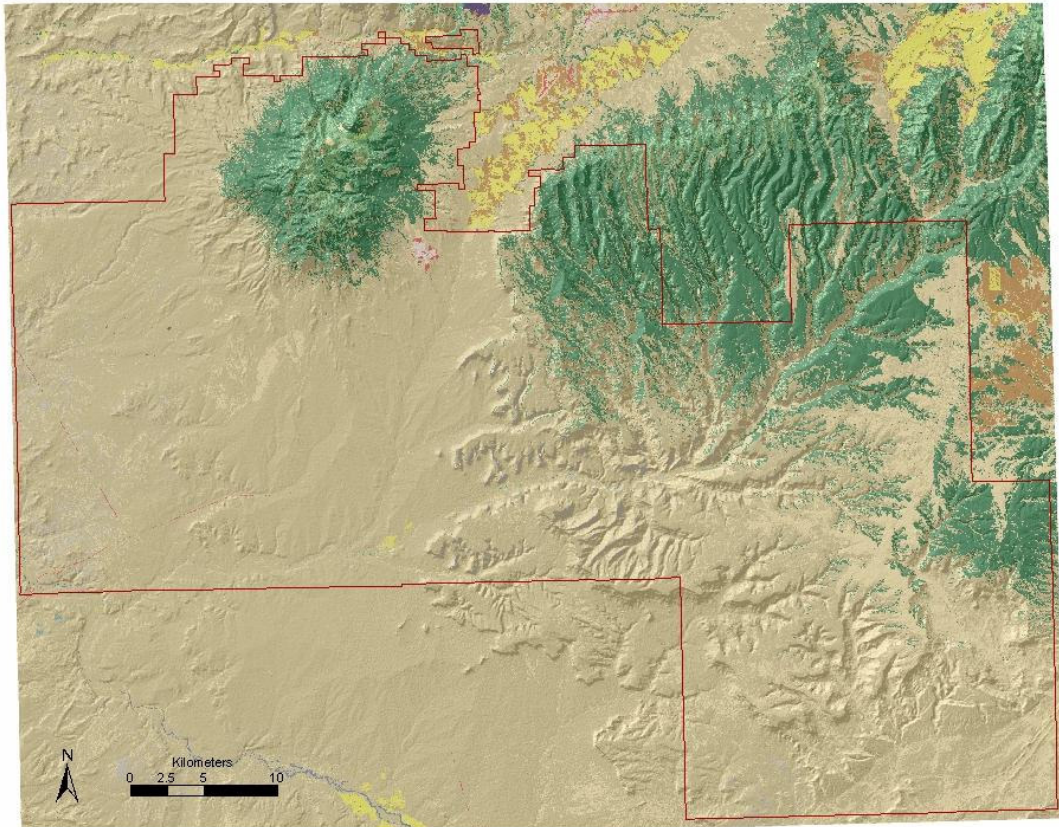
The people living on the Ute Mountain Ute Reservation are referred to as the Weeminuche, “the true people”. The Weeminuche are one of several Ute bands who historically lived in Utah, Colorado and New Mexico. The Colorado Utes were traditionally a mountain culture consisting of three bands, the Muache, Caputa and the Weeminuche. Treaties in the latter half of the nineteenth century placed the Ute Mountain Utes on their present reservation lands in southwestern Colorado, northwestern New Mexico and southeastern Utah.

Today, as it has for hundreds if not thousands of years, agriculture and wildlife play a major role in the life and economy of the area. Agriculture, along with tourism and recreation are important for the economy of the Ute Mountain Ute Tribe. The Farm and Ranch Enterprise along with the Tribal ranches managed by the Natural Resources Department and Tribal member grazing allotments are a major source of income for the Tribe.

**Table VI-1
Land Ownership**

<u>Land Status:</u>	<u>Acres</u>
Tribal Trust lands	597,288
Tribal Fee Lands (ranches)	33,993
Total Area:	631,281

Ute Mountain Indian Reservation - Land Use / Land Cover Divisions



**Figure VI-1 Land Cover Type
(Colorado and New Mexico Lands)**

Physical Setting

(From Ute Mountain Ute Nonpoint Source Assessment Report)

Topographically, the reservation is characterized as a high desert plateau, with the elevation ranging from 4,600 feet along the San Juan River to 9,977 on Ute Peak. Vegetation ranges from sagebrush shrubs in the lower elevations to ponderosa pine forests in the higher elevations (UMU, 1999a). The reservation includes six vegetation zones (EMI, 2000) including semi-desert grassland, sagebrush savanna, pinyon-juniper woodland, pinyon-juniper woodland/mountain browse, chaparral, and fir-spruce-aspen. Approximately 3,800 acres of noncommercial timber forests are represented in the pinyon-juniper woodland/mountain browse, chaparral, and fir-spruce-aspen. The reservation contains verified or potential habitat for several federally listed species of plants and animals.

Early reports indicate that the Ute Mountain Ute land, as late as the 1870s, contained grasses, mowable as hay in nonwooded areas, with sagebrush sparse or absent. This condition was changed by heavy grazing, in part due to encroachment from non-

Ute Mountain Indian Reservation - Hillshade of SRTM DEM

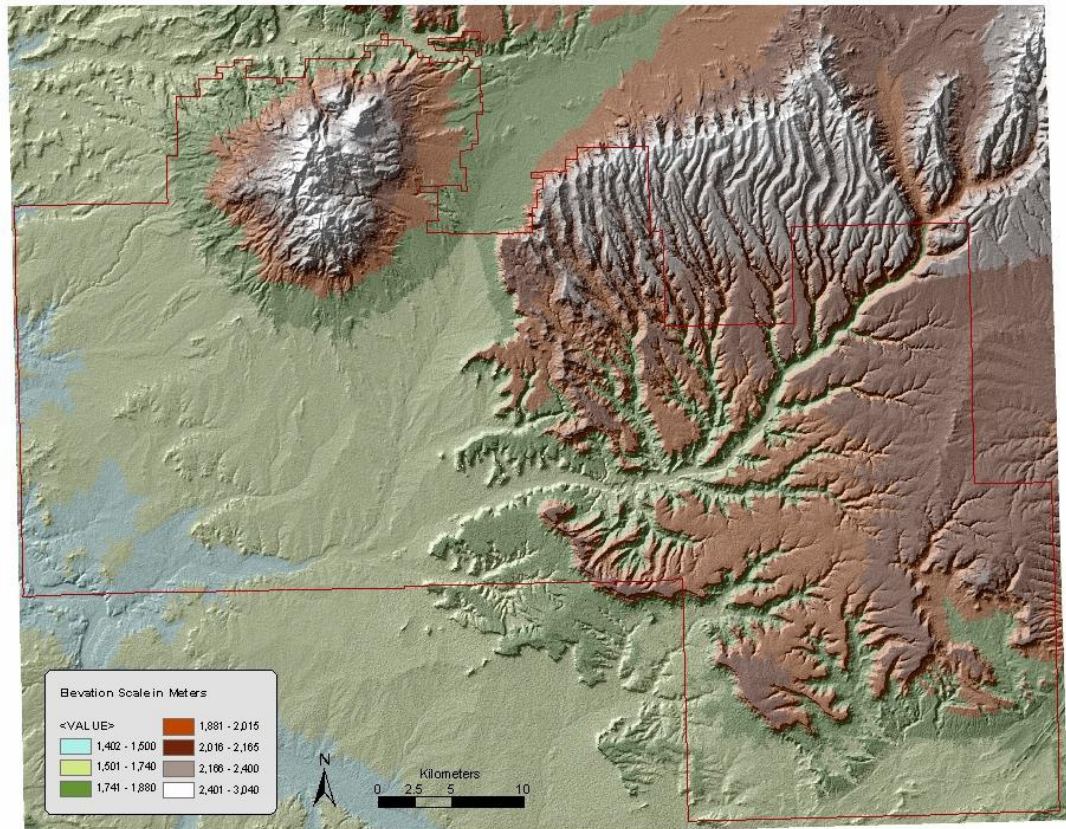


Figure VI-2 Hillshade of Digital Elevation Model (Colorado and New Mexico Lands)

indian livestock (BIA, 1966). Overgrazing resulted in serious range depletion, with invasion or increase of sagebrush and other undesirable species, the cutting of gullies and arroyos in the lowlands, and severe erosion in the uplands. Later reductions in livestock numbers have resulted in partial recovery of some reservation and surrounding rangelands (BIA, 1966). The Livestock Grazing Program within the Natural Resources Department was established to assist Tribal member cattlemen in developing and maintaining the best possible herds for their families and profit (UMU, 1999a).

The climate of Four Corners region is classified as semiarid and is characterized by low humidity, cold winters, and wide variations in seasonal and diurnal temperatures. Temperature varies with elevation. Average monthly maximum temperature ranges from 39°F to 86°F, and the average monthly minimum temperature ranges from 18°F to 57°F. The highest and lowest temperatures occur in July and January, respectively.

Precipitation also varies with elevation, with average annual precipitation amounts of 8 to 10 inches in the lower elevations of the Ute Mountain Ute Reservation and about 13 inches at Cortez (Butler et al., 1995). The 50-year (1948 through 1997) annual precipitation minimum was approximately 5.2 inches at Cortez (1989) and the 50-year maximum was 30.8 inches at Mesa Verde National Park (1957) (Earthinfo, Inc., 2000). Average monthly precipitation varies from 0.65 inch in June to 2.00 inches in August. At the higher elevations, the monthly precipitation totals are relatively constant throughout the year with the exception of the dry season, which occurs in April, May, and June. At lower elevations, a relatively drier season occurs from April through June and a relatively wetter season occurs from August through October. Summer precipitation is characterized by brief and heavy thunderstorms. The snowfall season lasts for 7 to 8 months with the heaviest snowfall occurring in December.

Groundwater Hydrology from NPS Report: “Groundwater Description”

The Ute Mountain Ute Reservation lies within the Four Corners Platform, a structural bench between local uplifts and the adjacent San Juan River and Blanding Basins. The rocks are gently folded into a shallow syncline that plunges to the south. This structure is flanked on the east by Barker Dome, on the west by Sleeping Ute Mountain Uplift, and on the north by the Dolores Plateau. Moderately to highly incised topography has developed on the southward-tilted Upper Cretaceous strata, consisting of (in ascending order) the Dakota Sandstone, the Mancos Shale, and the Mesa Verde Group, which consists of the Point Lookout, Meneffee, and Cliff House Sandstones.

Near Sleeping Ute Mountain, the Morrison, Burro Canyon, and Dakota Sandstone Formations are near the surface. The Mancos Shale crops out between the igneous intrusions forming the mountain and underlies the pediment alluvium flanking the mountain. Isolated Quaternary deposits consist of talus, block rubble, colluvium, stream-channel alluvium, and pediment alluvium. The overlying soils reflect the composition of the underlying geologic formations.

Groundwater is available from several unconsolidated surficial deposits and from confined bedrock aquifers:

- Alluvium, talus deposits, and pediment deposits may provide small quantities of shallow groundwater. Springs issuing from near-surface talus, block rubble, and colluvium in the Sleeping Ute Mountain area may yield more than 100 gallons per minute (gpm) seasonally (Geldon, 1985). During most of the year, channel alluvium and older pediment alluvium contain water only near the bases of these units, where downward percolation is restricted by the Mancos Shale. Groundwater in the alluvium generally flows toward canyons and tributaries of the San Juan River (Whitfield et al., 1983, cited in Butler et al., 1995).
- Groundwater is also obtained from three primary bedrock aquifers on the Ute Mountain Ute Reservation: the Dakota Sandstone and two sandstone units of the

Mesa Verde Group in Colorado and New Mexico, and the Navajo/Entrada sandstone aquifer in Utah.

- The Dakota Sandstone is the main aquifer for livestock water on the Ute Mountain Ute Reservation. The gray, resistant Dakota Sandstone ranges from 100 to 160 feet in thickness and lies below the gray Cretaceous Mancos Shale and above the Burro Canyon Sandstone. Wells in the Dakota Sandstone are used primarily to supply water to livestock because they are generally 200 to 1,000 feet deep and do not yield much water (Ecosphere Environmental Services, 2000). Groundwater flow is generally toward the San Juan River (Whitfield et al., 1983, cited in Butler et al., 1995).
- Small amounts of groundwater are also obtained from the sandstone units of the Mesa Verde Group, especially the Cliff House Sandstone and the upper sandstone member of the Point Lookout Sandstone. The Cliff House Sandstone is a sequence of sandstone and shale that is not uniform throughout in thickness or lithologic characteristics (Ecosphere Environmental Services, 2000). The sandstone is characterized as grayish-orange to pale yellowish-brown, very fine- to fine-grained, immature to submature, subarkose, thick-bedded sandstone units with large-scale cross-bedding. Groundwater in the Cliff House and Point Lookout Sandstones generally occurs in the southeast part of the reservation. The development of this aquifer is limited by (1) the lack of recharge and infiltration because of highly impermeable materials overlying the aquifer, (2) the Mancos River and its tributaries, which dissect and drain the Mesa Verde Group, and (3) the belief that the sandstones do not hold much water (Ecosphere Environmental Services, 2000).
- In Utah, groundwater seeps from the contact of the Burro Canyon and underlying Brushy Basin formations along the edges of White Mesa. Approximately 1000 feet of confining formations below the Brushy Basin protect the sole-source Navajo/Entrada sandstone aquifer from which the White Mesa Community of Utes pumps their drinking water.

Given the limited and/or seasonal nature of the alluvial and bedrock aquifers described above, the use of groundwater on the Ute Mountain Ute Reservation to fulfill municipal and agricultural demands is small. White Mesa, Utah is the only groundwater dependent community. In Colorado, municipal and agricultural irrigation water is obtained largely from the Dolores Project, while local groundwater in Colorado and New Mexico is primarily used for livestock watering. Some drinking and ceremonial uses of ground water seeps and springs occur on the Reservation, although it is relatively undocumented on paper.

Chemical water quality reflects the lithologic composition of the aquifers. The concentration of minerals is small in block rubble and talus deposits, which are composed mostly of igneous rock, while water from other aquifers locally exceeds federal

maximum contaminant levels (MCLs) for some constituents including arsenic, selenium, fluoride, and manganese. Secondary maximum contaminant levels (non-enforced guidelines) are exceeded for total dissolved solids (TDS) and sulfate. In addition, bacteriological contamination from livestock and human activities remains a threat for shallow groundwater resources.

Areas of private wells, traditional springs and riparian corridors are very important to the Tribe and will be protected. The Tribe considers all ground water with a total dissolved solids concentration of less than 5,000 parts per million (PPM) as livestock water or drinking water as defined by the Safe Drinking Water Act. All ground water meeting the 5,000 PPM limit for dissolved solids is to be protected or remediated to meet livestock or drinking water standards, as dictated by demand. The U. S. Public Health Service recommends a maximum concentration of 500 PPM TDS for drinking water. People living on the Reservation sometimes drink water that exceeds that standard. Ground water from private wells on the reservation falls within the range of drinking water yet may exceed the public health standard for total dissolved solids as recommended by the Public Health Service. Historically, ground water quality was more of an impact to Ute Mountain Ute society. Since the construction of the Dolores Project, domestic water has come from a trans-basin surface water diversion for almost all of the Colorado residents of the Tribe.

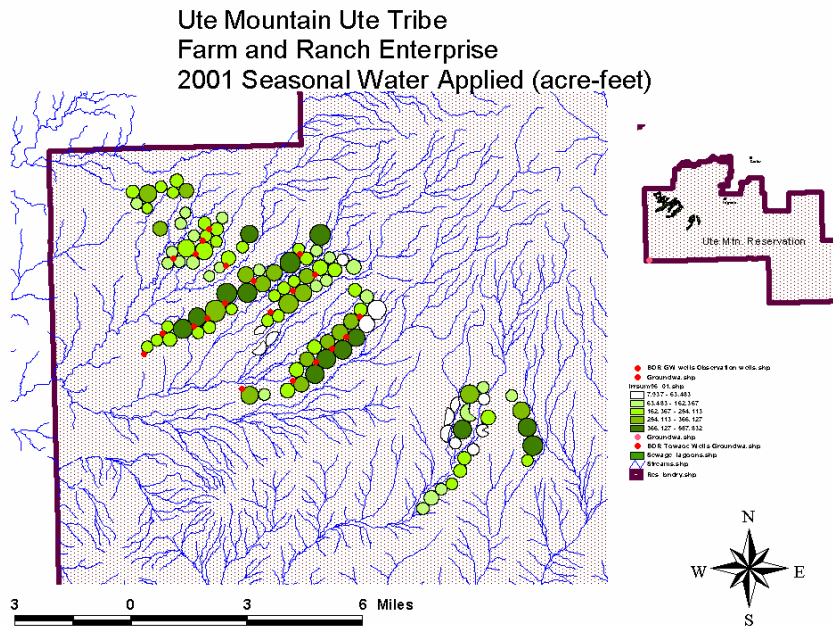
Irrigation

Some of the Tribes fee lands that are used for ranching have small irrigated areas. See irrigation summary in Table I-1 for ranches.

Other irrigated lands include the Farm and Ranch Enterprise and Mancos Creek Farm. Mancos Creek Farm does not have reliable water due to water rights compromises made for Dolores Project Water. Because of this, only a few hundred acres at most can be put in production for growing hay, on a good water year when the diversion ditch is managed properly. Navajo Wash flows past the farm, but water quality in Navajo Wash is marginal and often too saline for irrigation.

As described above, the Farm and Ranch Enterprise, southwest of the Sleeping Ute Mountain has over 7,000 irrigated acres. Precision farming technology is used extensively, including telemetry-controlled irrigators, high-efficiency sprayer heads, and GIS/GPS data management-- especially for water use, soil fertility, and chemical applications.

**Figure VI-3
Farm and Ranch Irrigated Acreage**



Community Drinking Water Wells

There are currently five groundwater wells on various parts of the Ute Mountain Reservation that are used primarily for domestic use. These are: 2 community wells in White Mesa, Utah; 2 private wells at homes in McElmo Canyon in Colorado, and a well at the Farm and Ranch Enterprise Headquarters. Some of the ranches off-reservation also have domestic water wells. The ranches will be the subject of water quality investigations during the 2003-04 and 2004-05 sampling seasons, and the vulnerability of those groundwater resources to pollution will be assessed at that time. Maps of the existing domestic and community supply wells are included in Appendix B to this document.

Aquifer Vulnerability Matrix—Soils and Land Use

Soils and the Pesticide Screening Process

The contact between the land surface and the underlying ground water systems is comprised of parent and weathered geologic material and the organic matter that has built up over time. The Soil Science Society of America defines soil as

- (i) The unconsolidated mineral or organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants.*
- (ii) The unconsolidated mineral or organic matter on the surface of the earth that has been subjected to and shows effects of genetic and environmental factors of: climate (including water and temperature effects), and macro- and microorganisms, conditioned by relief, acting on parent material over a period of time. A product-soil differs from the material from which it is derived in many physical, chemical, biological, and morphological properties and characteristics.*

Soil plays a critical role in the break down, movement and toxicity of a contaminant. Heavy metals, organic contaminants, and virtually every chemical constituent is affected by the soil it must move through. In the case of pesticides, a unique organic chemical recognized for its toxicity and for its ability to achieve a specific societal function, soils play a critical role in determining whether or not contamination has occurred. If a pesticide remains within the root zone, it is within its area of intended use and therefore not a contaminant. If the pesticide migrates below this zone or is carried either attached to a soil particle or in solution, it is considered a contaminant. While pesticides are unique in that they are specifically applied in the environment and therefore a potential non-point source contaminant, the principles of determining whether or not any contaminant could potentially migrate beyond the immediate site are the same.

Soils provide the first defense to protecting groundwater from contamination. The composition or parent material; pedologic manner in which a given soil developed; the location of the soil on the landscape; and the organic matter that contributes to the fertility of the soil all impact the risk a properly applied pesticide poses to groundwater resources. Three factors directly influence the risk posed by a specific soil type. These factors are: the potential for a soil to facilitate the leaching of a pesticide through a soil, the potential for a soil type to facilitate a pesticide running-off of a given soil, and the potential of a soil type to leach nitrates.

A number of soil properties have been used to assess risk associated with the movement of pesticides. The key soil factors identified to assess pesticide migration risk are (1) surface horizon thickness, (2) organic matter content of the surface horizon, (3) surface texture, (4) subsurface texture, and (5) hydrologic soil group. (Goss, D. & Wauchope, R. D., 1990). These factors were used to develop a pesticide screening. The primary goal of the screening process is to determine the capacity of a soil to retain a pesticide at the point of application, regardless of management or climatic inputs. Soil loss potential can be thought of as potential to leach into the ground or potential to migrate along the surface. Each soil has been classified and assessed based upon its hydrologic group, the quantity of organic matter in the first horizon and its propensity to erode or K-Factor. The soil erodibility factor K represents both susceptibility of soil to erosion and the rate of runoff, as measured under the standard unit plot condition. Algorithms using these soil properties were developed to group soil series into three or four loss potentials for the three categories of loss (leaching, absorbed run-off and solution run-off). A series of pesticide factors were then used to determine screening rankings for pesticide loss. The pesticides parameters chosen were solubility, soil half-life, and the organic carbon partitioning coefficient (K_{oc}). The values for half-life were 1, 2, 4 and 40 days. The

solubility values were 0.1, 1, 10, 1,000, 10,000, and 100,000 ppm. The K_{oc} was 100, 300, 500, 700, 10,000, and 100,000 ml/g. The pesticide was applied to the surface of a bare soil at a rate of 4 kg/ha. A screening system was then developed to rank the potential for a pesticide to migrate beyond the soil application point.

The NRCS has mapped the soils in each county and is finishing a comprehensive soil survey of the entire Reservation. Soils have been mapped using aerial photography and ground checking. Through work by the National Soil Survey Center, models have been developed to identify the vulnerability of a soil to pesticide leaching, and pesticide run-off, both in solution and adsorbed to eroding materials.

The U. S. D. A. Natural Resources Conservation Service has characterized the soils found on the Reservation as having a severe, moderate or low potential to for pesticide loss due to leaching or run-off. The NRCS has identified soils that are either prone to flooding or are characterized by a shallow depth to ground water. Soils with a severe rating pose a “red flag” to the NRCS and are a critical component of the Groundwater and Pesticides Risk map. Areas containing a moderate risk to leaching or run-off remain a concern, but may not require the same level of protection as areas posing a severe risk of pesticide contamination. Either a severe or moderate rating does not preclude the use of any pesticide. The presence of such a soil identifies the need to (1) provide special care in the application and handling of all pesticides, and (2) may necessitate specific prevention.

Pesticide loss potential is an interpretation developed by the Natural Resources Conservation Service (USDA, NRCS, National Soil Survey Handbook) to use in evaluating and determining the potential for pesticides to be transported by percolating water below the plant root zone. Pesticides in ground-water solution are leached from the soil surface layer and transported vertically and horizontally through the soil and vadose zone by percolating water. The Soil Leaching Loss Rating (SLLR) is a value derived from the soil algorithm developed by the GLEAMS model to rank various soil and pesticide properties (Goss et. Al., 1988). Precipitation, either as rain, sleet, or snow, and irrigation are the major sources of soil moisture available for leaching or causing run-off of a pesticide through the soil and the vadose zone. Irrigation increases the potential for a pesticide or nitrate to leach or run-off raising the classification to the next higher ranking. Soil properties and qualities considered in assigning values are those that affect soil attenuation capacity, water infiltration, and soil permeability.

The Soil Leaching Loss Rating (SLLR) of soil represents attenuation capacity. The infiltration rate is interpreted from slope and soil hydrologic group. Soils groups are identified based upon soil texture, permeability, restrictive layers, depth, and shrink-swell potential. Soil permeability is a function of soil structure, particle-size distribution, bulk density, presence of a restricting layer, and depth to that restricting layer. Bedrock permeability is related to the type, size, extent, and interconnection of fractures and bedding planes. The pesticide loss potential from leaching is based on the potential for soils to retain pesticides within the boundaries of the root zone. It is not directed toward any particular pesticide or family of pesticides. The NRCS has developed ratings for individual pesticides that can be combined with specific soils to refine vulnerability

evaluations to assist in conservation planning. This assessment does not consider any specific pesticide, but rather looks at soil properties.

WIN-PST

The SLLR soil pesticide screening tool has since been refined beyond this initial research into a national soil/pesticide screening tool known as WIN-PST. This windows based tool is readily available on the internet at

<http://www.wcc.nrcs.usda.gov/water/quality/common/pestmgt/winpst.htm>

WIN-PST is a pesticide environmental risk screening tool that NRCS field office conservationists, extension agents, crop consultants, pesticide dealers and producers can use to evaluate the potential for pesticides to move with water and eroded soil/organic matter and affect non-target organisms. The USDA-NRCS National Water and Climate Center developed the screening process. Access to this easy-to-use tool allows one to consider environmental risk when making recommendations concerning the use of pesticides. These types of recommendations were previously based only on efficacy and economics. WIN-PST goes beyond previous NRCS screening tools to consider the impact of water table depth, irrigation, residue management and pesticide application area, method and rate class (Standard, Low, Ultralow). WIN-PST users can specify pesticides by product name or active ingredient. Long-term human and fish toxicity data and ratings are also included in WIN-PST. These toxicity ratings can be combined with the off-site movement potential ratings to provide an overall rating of the potential risks from pesticide movement below the root zone and past the edge of the field.

WINPST as used in this vulnerability assessment is a factor in an overall assessment of the risk of a potential contaminant to migrate and potentially impact ground or surface water. While it is recommended that the Tribe and its enterprises utilize WinPST in making future pesticide use decisions, the tool is used in the plan to prioritize and guide ground water management in order to prevent ground water contamination by any potential toxic pollution. The tool is most useful in looking at potential organic pollutants but can also provide guidance to other types of contamination threat since the soil properties used in this assessment will also control the rate and movement of these other types of environmental releases.

This particular WIN-PST soil screening is limited to pesticides. Using this tool, the potential for a pesticide to migrate either leaching or in run-off provides a reasonable surrogate for the movement of any organic contaminant since all organic constituents exhibit similar properties. At the same time, it is critical to remember that while extrapolation to leaching and run-off potential is justified, any specific assignment of risk needs to consider the specific pesticide or organic contaminant.

The purpose of the vulnerability assessment is to guide ground water policy development, response to detections, monitoring and prevention measures to protect the Tribe's ground water resources. The assessment relies upon consideration of risk looking at a pesticide that has a known propensity to leach and to migrate. Atrazine has been

signaled out by the U. S. Environmental Protection Agency for special monitoring due to concern over its ability to contaminate surface and ground water (EPA's "Interim Reregistration Eligibility Decision" (IREDD,). Atrazine is also the most widely detected pesticide identified by the U. S. Geological service (See Figure V-X).

A key requirement of using the WINPST tool is that soils information must (1) be available and (2) ideally be in a form that can be accessed in a map format that can be incorporated into the Environmental Program Department's geographic information system. The NRCS mapping of soils on the Ute Mountain Ute Reservation is currently being updated and digitized for ease of use by the Tribe. Future WINPEST assessments will include use of these maps as they become available.

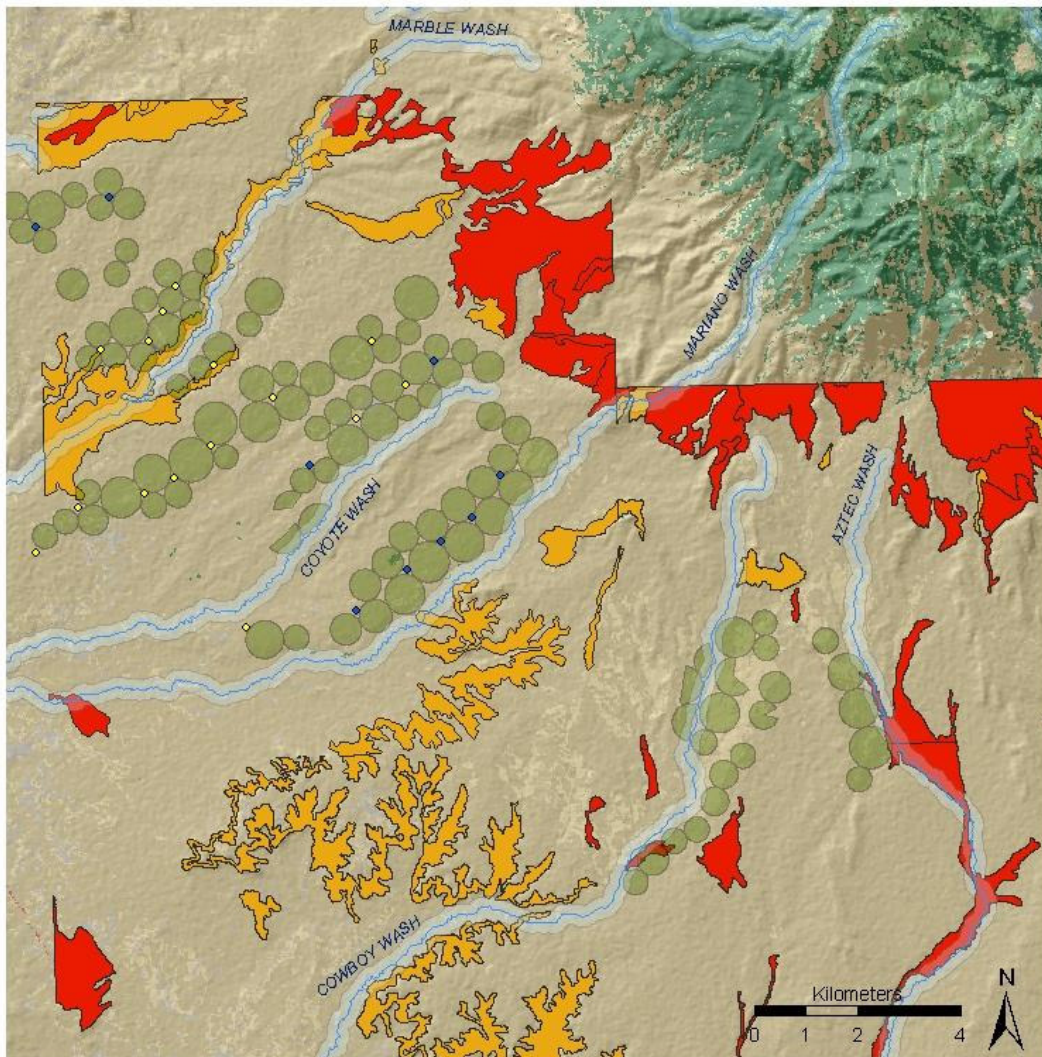
While atrazine is used on the Reservation, it was not chosen because it was expected to pose a problem. The distance to surface water, the overlying Mancos shale separating the deep aquifer from the surface and the low precipitation each reduce any risk of contamination. Rather, it was chosen as an indicator of high potential for migration so that a "worst-case" vulnerability assessment could be identified. The goal of the plan is to prevent contamination. If a problem is found to exist despite preventative measures, then measures will be taken to address them.

When combined with aquifer and land use information, WIN-PST provides a means for the Environmental Programs Department to prioritize and directs its efforts as it works to protect the Tribe's ground water resources.

Soils are classified into three classifications: leaching potential, solution run-off and attached particle run-off. Each of these contaminant mechanisms is broken down into high, moderate or low potential. Utilizing the Ute Mountain Ute soil survey, WINPST can be used to classify soils.

The NRCS has recently updated the soils survey for the area surrounding Farm and Ranch. Soils have been evaluated for leaching and run-off. As additional areas become available for analysis as NRCS completes its work, WINPST can be used to evaluate pesticide uses on different areas of the Tribe's land. Currently, Farm and Ranch uses the bulk of the pesticides on the Reservation so beginning a detailed assessment looking at this area is appropriate. The two key transport mechanisms considered by WINPST are leaching and run-off. The analysis using atrazine is shown below.

Interaction Leaching Hazard Potential of Soils for Humans and Fish



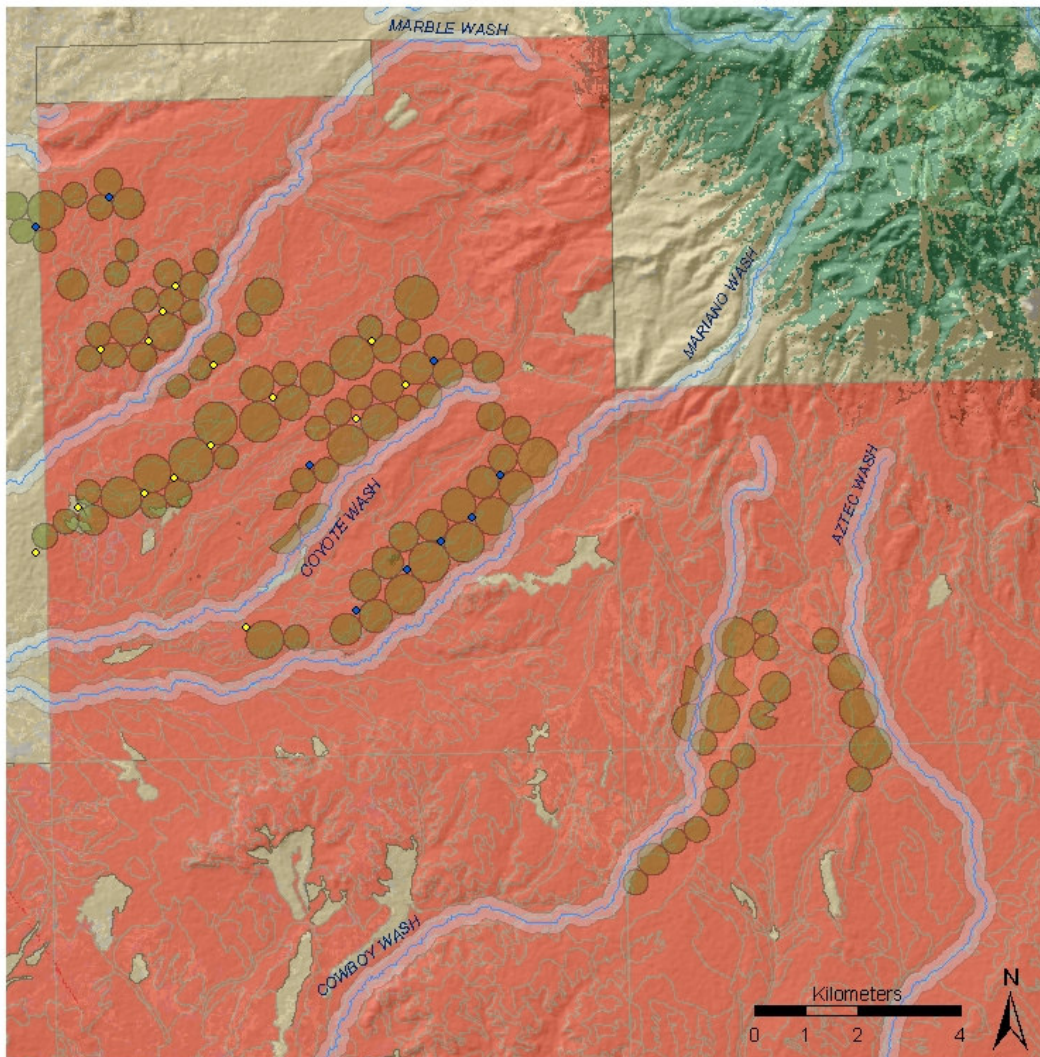
The orange and red areas of the map above represent, respectively, the areas of intermediate and high hazard potential of leaching of the pesticide Atrazine. The results were determined using the NRCS WIN-PST Utility. Monitoring emphasis would be placed on hazard areas that lie adjacent to or underneath the features identified by the legend, as those areas would be most susceptible to contamination and dispersal of the pesticide

Legend

- ◆ ground_water
- ◇ observation_wells
- allpivs
- streams_buffer_200m

Figure VI-4
WIN-PST for Atrazine—Leaching Potential
At Ute Mountain Farm and Ranch

Interaction Solution Runoff Hazard Potential of Soils for Humans and Fish



The red areas of the map above represent the areas and high hazard potential of solution runoff of the pesticide Atrazine. The results were determined using the NRCS WIN-PST Utility. Monitoring emphasis would be placed on hazard areas that lie adjacent to or underneath the features identified by the legend, as those areas would be most susceptible to contamination and dispersal of the pesticide



Figure VI-5
WIN-PST for Atrazine—runoff potential
At Ute Mountain Farm and Ranch

The two WIN-PST models above indicate that run-off potential poses a high risk of contamination from the pesticide atrazine, while leaching potential is intermediate on only a few fields for atrazine. While the run-off risk on its face is significant, it only provides part of the vulnerability question. The entire area is high desert. Understanding water resources is critical in order to identify relative natural resource risk. Combining aquifer vulnerability with soils vulnerability, natural risk vulnerability can be identified.

Ranking Vulnerability

Identifying the *vulnerability* of areas to potential contamination is a key part of this plan’s groundwater protection strategy. The vulnerability of an area to pesticide contamination requires assessment of the natural conditions that exist in that area and the ability of a given pesticide or other toxic substance to migrate through the natural setting. Natural factors affecting vulnerability are the type of aquifer, geology of the area, soils, and proximity to surface waters.

The vulnerability ranking factors are listed on the tables below and classified based upon geology, soils, water bodies, and land use (irrigated or non-irrigated). The combination of factors determines the ranking. The vulnerability assessment considers pesticide contamination from leaching, pesticide contamination associated with erosion and nitrate leaching. Each table defines a classification screen. The combination of all of the factors in a given table determines its ranking. Less soluble pesticides and more persistent pesticides are more likely to be found in sediments and aqua biota (See Table VI-8).

Table VI-2
Natural Risk Vulnerability
Aquifer Vulnerability

	High	Moderate	Low
<u>Soil Property (SLLR-WINPST)</u>			
<u>Leaching potential</u>			
High	NR1	NR2	
Medium	NR1	NR3	NR3
Low	NR2	NR3	NR3
Ultra-low	NR3	NR3	NR3
<u>Solution run-off</u>			
High	NR1	NR2	NR3
Medium	NR1	NR3	NR3
Low	NR1	NR3	NR3
Ultra-low	NR3	NR3	NR3
<u>Attached run-off</u>			
High	NR1	NR2	NR3
Medium	NR1	NR3	NR3
Low	NR1	NR3	NR3
Ultra-low	NR3	NR3	NR3

NR1= High Natural Risk
NR2= Moderate Natural Risk
NR3= Low Natural Risk

Human Value/Land Use Sensitivity

The Tribe's use of the land directly impacts the vulnerability and in turn the level of care required to prevent ground water contamination. The Sleeping Ute Mountains, for example, are culturally very important to the Tribe. The area is closed to non-tribal members, except with special permission. The area is a traditional location, and in order to develop prevention measures, provides a focus for ground water monitoring and location for tribal ceremonies such as the Sun Dance. The area has special significance and importance to the Tribe. The area is a high sensitivity area. Similarly, sole source aquifers for public water supplies are considered high sensitivity areas. The White Mesa public water supply and its sole source aquifer is a high sensitivity area.

The Tribal Park has been set aside in recognition of the cultural value of the area. While other land uses and activities are allowed within the park area, the artifacts left by ancient peoples are important to the Tribe. Similarly, irrigated agricultural areas have a special sensitivity. These areas combine the application of pesticides with the potential of a water source capable of allowing the pesticide to migrate beyond its intended target. Other areas of potential contamination are along the major transportation corridors going through the Reservation. These areas are exposed to a higher potential of an accidental spill than closed areas within the Reservation. Areas of activity oil and gas production have the potential of releasing a toxic chemical that could adversely impact an aquifer. These areas have a moderate sensitivity.

The communities of Towaoc and around the Casino, Travel Center, and Hotel, since pesticide use is low and presence of toxic or hazardous substance being released is low, are assigned a moderate sensitivity. Similarly, rangelands on the Reservation are assigned a low sensitivity.

A second and just as important a factor in the protection plan is the *susceptibility* of a given area to contamination. Susceptibility is more directly linked to how the resource is used. The use of irrigation is critical to much of the agriculture on the Reservation, but irrigation raises the potential for a pesticide to migrate from its intended area of use and contaminate ground or surface water. The identification of susceptible areas, since they depend upon land use and development, are easy to describe. The understanding of these natural resources requires an understanding of a combination of both a general understanding of site conditions and may require site specific analysis to assure environmentally protective control measures are adopted. Areas that have the most use, such as roadways, irrigated lands, and lands with oil and gas production are more susceptible to pollution because of the level of activity that poses a risk.

Ground Water Vulnerability

Combining an area's natural risk to contamination with an area's susceptibility (based on human value and land use) provides a ranking of the various areas of the Reservation for purposes of focusing monitoring, targeting prevention measures and implementing a response to detection strategy. Table VI-3 below relates the natural risk from Table VI-2 to the susceptibility and sensitivity described above to give an overall ground water vulnerability ranking method for planning and assessment purposes.

**Table VI-3 Land-Use & Natural Risk
In Ground Water Vulnerability**

	NR1	NR2	NR3
Cultural	HV	HV	MV
Irrigated AG	HV	MV	MV
Urban	HV	MV	LV
Highways	HV	MV	LV
Oil/gas	HV	MV	LV
Ag	MV	LV	LV
Range	LV	LV	LV

HV= Highly Vulnerability

MV= Moderately Vulnerability

LV= Low Vulnerability

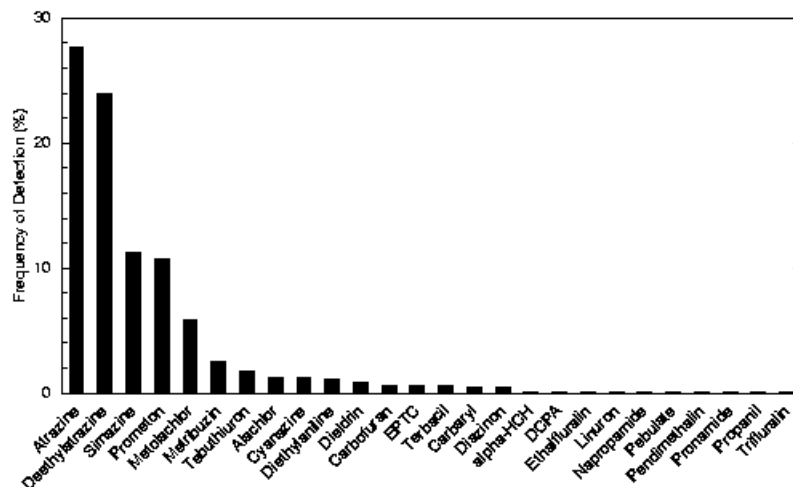
Pesticide Usage and the proposed PMP Rule

The use and types of pesticides used in an area has a direct relationship to the potential for a given pesticide to contaminate ground or surface water. Once the natural capability of an area is identified, the next step is to identify the pesticides being used so the potential avenues and level of risk of contamination can be determined.

A range of pesticides have been detected in ground water nationwide (See Figure VI-6). Most of these pesticides are not used on the Ute Mountain Ute Reservation or in Colorado or Utah. Depending upon the chemical characteristics of the pesticide and how it is applied the pesticide may have a greater or lesser potential to contaminate ground or surface water. Certain pesticides are highly mobile and soluble. These types of pesticides have a greater propensity to migrate to ground water and, if the ground water is readily connected to surface water, to contaminate it. A proposed national rule would limit availability of certain pesticides if an EPA-approved pesticide management plan (PMP) is not adopted by a commercial applicator. The five pesticides covered by the PMP rule: Atrazine, Cyanazine, Simazine, Alachlor and Metolachlor are examples of these types of pesticides.

**Figure VI-6
Pesticides Detected in Ground Water Nationally**

Source: USGS Occurrence of Pesticides in Shallow Ground Water of the United States:
Initial Results from the National Water-Quality Assessment Program, Dana W. Kolpin, Jack E. Barbash, and Robert J. Gilliom
Adapted from original article published in the Environmental Science & Technology, v 32, 1998.



The Ute Mountain Ute Tribe and the EPA require certified pesticide users and dealers to maintain records of the pesticides, but neither requires reporting. The National Agriculture Statistics Service collects data on pesticide use by county. These data provide a good approximation of the types of pesticides used on crops in the area as well as the overall volume of pesticides uses.

**Table VI-4
Historically used (pre-1995) pesticides predicted to have
potential to accumulate in sediment and aquatic biota
nationally**

Source: USGS Pesticides in Stream Sediment & Biota Fact Sheet 092-00 (8-24-00)
UMU Tribe, EPA Time-Critical Removal Action Report, 1996 and 2000

Insecticides	Herbicides	Fungicides or wood preservatives
Toxaphene 4-4' DDT 4-4' DDE Dieldrin Heptachlor epoxide Gamma-BHC	2,4-D 2,4,5-T 2,4,5-TP(Silvex)	None known to have been used

(Lindane) Endosulfan I Endrin Endrin (Aldehyde) Diazanon		
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Selection criteria: (1) water solubility < 1.0 milligram per liter (mg/L) or $\log K_{OW} > 3$, and (2) soil half-life >30 days.

K_{OW} = n-octanol-water partition coefficient

2 Detected in one or more past studies of stream sediment or biota.

3 Organochlorine insecticide.

4 Analyzed in >1,000 total samples by past studies, but not detected.

The requirement of the Pesticide Management Plan rule is to prevent contamination of ground water. Minor detections that have been identified in monitoring wells below agricultural fields on the Ute Mountain Ute Reservation would be applicable to the proposed PMP rule. Because there are no domestic water supplies that could be affected by these waters, the consequences of the detections are minimal to human health. Whereas no detection has occurred off the agricultural project, the affects to wildlife would also be negligible. It is expected that additional water management approaches such as changes in rate and timing of applications and water reuse will be sufficient to mitigate these detections. The Ground Water Protection Plan and its Pesticide Management Plan component for the Ute Mountain Ute Reservation considers relative risk to human health and environment in determining actions to be taken as a result of detections of pesticides and toxic substances.

VII. Preventative Actions

The achievement of fishable, swimmable surface waters; the avoidance of toxic pollutants in toxic amounts; and attainment of the anti-degradation standard; as well as maximum contaminant or health advisory levels (reference levels) provides the basis for decisions regarding preventative actions. A decision as to what measures or type of response is needed to address the detection of a pesticide in ground or surface water depends upon the use of health advisories; Safe Drinking Water Act Maximum Contaminant Levels, and Clean Water Act Water Quality Criteria. In determining how to respond to a release, the Environmental Programs Department will seek public involvement and technical assistance to establish the level of protection. In no case will the level of response be less than the federal protective standard.

The Ground Water Protection Plan is based upon a use of both general and site-specific conditions. In certain cases such as surface waters, riparian protection standards can assure protection. In other cases such as vulnerable ground water aquifers, the actual location of the soil and relationship to other factors will determine the level and types of restrictions that are necessary. Monitoring and the use of adaptive management strategies are an important component of plan implementation. As new information becomes available or effective protection measures become demonstrated, the plan will be

modified and changed, provided that the Environmental Programs Department will take a conservative approach towards resource protection.

The plan to protect ground water from contamination depends upon a combination of four strategies: education, changes in uses, prohibitions of uses in certain areas, and bans. The Environmental Programs Department, in consultation with the Tribal Council, will use a combination of approaches to protect ground water based upon natural and man-caused risk posed by the pesticide or other contaminant. While this plan is directed primarily at addressing contamination of ground water from non-point source pollution, the basic framework will apply to point-source pollution as well. While the emphasis is on pesticide contamination it will also be used for other point and non-point sources of pollutants and contaminants. Ground protection is part of a comprehensive resource protection and management program being implemented by the Environmental Programs Department.

Pesticides play an important role in current agriculture practices. Managing the use of pesticides, assuring areas more vulnerable to contamination by pesticides are protected, utilizing safer pesticides, incorporating integrated pesticide management and sustainable agricultural, range and land management practices that do not require the use of pesticides, together form the long-term strategy of the Tribe to protect its ground water.

The plan relies upon education, incentives and regulatory approaches to protect the ground water resources on the reservation. Much of the ground water is connected to shallow surface water bodies. Environmental Programs Department's Water Pollution Prevention Program is responsible for assuring the protection of all of the ground water resources on the reservation. The two factors above influence the targeting of the Water Pollution Prevention Program effort. First, the natural risk vulnerability of an area to contamination is used to identify those areas where the implementation of additional measures are thought to provide protection that extends to other less vulnerable areas and in turn provides protection for ground water resources on the reservation. The susceptibility conditions that the Water Pollution Prevention Program considers in protecting ground water are (1) how human activities affect the potential for a pesticide application or use of toxic substances to adversely impact ground water and (2) the potential threat to public health and the environment that the use presents due to factors such as public water supply systems and downgradient springs. Individually, vulnerability and susceptibility assessments provide guidance in targeting education, monitoring, and regulation. The intent of focusing on susceptible and vulnerable areas is to protect those resource factors that provide the basis to protect all of the ground water resources on the Reservation. This approach recognizes that limited funding and staff resources require targeting of the effort to these areas first. As monitoring continues, more detailed resource assessments and a better understanding is gained of how these contaminants migrate through the ground water, and the types of preventative measures are likely to change. These changes could include requirements for more stringent controls, additional areas for cancellation, or increased areas of permitted usage due to effectiveness of control measures.

The development of measures to protect ground water from pesticide and toxic substance contamination will be coordinated with other environmental protection programs of the Tribe. The Environmental Programs Department currently includes assessment and regulatory programs to protect surface water. The ground water program is fully integrated with this program. The Environmental Programs Department will rely extensively upon education and voluntary measures to protect ground water. All protection efforts will be developed cooperatively with Tribal stakeholders.

Depending upon the vulnerability of the area different types of control measures may be required. The least restrictive ground water protection measures will be used for areas where few natural resource constraints exist. Voluntary BMPs will be encouraged for all areas. In addition, a point source contamination event on the reservation may trigger special restrictions on the general application on either a temporary or permanent basis.

Recognizing the increased potential for contamination posed through use of irrigation, the use of voluntary BMPs will be incorporated into farm management plans. The voluntary BMPs will be based upon a combination of factors. The Environmental Programs Department may adopt reservation-wide BMPs after notice of public hearing and adoption by resolution of the Tribal Council. These BMPs may upon measures developed by EPA, the Cooperative Extension Service, the Natural Resources Conservation Service, or the results of research investigations. These BMPs may address practices to protect surface water in addition to ground water.

Public service announcements, community meetings and meetings with agricultural producers, cattlemen, oil/gas production workers, and other user groups are educational voluntary BMP's that will be used to enhance education and outreach.

VIII. Response to Detection of Pesticides

Approach to Detection

The detection of a pesticide in ground water, or hydrologically connected surface water is a cause for concern. The Tribe relies upon a series of authorities in responding to pesticide contamination. Further, The Ute Mountain Ute Tribe assumes the primary responsibility for responding to contamination. The Ute Mountain Ute Tribe's Constitution provides authority for the Tribe to adopt and enforce resolutions, ordinances and codes to protect land and water resources on the Reservation.

The approach to responding to detections of pesticides and toxic substances in groundwater is based on: 1) comparison of detected amounts to a reference point (or concentration) of that substance; 2) a response action based on the percentage of the reference amount detected; 3) enforcement mechanisms when necessary.

Reference Points for Pesticides in Ground Water

The ground water resources on the Ute Mountain Ute Reservation are to be protected from contamination by pesticides to the maximum extent possible. In no case shall a ground water resource be allowed to have concentrations of pesticides exceeding EPA reference points. These maximums are the “Maximum Contaminant Levels” (MCL) under the Safe Drinking Water Act, as amended, “Health Advisory” levels established as the federal enforcement standards in EPA Drinking Water Regulations and Health Advisories (EPA 822-R-94-001), water quality criteria and standards under Clean Water Act (where ground water is hydrologically connected to surface water), or other appropriate health-based levels derived from the health and environmental effects literature.

Response Action Levels

The detection of a pesticide in ground water anywhere on the Reservation will trigger additional investigations. These investigations will be undertaken as soon as possible in order to determine if the pesticide concentration may reach or exceed a reference point. A verified detection will consist of an initial sample where a pesticide is found at a concentration above the detection limit using the EPA Method of Analysis. The EPA analyses shall include analytical methods for pesticides developed for the Safe Drinking Water Act (SDWA) regulations (500-series methods), National Pesticide Survey (Methods 1-7), the Clean Water Act wastewater regulations (600-series methods), the Resource Conservation and Recovery Act hazardous waste regulations (800-series methods), and the National Sewage Sludge Survey (Method 1618). In addition, immunoassay techniques may be used to identify presence or absence and delineate the extent of any contamination.

Certain pesticides with a reference point below 10 parts per billion (ppb) pose unique problems in considering response actions. The statistically sound detection limit of laboratory analysis for many of these pesticides is often near the established reference point. Small changes in concentration (as small as 1 ppb) can mean the difference between detection and an exceedance of the reference point. In cases involving these types of pesticides, response actions will be elevated to the highest level once a second sample confirms the presence of the pesticide.

A sample may come from any series of sources and trigger action by the Environmental Programs Department. Sources of potential information include: public water supply systems, the Indian Health Service, the Water Pollution Prevention Program monitoring, an investigation of an illegal application, a spill or accidental release. For purposes of this plan any detection is considered a high priority.

The goal of the Ground Water Protection Plan is to protect, maintain and restore ground water resources in a manner that is least disruptive to the agricultural economy on the Reservation. Any time the detection of a pesticide is identified in a ground water

sample a second sample is collected within as short a time as possible. The second sample will guide the response. Four levels of action will be undertaken based upon the concentration of the pesticide below the reference point (See Table VIII-1). Reaching or exceeding the appropriate reference point is considered a failure of the prevention goals of the Tribe.

Once a pesticide is detected, different levels of response will be triggered depending upon the percentage of pesticide concentration below the reference point for normal legal pesticide usage, and the stratigraphy and hydrology of the affected aquifer. A site investigation will be made of any detection even if a second sample does not indicate a continuing problem. This could include an inspection of commercial or private applicators, or identification of the area's vulnerability. A report will be prepared and information maintained by the Environmental Programs Department. In the case of any accidental or illegal use, or illegal storage or disposal of a pesticide, the Tribe may require remediation and take an enforcement action regardless of the level of pesticide concentration above detection in ground water, surface water or soil.

Whenever a pesticide is detected in ground or surface water Tribal departments or enterprises will be contacted. At a level greater than 50% of the reference point, The Tribal Council will be notified of the pesticide detection. If the second sample indicates that the pesticide exceeds a level greater than 90% of the concentration of the reference point, the Environmental Programs Department will conduct a public meeting within 30 days. A local committee of affected individuals will be formed to address the contamination. For detections above this 90% of reference point level, BACT will be implemented. Detection below this level shall continue to rely upon voluntary BMPs. A response plan shall be developed for all detection above the 50% of reference point level. This plan may simply require additional monitoring. In the case of levels greater than the 50% reference concentration, remediation shall be based upon a site-specific assessment. When the level of pesticide exceeds the 90% of reference level, remediation is mandatory except where a determination is made that natural processes will mitigate adverse ground or surface water impacts and the Tribal Council determines risks to the environment or public health are insignificant.

If a pesticide is detected in ground water at a concentration at least 10% of the reference point, but less than 50% of the reference point, voluntary BMPs will be identified. All pesticide users will be encouraged to use voluntary "best management practices" (BMPs).

Table VIII-1
Pesticide Detection Action Matrix

Response Action	Pesticide Concentration as % MCL or HA			
	<10	>10<50	>50<90	>90
Notify Users	Yes	Yes	Yes	Yes
Notify Company	NO	NO	Yes	Yes
Notify Agencies	No	NO	NO	Yes
Education/Outreach	NO	NO	NO	Yes
Site Investigation	Yes	Yes	Yes	Yes
Voluntary BMPs	NO	Yes	Yes	Yes
BACT	No	No	NO	Yes
Response Plan	No	Site sp	Yes	Yes
Remediation	No	NO	Site Specific	Yes
Site Specific label	No	NO	Site Specific	Yes
Cancel label	NO	Site sp	Site sp	Yes

If the pesticide detection level continues to increase or it approaches 90% of the reference point, and use is planned in the immediate area (within 1 mile) or within the same vulnerability type, the user will be required to implement “Best Available Control Technology” (BACT) through development of a cooperative management plan. The user, the commercial dealer and the registrant, in cooperation with the Environmental Programs Department staff, will identify a plan to manage the pesticide in a manner that reduces the potential for ground water contamination. This plan may include changes in application rates, changes in application timing, changes in the manner in which the pesticide is applied or other measures to assure the risk of ground water or connected surface water is reduced. The Colorado State University Cooperative Extension Service and the U.S.D.A. Natural Resources Conservation Service may be asked to assist the Tribe with the development of this plan. If the level of contamination is not reduced within the next growing season through implementation of these measures, the use of the pesticide may be cancelled.

The Environmental Programs Department with concurrence of the Tribal Council may, based upon vulnerability or susceptibility, cancel the use of any PMP-rule regulated pesticide detected in ground water as part of the plan for a specific area.

For contracted commercial pesticide applicators, the Tribe may require the commercial applicator or the farmer using the chemical to reimburse the Tribe for all remediation costs and replacement water supplies including implementation of any agreed to measures that allow for the continued use of the pesticide. These liability requirements will be applied in addition to any existing authorities the Tribe, the U. S. EPA, or the Secretary of Interior may have as trustees on behalf of the Tribe.

IX. Enforcement Mechanisms

The Environmental Programs Department recognizes the need to include enforcement as a component of the pesticide management program on the Reservation. The Ground Water Protection Plan, as a part of this broader effort will incorporate an enforcement component into the overall plan implementation. The primary authority to enforce the proposed PMP rule will be through the Ground Water Protection Plan.

The Ute Mountain Ute Tribal Council, with the assistance and expertise of its Environmental Programs Department staff, is responsible for implementing the Tribe's environmental laws. When a pesticide cooperative agreement is established for a chemical and a pesticide-specific (PMP) code is adopted, the Environmental Programs Department, with the approval of the Tribal Council, is authorized to deny, suspend, revoke or modify a pesticide certification. The Tribal Council is authorized to assess penalties to recover the costs of any violation of the pesticide code.

The Tribe cooperates and works with U. S. EPA regarding violations of FIFRA.

When a violation is identified, the Environmental Programs Department relies upon the EPA for technical support. Specific assistance may also be sought from the USGS and the Natural Resources Conservation Service to address special technical needs.

The purpose of the enforcement procedures is to ensure that pesticide applicators and users comply with all aspects of the Plan and that ground water on the Ute Mountain Ute Reservation is protected. While pesticide users often look at enforcement solely as a means to assure compliance, the Environmental Programs Department recognizes the importance enforcement plays in allowing for continual oversight and fine-tuning of the plan. This role is extremely important in areas identified as vulnerable to pesticide contamination since protection measures may require changes as new information becomes available.

X. Public Awareness and Participation

Generic Tribal Management Plan – Ute Mountain Tribe's Ground Water Protection Plan

The Environmental Programs Department plans to announce the availability of this Ground Water Protection Plan through notice to the Tribal Council, public service announcements on local radio stations, and posting an announcement of the availability of the Plan at the tribal offices. A 30-day comment period will then be provided for the public and interested agencies prior to adoption by the Tribe. Copies of the Plan will be

made available to any individuals who request them.

Pesticide-Specific Tribal Management Plans—Pesticide Management Plans (PMP's)

The Environmental Programs Department will announce its intention to develop a tribal pesticide management plan (PMP) for any pesticide identified by U. S. EPA as requiring a pesticide management plan within 90 days of an announcement in the Federal register of the EPA requirement for the development of a plan. The Tribal Chairman will authorize the implementation of a pesticide-specific plan following the EPA announcement and Tribal determination that the product is needed. In the case of any pesticide where the Environmental Programs Department determines the economic use of the pesticide is not significant or the environmental risks posed by the pesticide pose an unreasonable risk to public health and the environment, a recommendation may be made to the Tribal Chairman canceling the label for the pesticide on the Reservation. If the Tribal Chairman fails to approve a specific management plan or cancel use of the pesticide, the cancellation shall be in accordance with the federal regulation.

If the Tribal Chairman approves a pesticide-specific management plan, the Environmental Programs Department will announce the availability of the plan. It will request public comments through announcements through the local tribal media. A public information meeting will be held in Towoac. A period of 60 days will be provided to allow public feedback before any regulations provided for in the plan are implemented. Comments will be reviewed by the Environmental Programs Department and regulation will be proposed to the Tribal Chairman for implementing the plan. Copies of the draft and final plans shall be maintained at the Environmental Programs Department in Towoac. Copies of the final pesticide-specific management plan (PMP) will be made available to any individual who requests them.

Public Involvement in Responses to Detection

The detection of a pesticide in ground water above 10% of the response level on any area of the Reservation shall be announced through contacting the users in close proximity to the well and others in the immediate vicinity who may have an interest in the well or other wells in the immediate area. Each individual who obtains drinking water from a well located in a contaminated ground water source will be contacted and advised of steps or precautions that should be taken.

A well owner where the pesticide contamination exceeds the Reference Points shall be contacted and advised to stop use of the water for domestic purposes. The Tribe shall assist in identifying an alternative source of water for domestic use. In the case of a public system, the Tribe will notify each water user as required by the Safe Drinking Water Act. The Tribe will make every attempt to find a temporary alternative water source until the contaminated source meets Safe Drinking Water Act standards.

The Environmental Programs Department will hold an informational meeting

concerning the results of a detection investigation involving contamination above 90% of the reference level and the development of proposed management plan or response changes identified to protect the ground water.

Closely related to informing the public is the process the Tribe will use to assure the broadest range of technical support in addressing problems associated with pesticide contamination of ground water. The annual meeting of the Ground Water Task Force will provide a forum to discuss current pesticide and ground water protection issues. When a pesticide in groundwater detection is identified, the task force members will be given notice. Depending upon the nature of the concern, individual task force members will be asked for assistance.

XI. Information Dissemination

The Environmental Programs Department will use a multi-faceted approach to disseminate information concerning the use of pesticides and other toxic substances that have the potential to contaminate ground water. Education and outreach is an ongoing part of the effort of the Environmental Programs Department. Inspections, training sessions, attendance at public meetings and the issuance of public information announcements are all part of an effort to bring greater awareness and sensitivity to the use and application of pesticides and other toxic substances on the Reservation. The implementation of the Ground Water Protection Plan is an expansion of that effort with the goal of providing additional protection for public health and the environment and maintaining a strong sustainable economy for the Tribe.

Each certified commercial pesticide applicator must attend a regional meeting on pesticides every two years. These meetings are currently held with the local extension agency offices. Private applicators must attend a meeting every five years. New certification training is conducted each year. Ground water protection strategy (including the Ute Mountain Ute Ground Water Protection Plan and updates to it), any pesticide-specific regulations, and any Tribal pesticide-specific management plans (PMP's) will be described at those meetings in Montezuma County.

The Environmental Programs Department pesticide staff will visit local commercial applicators to make them aware of the plan. Chemical companies may also be asked to assist in disseminating information.

Tribal public service announcements and interviews with the Tribal media will be used to reach out to people living on the Reservation. Meetings may be held with specific groups, if requested, to discuss the Ground Water Protection Plan. The Director of the Environmental Programs Department and/or the Water Quality Specialist will be available to discuss, educate and inform people of the need for and requirements of the Plan.

XII. Records and Reporting

The Environmental Programs Department will submit a biennial report to the EPA Region concerning all activities regarding the implementation of Ground Water Protection Plan. This biennial report will include, at a minimum, an assessment of Plan implementation and an assessment of the effectiveness of the Plan in protecting ground water. The report will provide information to assure that the management of any restricted pesticide or other toxic substance that is controlled through the Ground Water Protection Plan meets or exceeds all national standards. Each of the twelve components of the Ground Water Protection Plan will be assessed and modified, if necessary, to assure that the objectives of protecting ground water are achieved. Any ground water contamination, areas of special concern, or issues of public concern will be noted and described. The report will include projections of resources available or needed to continue implementation of the Plan. Any proposed modifications will be described. A summary of all inspections, enforcement activities and the results of those activities will be summarized and included in the report. The results of any response actions will be included. Federally-funded monitoring results and assessments of pesticide usage will be part of the report, as required by FIFRA or other federal laws.

The report will be provided to the Tribal Council for their information and a copy maintained in the Environmental Programs Department in Towoac.

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Appendix A

Glossary of Terms and Acronyms

- ACP Agricultural Conservation Program:** A U.S D. A. program to promote water quality oriented best management practices
- BMP Best Management Practice:** Management techniques that minimize impacts to a given resource, for the purposes of this report, BMP's would minimize negative impacts to ground and surface waters.
- Brushy Basin** A Cretaceous age geologic formation of gray, gray-green and purple shale providing a confining layer approximately 200-440 feet in thickness. The Brushy Basin member occurs below the "D aquifer" and the Burro Canyon formation. Ground water seeps from the contact between the Burro Canyon and Brushy Basin formations in San Juan County, Utah at various locations.
- Burro Canyon Formation** A Cretaceous age geologic formation of gray and brown sandstone and quartz approximately 50-180 feet in thickness containing the "D aquifer" ground water. The Burro Canyon Formation occurs above the Brushy Basin formation in San Juan County, Utah, and ground water seeps from various points at the contact between these two formations.
- Dakota Sandstone** A Cretaceous age geologic formation of yellow- brown sandstone and some quartz approximately 30-150 feet in thickness containing the "D aquifer" ground water. The Dakota sandstone occurs above the Burro Canyon formation in San Juan County, Utah. Many livestock wells on the Colorado and New Mexico portions of the Ute Mountain Ute Reservation are drilled into
- Entrada Sandstone** A Jurassic age geologic formation of white to gray-brown sandstone approximately 50-400 feet in thickness containing the "N aquifer" ground water. The White Mesa Community wells are drilled through this formation.
- FSA Farm Services Agency:** a federal agency that assists farmers with various programs and subsidies.
- FIFRA** The *Federal Insecticide, Rodenticide, and Fungicide Act*, a federal law authorizing the Environmental protection Agency to regulate the management of pesticides nationally.
- Food Security Act** of 1985, as amended 2002, an Act of Congress that directs the FSA.
- FWS U.S. Fish and Wildlife Service** The federal agency responsible for the protection of fish and wildlife, including Threatened and Endangered Species.
- GWPP Ground Water Protection Plan:** *This* plan for the protection of the Ute Mountain Ute Tribe's groundwater resources from toxic substances, including, but not limited to, pesticides
- Mancos Creek, Mancos River** These are two terms for the same water body. Traditionally, the water body has been referred to as a creek, but the Water Pollution Prevention Program defines it as a river or tribal water body.
- Navajo Sandstone** A Jurassic age geologic formation of yellow-brown sandstone approximately 300-800 feet thick containing the "N aquifer" ground water and occurring below the Entrada formation. The White Mesa Community wells are drilled into this formation.
- NEPA** The *National Environmental Policy Act* A federal law requiring federally funded projects to undergo an assessment of potential impacts to all resources as the result of that project, and to weigh various alternatives and the impact of each of those on the affected resources.
- Pesticide** An insecticide, herbicide, bacterocide, fungicide or rodenticide. A chemical substance that is used to eliminate the presence or inactivate or incapacitate a pest.
- PMP, Pesticide Management Plan or Pesticide-Specific Management Plan** A plan specifying a management strategy to minimize pollution from a specific pesticide, as required by the proposed federal law, or as a result of detection beyond an appropriate percentage of that pesticide's reference point. This plan would specify BMP's, BACTS's, monitoring requirements, target concentrations and/or other remedial actions necessary to ensure the minimization of pollution by the use of this specific chemical and those responsible for implementing each component of the PMP.

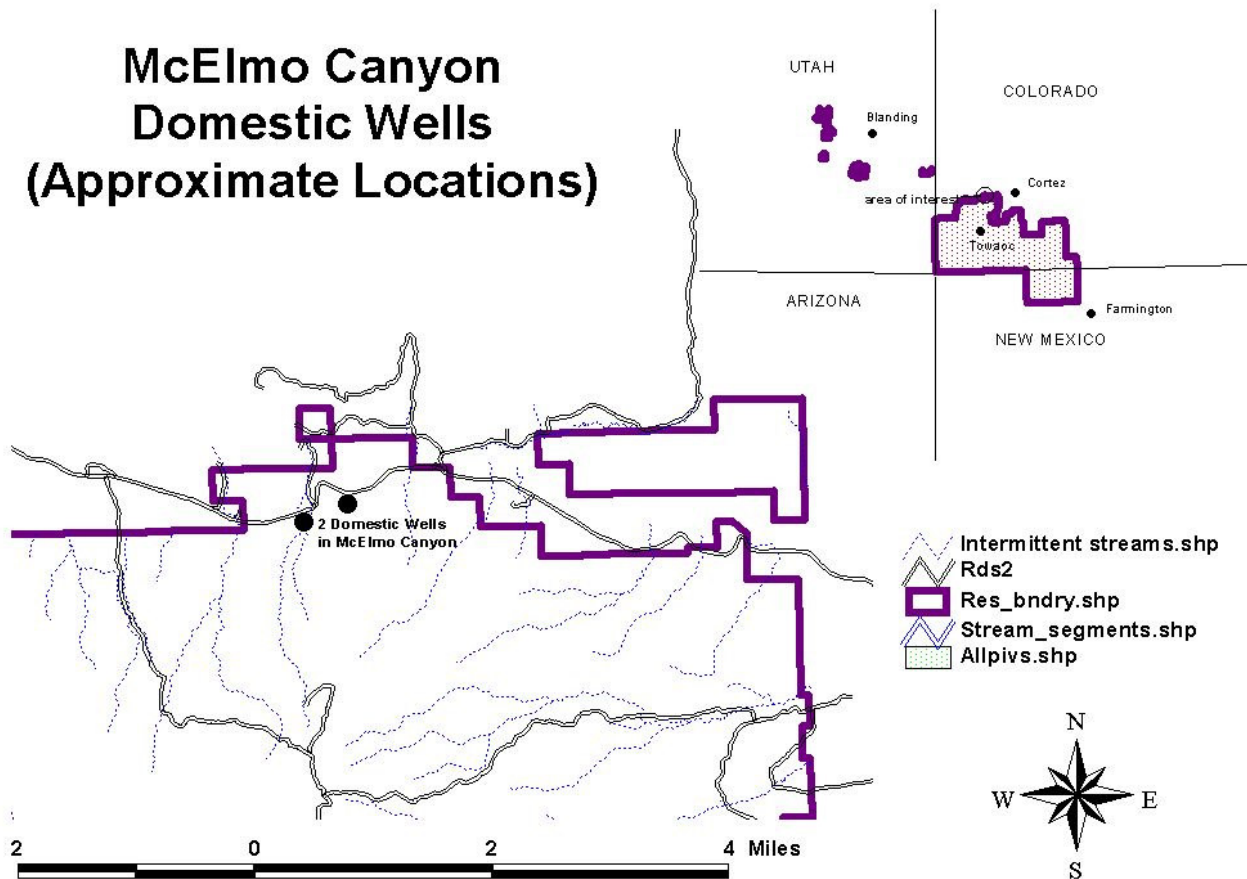
- PMP pesticide** A chemical specified by the relative PMP.
- PMP Rule** A federal rule, authorized by FIFRA, proposed by EPA to require the implementation of PMP's for 5 specific pesticides that have been detected nation-wide because of their persistence in the environment.
- QAPP** *Quality Assurance Project Plan*. A plan for ensuring that environmental data is collected at a specific standard of quality. A QAPP described sampling locations and quality requirements, program structure, personnel qualifications, etc. This is a prerequisite to spending EPA dollars on environmental monitoring.
- SOP** *Standard Operating Procedure(s)*. A guide for the exact way to perform certain actions. The Ute Mountain Tribe's Water Pollution Prevention Program has SOP's for the sampling and analysis of surface and ground water.
- SCS** Soil Conservation Service, a Division of the U.S. Dept. of Agriculture, now renamed the Natural Resources Conservation Service.
- SLLR** *Soil Leaching Loss Rating* a tool for assessing the potential loss of pesticides through leaching into ground water. This is based on a soil's attenuation capacity. See Section VI.
- Tribal Park** The Ute Mountain Ute Tribal Park is a Tribal Enterprise that offers tours of the cultural history and natural beauty of the greater Mancos River Canyon and surrounding area including most tributaries to the Mancos River upstream of Highway 666 (491) on the Ute Mountain Reservation.
- TSCA** **Toxic Substances Control Act**: A federal law requiring public reporting of toxic chemicals produced or stored at a facility.
- UIC, Underground Injection Control** A high-pressure, dual casing well used to dispose of produced water from oil and gas production.
- Ute Mountain or Sleeping Ute Mountain Range** The mountain range on the Ute Mountain Reservation. This is the spiritual center and homeland of the Weeminuche Band of Utes who are the Ute Mountain Tribe.
- WIN-PST** A pesticide environmental risk screening tool that NRCS developed, based on SLLR and pesticide solubility properties

Appendix B

Maps of Ground Water Wells on the Ute Mountain Ute Reservation

Note: Livestock Wells are not included in Appendix B

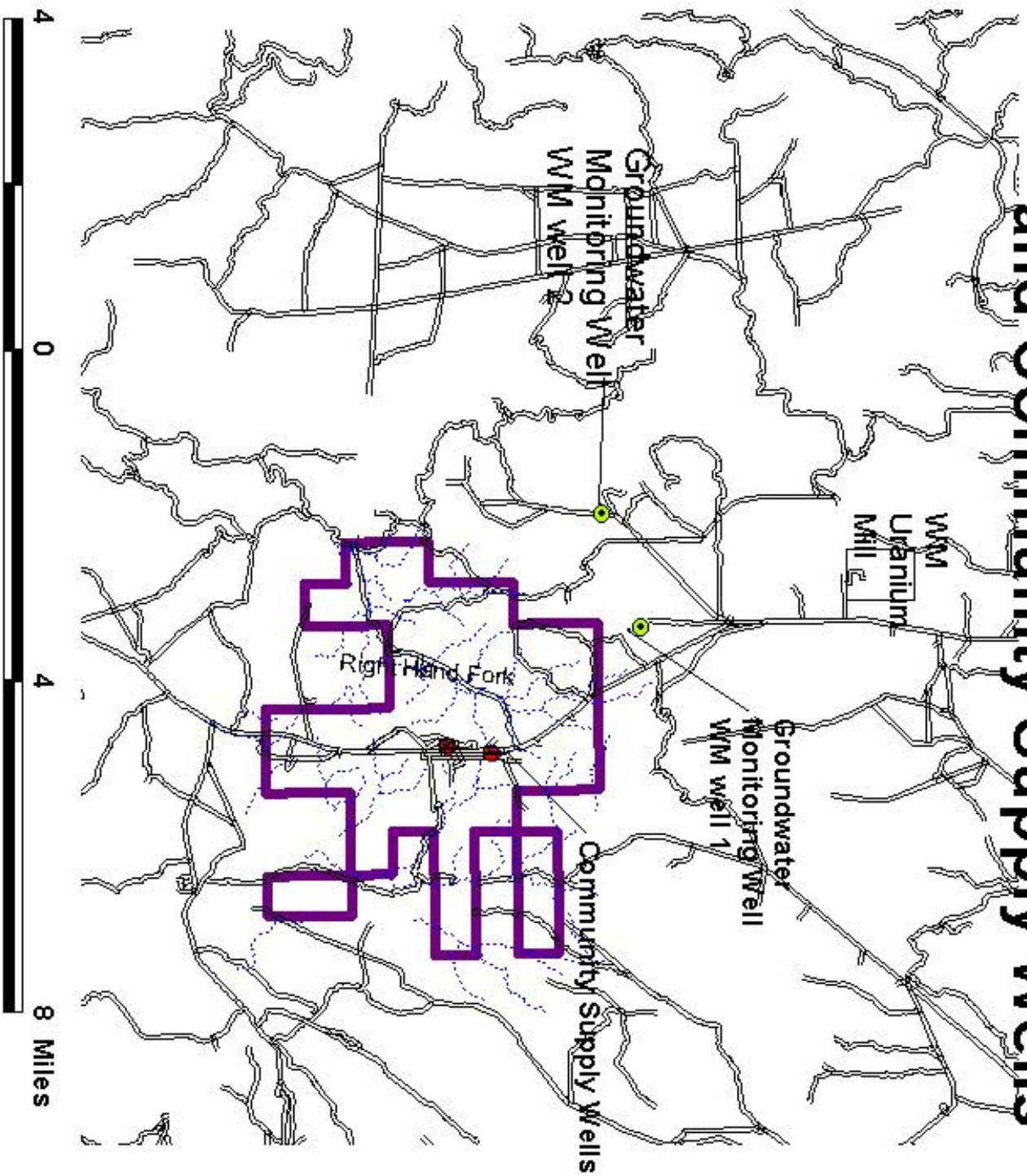
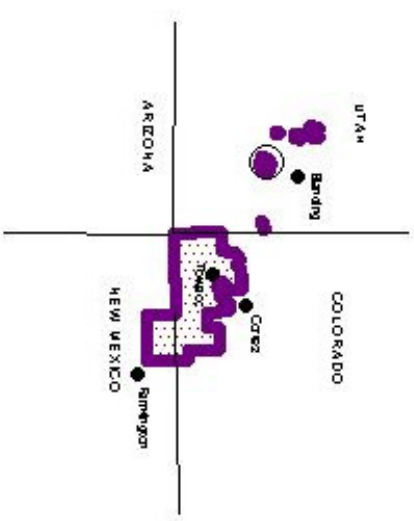
- McElmo Canyon Domestic Wells
 - Farm and Ranch Headquarters Domestic Well
 - Shallow Groundwater Table (Monitoring Wells at) Farm and Ranch Enterprise
 - Mancos Creek Farm Groundwater Monitoring Wells
 - Location of Towaoc Area Monitoring Wells
 - White Mesa, UT Groundwater Monitoring Wells and Community Supply Wells
- (Separate pages)



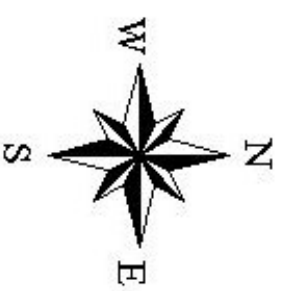
White Mesa, UT

Groundwater Monitoring Wells

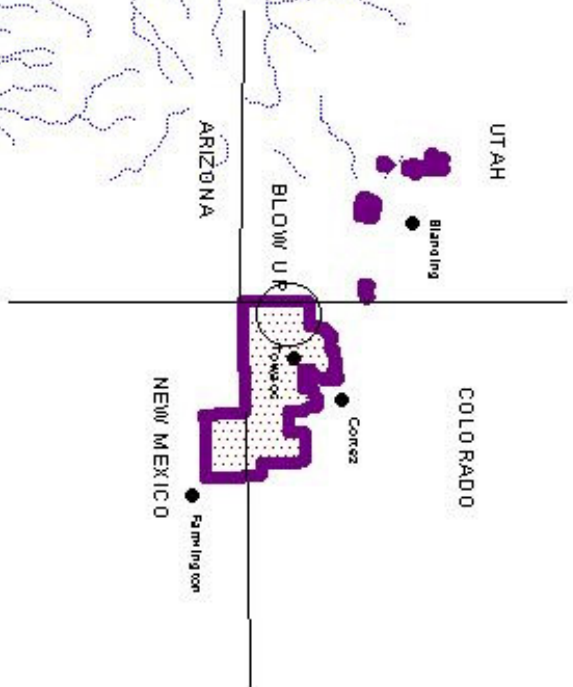
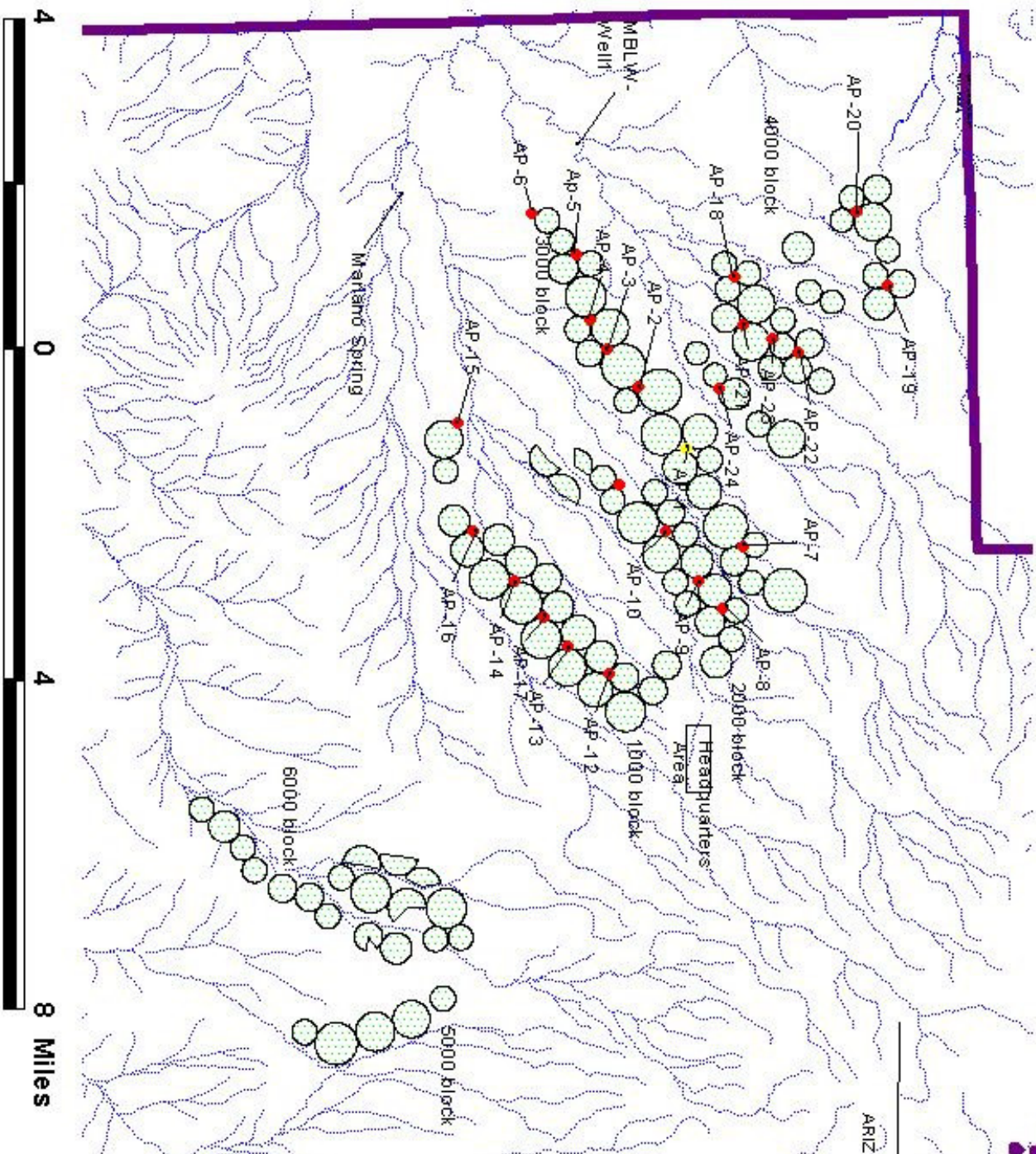
and Community Supply Wells



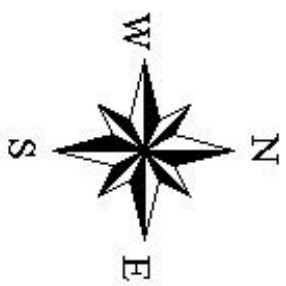
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- Intermittent streams.shp
- Res_bndry.shp
- Stream_segments.shp
- Water Well Point_ge.shp



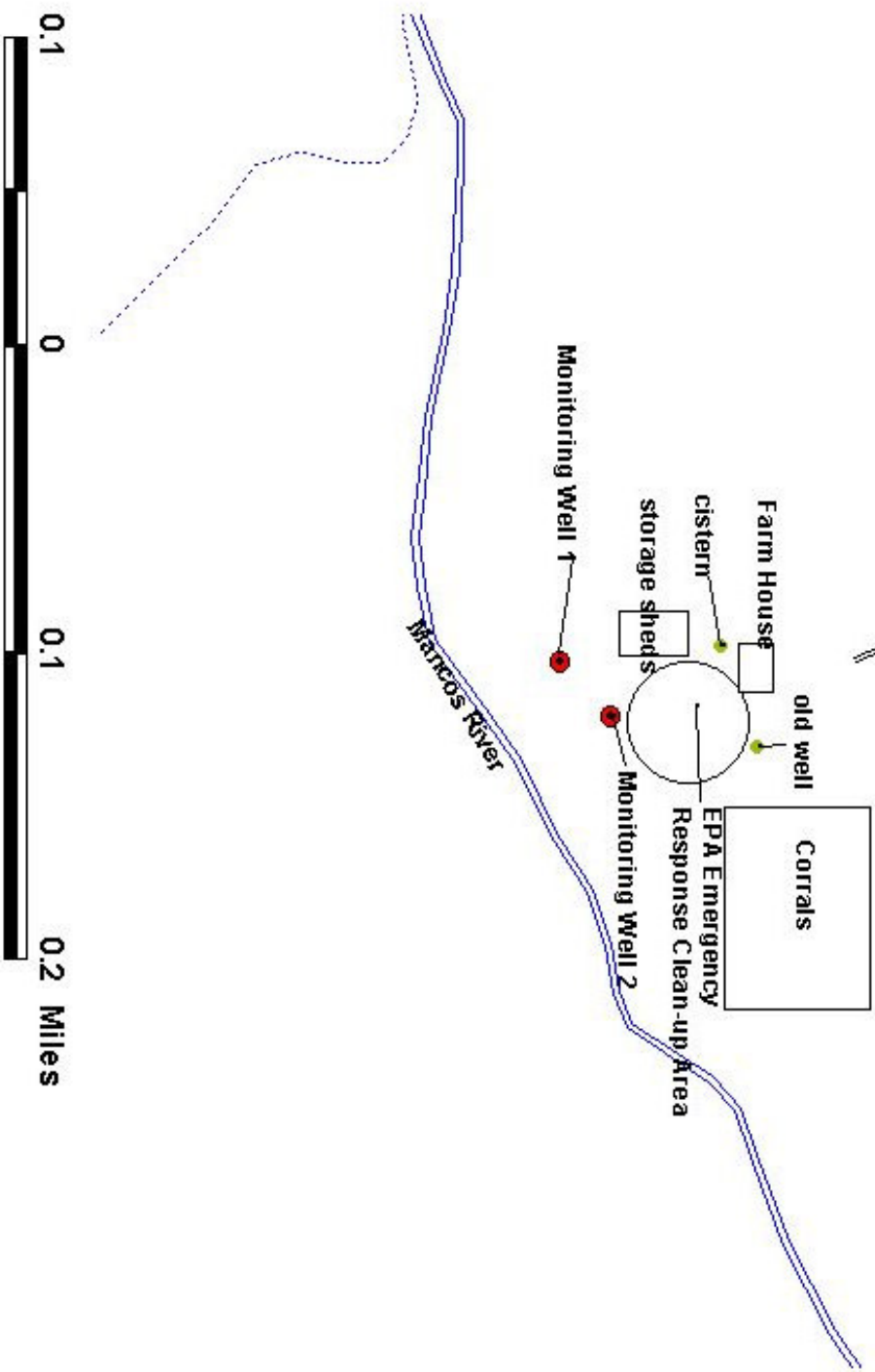
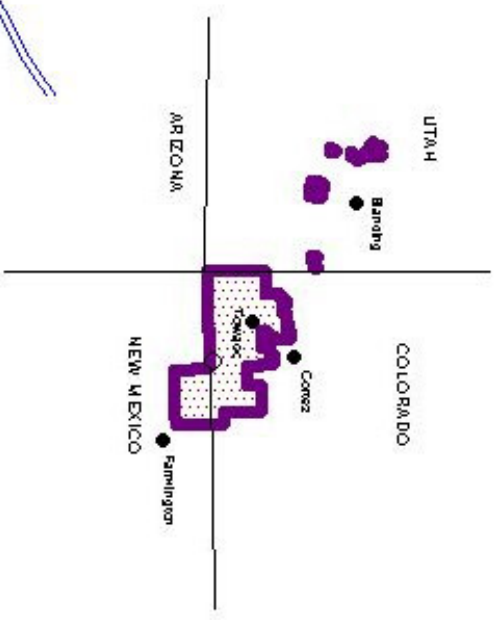
Shallow Groundwater Table Farm and Ranch Enterprise



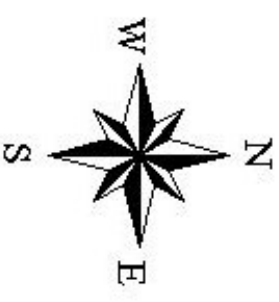
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- Water Well Point_ge.shp
- BOR GW/WM's Groundwa.shp
- BOR GW wells Observation wells.shp
- Groundwa.shp
- Allpiv's.shp
- Streams.shp
- Res_bndry.shp



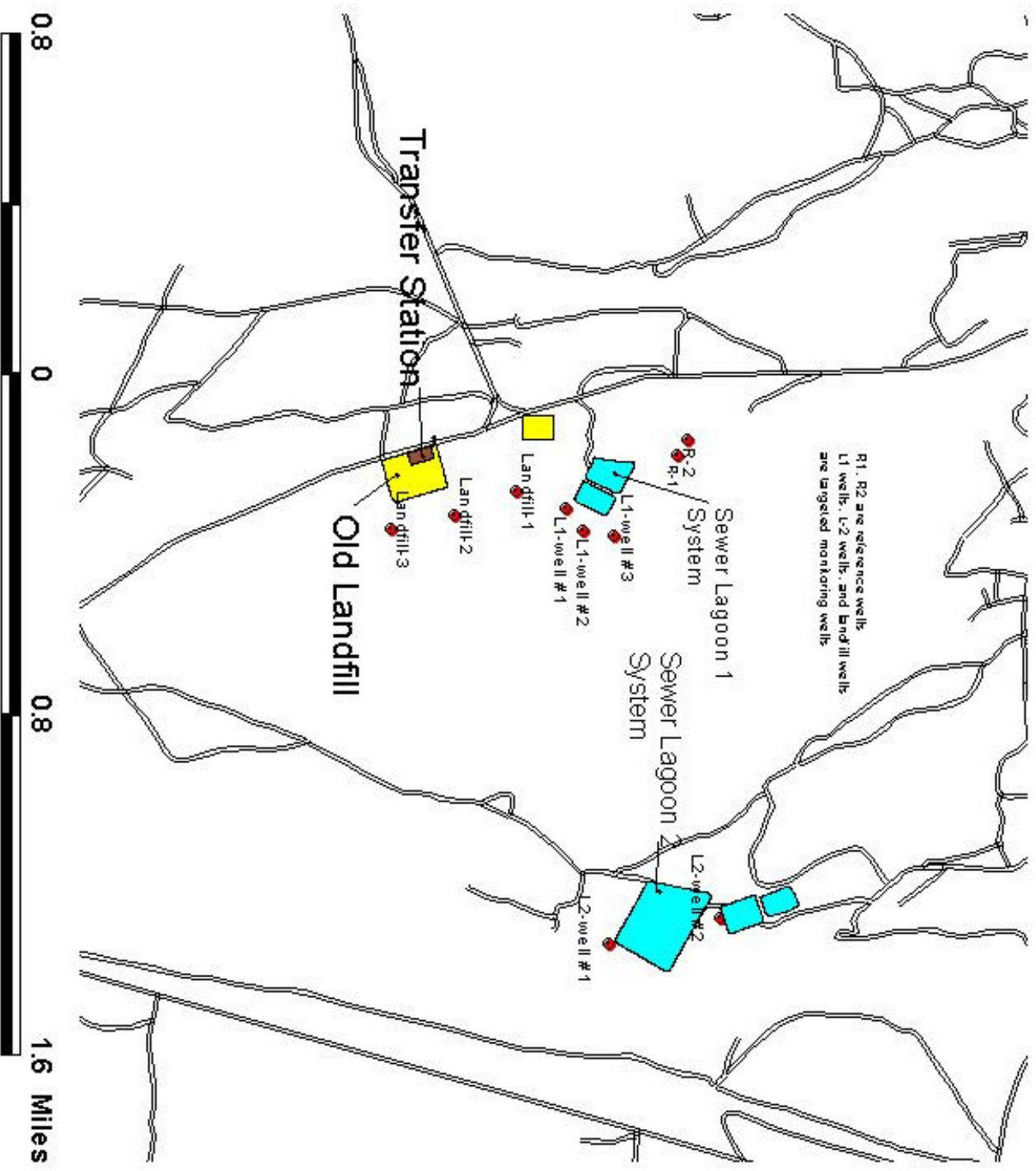
Mancos Creek Farm Groundwater Monitoring Wells






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- Point_ge.shp
- New Monitoring Wells Groundwa.shp
- Intermittent streams.shp
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- BOR Towaac Wells Groundwa.shp

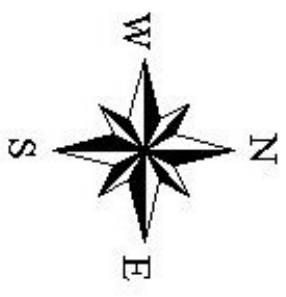


Location of Towaoc Area Monitoring Wells



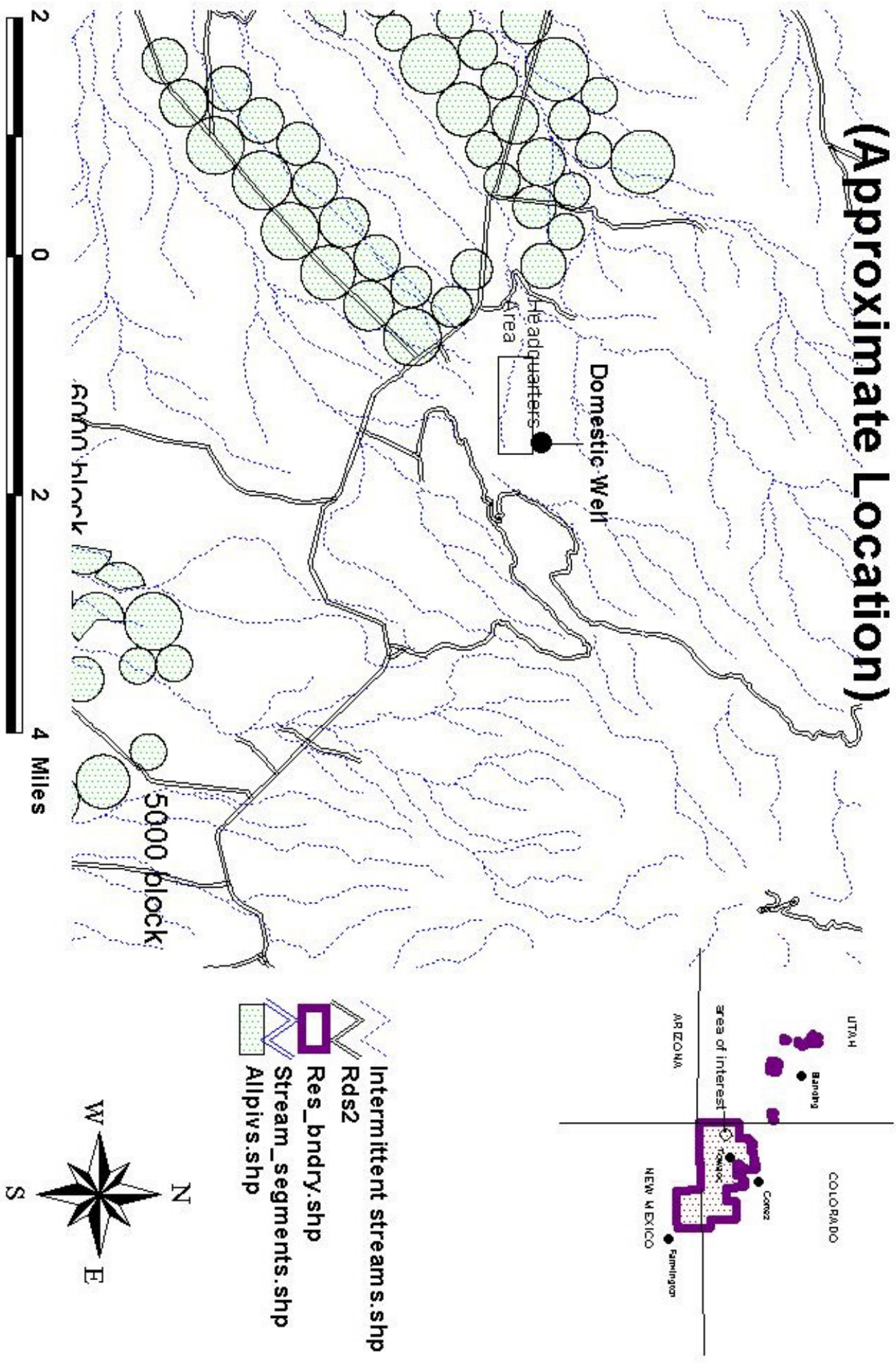
R1, R2 are reference wells
L1 wells, L2 wells, and land fill wells
are targeted monitoring wells

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-  Old_LandfillDump.shp
-  Old_landfill_north.shp



Farm and Ranch Headquarters Domestic Well

(Approximate Location)



Appendix C

Letters of Concurrence

Ute Mountain Ute Tribal Council Resolution 2002-32, adopted January 29, 2002, authorized the contract for services between the Ute Mountain Ute Tribe and *MountainTop Associates, Inc.* to research and develop a comprehensive strategy for the protection of ground water resources on the Ute Mountain Ute Reservation and other Tribally-owned lands. Following the completion of that contract and subsequent revisions to the product, this *Ute Mountain Ute Ground Water Protection Plan*, a cooperative agreement with the U.S. Environmental Protection Agency is being sought for implementation of the Plan, as described in the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Direct implementation of the plan through tribal jurisdictional sovereignty is not possible because it is not permitted under FIFRA.

The following letters of concurrence support the cooperative agreement between the Ute Mountain Ute Tribe and the U.S. Environmental Protection Agency for the implementation of the Ute Mountain Ute Groundwater Protection Plan:

1. [Letter from Ute Mountain Ute Tribal Chairman to U.S. EPA in support of cooperative agreement, forthcoming]
2. [Letter from U.S. EPA to Ute Mountain Ute Tribal Chairman in support of cooperative agreement, forthcoming]
3. [Letter from Bureau of Indian Affairs to Ute Mountain Ute Tribe in support of cooperative agreement, forthcoming]