MODIFIED
VOLUNTARY CLEAN-UP APPLICATION

MINERAL COUNTY FAIRGROUNDS

Prepared for:
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VOLUNTARY CLEAN-UP AND REDEVELOPMENT ACT CHECKLIST AND INFORMATION COMPARISON TABLE

This table provides a checklist of information that may be included in a Voluntary Clean-up Program application. Although not all information requirements apply to all sites, the applicant should review this list carefully and include in the application any information that is relevant to the property in question. The table should be submitted in the application, with the page numbers in the application where this information can be found inserted into the last column. This is not an application requirement, but it does greatly assist the reviewer.

This table may also be used to compare the information normally contained in Phase I and Phase II Environmental Audits, with the requirements of the Voluntary Clean-up Program application. Since these audits are commonly performed, the table will assist owners in determining any additional information that may be needed, if you have already performed a Phase I or Phase II audit.

DIRECTIONS FOR COMPARISON TABLE INTERPRETATION

The table that follows is organized like the one below.

P I	P II	VC	I. General Information	Page

The first three columns provide the comparison between the information requirements of Phase I (PI) and Phase II (P II) Environmental Audits and the Voluntary Clean-up Program application (VC). In each column you will either see a blank space, a zero (0), a plus sign (+) or a minus sign (-). These can be interpreted as follows:

\+ means requirements are more detailed than other documents

\- means requirements are less detailed than other documents

0 means requirements are similar to other documents

a blank means that the requirement does not exist for that document

So, for example, if you saw a (+) in the VC column, it means that there are additional information requirements for the Voluntary Clean-up Program application in comparison to the audit reports for that item. If there was a (0) in the VC column, then the information contained in the Phase I or Phase II audit is adequate for the Voluntary Clean-up Program application.

The fourth column provides the checklist of information items required in the Voluntary Clean-up Program application.

The fifth column provides a place for you to insert the page number from the Voluntary Clean-up Program application that pertains to this informational item. If the applicant fills this portion out and returns the table with the application, it greatly assists the reviewer in finding information within the application.

1. VOLUNTARY CLEAN-UP APPLICATION CHECK LIST

PI	PII	VC	I. GENERAL INFORMATION	Page
O	O	O	Name and address of owner	2-1
O	O	O	Contact person and phone number	2-1
O	O	O	Location of property	2-1
-	+	+	Type and source of contamination	2-3
		+	Voluntary Clean-up (VC) or No Action Determination (NAD)	2-3
O		O	Current Land Use	2-3
		+	Proposed Land Use. Proposed future land use is not covered in a Phase I or II assessment. A voluntary clean-up approval is contingent upon this item.	2-3

PI	PII	VC	II. PROGRAM INCLUSION	Page
-		+	Is the applicant the owner of the property for the submitted VC or NAD? In a Phase I assessment, the owner is not always the party preparing the assessment. The Voluntary Clean-up Program requires owner/designated representative to complete the submittal.	3-5
-		+	Is the property submitted for the VC or NAD the subject of corrective action under orders or agreements issued pursuant to provisions of Part 3 of Article 15 of this Title or the federal RCRA 1976 as amended? Although Phase I assessments review state records for RCRA corrective actions, the Voluntary Clean-up Program requires details of a corrective action for an eligibility determination.	3-5
-		+	Is the property submitted for the VC or NAD subject to an order issued by or an agreement with the Water Quality Control Division pursuant to Part 6 of Article 8 of this Title? Although Phase I assessments review state records, detail is not discussed. If Water Quality has issued a permit, the applicant is ineligible.	3-5
-		+	Is the property submitted for the VC or NAD a facility that has or should have a permit or interim status pursuant to Part 3 of Article 15 of this Title for treatment, storage or disposal of hazardous waste? Although Phase I assessments review state records, detail is not discussed. For the Voluntary Clean-up Program, details of permits or interim status are necessary for an eligibility determination. Based on the site specifics of the permitted facility, the applicant may qualify for the program.	3-5
-		+	Is the property submitted for the VC or NAD subject to the provisions of Part 5 of Article 20 of Title 8 (Underground Storage Tanks) CRS or of Article 18 of this Title (RCRA)? Although Phase I assessments review state records, detail is not discussed. For the Voluntary Clean-up Program details of Underground Storage Tank or RCRA requirements are necessary to make an evaluation. In some cases (e.g., tanks were removed prior to 12/22/88), the applicant may be eligible for the program.	3-5
-		+	Is the property submitted for the VC or NAD listed or proposed for listing on the National Priorities List of Superfund sites established under the federal act (CERCLA)? Although Phase I assessments review state records, detail is not discussed. For the VCUP, details of CERCLA action are necessary to make an evaluation. In some cases, the applicant may not be eligible for the program.	4-6

PI	PII	VC	III. ENVIRONMENTAL ASSESSMENT	Page
O	O	O	Qualified environmental professionals must submit environmental assessments. The applicant must submit documentation, in the form of a statement of qualifications or resume.	4-6
O	O	O	The applicant should provide the address and legal description of the site and a map of appropriate scale identifying the location and size of the property.	2-1
O		O	The applicant should describe the operational history of the property in detail, including the most current use of the property.	4-6
O		O	A description of all business/activities that occupy or occupied the site as far back as record/knowledge allows.	4-6
-		+	A brief description of all operations that may have resulted in the release of hazardous substances or petroleum products at the site, both past and present, including the dates activities occurred at the property and dates during which the contaminants were released into the environment. Although Phase I & II assessments may reveal the release of hazardous substances or petroleum products, the exact dates and quantities may not be discussed. For the VCUP, the dates of activities or releases are necessary for an evaluation of eligibility.	4-6
-		+	A list of all site-specific notifications made as a result of any management activities of hazardous substances conducted at the site, including any and all Environmental Protection Agency ID numbers obtained for management of hazardous substances at the site from either the state or the Environmental Protection Agency. The Phase I assessment will reveal whether a facility has an Environmental Protection Agency ID number, but will not list the notifications made as a result of management activities of hazardous substances. This information is necessary for a Voluntary Clean-up Program evaluation.	N/A
O		O	A list of all notifications to county emergency response personnel for the storage of reportable quantities of hazardous substances required under Emergency Planning and Community Right-to-Know statutes.	N/A
O		O	A list of all notifications made to state and/or federal agencies, such as reporting of spills and/or accidental releases, including notifications to the State Oil Inspection Section (OIS) required under 8-20-506 and 507 and 25- 18-104 CRS 1989 as amended and 6 CCR 1007-5 subpart 280.50 Part 3 of the OIS regulations, etc.	N/A
-	-	+	A list of all known hazardous substances used at the site with volume estimates and discussion of relative toxicities. A Phase I & II assessment does not require such detail, however, the hazardous substances used, volumes and toxicities are important for a VC in the overall evaluation of risk and sampling efforts.	4-6
-		+	A list of all wastes generated by current activities conducted at the site and manifests for shipment of hazardous wastes off site. A Phase I & II assessment does not require such detail; however, the manifest information is important for a VC evaluation, as in the above item.	4-7
		+	A list of all permits obtained from state or federal agencies required as a result of activities conducted at the site. A listing of all permits is beyond a Phase I or II assessment. These are important for the VCUP so the Department can evaluate what potential sources may be at the site	4-7

O		O	A brief description of the current land uses, zoning and zoning restrictions of all areas contiguous to the site.	2-1
			The applicant shall describe the physical characteristics of the site, including a map to scale, and an accompanying narrative showing and describing the following, utilizing historic knowledge as well as current data:	
O	O	O	• Topography	4-7
O	-	O	• All surface water bodies and waste water discharge points	4-7
O	-	O	• Ground water monitoring and supply wells	4-8
O	-	O	• Facility process units and loading docks	4-8
O		O	• Chemical and/or fuel transfer and pumping stations	4-8
O		O	• Railroad tracks and rail car loading areas	4-8
O		O	• Spill collection sumps and/or drainage collection areas	4-8
O		O	• Wastewater treatment units	4-8
O		O	• Surface and storm water runoff retention ponds and discharge points	4-8
O		O	• Building drainage or wastewater discharge points	4-8
O		O	• All above or below ground storage tanks	4-8
O		O	• Underground or above ground piping	4-8
O		O	• Air emission control scrubber units	4-8
O		O	• Water cooling systems or refrigeration units	4-8
O		O	• Sewer lines	4-8
O		O	• French drain system	4-8
O		O	• Water recovery sumps and building foundations	4-8
O		O	• Surface impoundments	4-8
O		O	• Waste storage and/or disposal areas/pits, landfills	4-8
O		O	• Chemical or product storage areas	4-8
O		O	• Leach fields	4-8
O		O	• Dry wells or waste disposal sumps	4-8
			If ground water contamination exists or the release has the potential to impact ground water, the applicant should provide the following information for areas within a one-half mile radius of the site:	
	O	O	• The state engineers office listing of all wells within one-half mile radius of the site, together with a map to scale showing the locations of these wells.	N/A
	O	O	• Documentation of due diligence in verifying the presence or absence of unregistered wells supplying ground water for domestic use, when the potential for such wells is deemed likely as in older residential neighborhoods, or in rural areas.	N/A
	O	O	• A statement about each well within the half-mile radius of the site, stating whether the well is used as a water supply well or ground water monitoring well.	N/A
	O	O	• Lithologic logs for all on-site wells; copies of field log notes may be appropriate.	N/A
	O	O	• Well construction diagrams for all on-site wells showing screened interval, casing type and construction details including gravel pack, interval, bentonite seal thickness and cemented interval.	N/A

	O	O	• Description of the current and proposed use of on-site ground water in sufficient detail to evaluate human health and environmental risk pathways. In addition, the applicant will provide a discussion of any state and/or local laws that restrict the use of onsite ground water.	N/A
			The applicant should provide information concerning the nature and extent of any contamination and releases of hazardous substances or petroleum products that have occurred at the site, including but not limited to:	
	-	+	• Identification of the chemical nature and extent, both onsite and offsite, of contamination that has been released into soil, ground water or surface water at the property, and/or releases of substances from each of the source areas identified, including estimated volumes and concentrations of substances discharged at each area, discharge point, or leakage point as per Section 25.16.308(2)(b). Although Phase II assessments identify the nature of contamination, the extent is not always fully defined. For Voluntary Clean-up Program purposes, the source, nature, extent and estimated volumes of the release are important in the overall evaluation of risk and eligibility.	5-9
	O	O	• A map to scale showing the depth to ground water across the site, direction and rate of ground water movement across the site using a minimum of three measuring points.	N/A
	O	O	• A discussion of all hydraulic tests performed at the site to characterize the hydrogeologic properties of any aquifers onsite and in the area.	N/A
	O	O	• All reports and/or correspondence, which detail site soil, ground water and/or surface water conditions at the site, including analytical laboratory reports for all samples and analyses.	5-9
	O	O	• A discussion of how all environmental samples were collected, including rationale involved in sampling locations, parameters and methodology, a description of sampling locations, sampling methodology and analytical methodology and information on well construction details and lithologic logs. All sample analyses performed and presented as part of the environmental assessment should be appropriate and sufficient to fully characterize all constituents of all contamination that may have impacted soil, air, surface water and/or ground water on the property. The applicant should use Environmental Protection Agency approved analytical methods when characterizing the soil, air, surface water and/or ground water.	5-17

PI	PII	VC	IV. APPLICABLE STANDARDS/RISK DETERMINATION	Page
	-	+	The applicant should provide a description of any applicable standards/guidance (federal, state, or other) establishing acceptable concentrations of constituents in soils, surface water, or ground water, for the proposed land use. Although a Phase II assessment evaluates applicable regulations for the current land use, it does not cover the proposed land use that may be different (e.g., the current land use is industrial and the proposed land use is residential, which likely has more conservative levels for contaminant concentrations).	7-19

	-	+	The applicant should provide a description of the human and environmental exposure to contamination at the site based on the property's current use and any future use proposed by the property owner, including:	7-19
	O	O	• A table or list for site contaminants indicating which media are contaminated and the estimated vertical and aerial extent of contamination in each medium.	5-16
	-	+	• A table or list of site contaminants, indicating the maximum concentrations of each contaminant detected onsite in the area where contaminant was discharged to the environment, and/or where the worst effects of the discharge are believed to exist. A Phase II assessment will evaluate the extent of site contaminants, not the maximum point or worst effects. The Voluntary Clean-up Program requests this item so that an understanding of the source and nature of the contaminants can be made as it relates to risk.	5-16
	-	+	• A table or list for site contaminants indicating whether the contaminant has a promulgated state standard, the promulgated standard and the medium the standard applies to. A Phase II assessment will not necessarily compare the site contaminants with state standards. This is important to evaluate whether the remedy will meet risk-based clean-up objectives.	7-19
	-	+	• A description and list of potential human and/or environmental exposure pathways pertinent to the present use of the property. A risk determination is not usually completed as part of a Phase II assessment; the VC will use risk as part of the overall evaluation.	7-19
		+	• A description and list of potential human and/or environmental exposure pathways pertinent to the future use of the property. (A risk determination is not usually completed as part of a Phase II assessment; the Voluntary Clean-up Program will use risk as noted above. Phase II assessments also do not evaluate future use of the property.)	7-19
	-	+	• A list and map defining all source areas, areas of contamination or contaminant discharge areas. Phase II assessments do not always show source areas. The Voluntary Clean-up Program requires that these areas be defined to indicate the proximity of contaminant with respect to receptors and sampling efforts.	8-21
	-	+	• A discussion of contaminant mobilities, including estimates of contaminants to be transported by wind, volatilization, or dissolution in water. For those contaminants that are determined to be mobile and have the potential to migrate and contaminate the underlying ground water resources, the applicant should also evaluate the leach ability/mobility of the contaminants. This evaluation should consider, but not be limited to the following: leachability/mobility of the contamination, health-based ground water standards for the contamination; geological characteristics of the vadose zone that would enhance or restrict contaminant migration to ground water, including but not limited to grain size, fractures and carbon content; and depth to ground water. This evaluation,	4-6

			and any supporting documentation, should be included in the plan submitted. A Phase II assessment usually does not include a risk determination. However, the Voluntary Clean-up Program will evaluate the risk involved with the proposed clean-up in order to evaluate the application.	
		+	The applicant should then provide, using the information contained in the application, a risk-based analysis of all exposure pathways, which details how the proposed remediation will obtain acceptable risk levels. A Phase II assessment usually does not include a risk analysis, however, the Voluntary Clean-up Program requires this analysis to show that the remediation propose will attain an acceptable risk or break pathways.	8-23
		+	The Voluntary Clean-up Program includes remediation whereas a Phase I or II assessment does not. Usually remediation is considered a Phase III assessment. The following are the requirements for the clean-up proposal.	
		+	• A detailed description of the remediation alternative, or alternatives selected, which will be used to remove or stabilize contamination released into the environment or threatened to be released into the environment	8-22
		+	• A map identifying areas to be remediated, the area where the remediation system will be located if it differs from the contaminated areas, the locations of confirmation samples, the locations of monitoring wells, areas where contaminated media will temporarily be stores/staged and areas where contamination will not be remediated.	8-21
		+	• Remediation system design diagrams showing how the system will be constructed in the field.	8-21
		+	• A remediation system operation and maintenance plan that describes, at a minimum, how the system will be operated to ensure that it functions as designed without interruptions and a sampling program that will be used to monitor its effectiveness in achieving the desired goal.	N/A
		+	• The plan should describe the sampling program that will be used to verify that treatment of the contaminated media has resulted in attainment of the proposed clean-up goals.	N/A
		+	• The plan should include a schedule of implementation	N/A
		+	The clean-up completion report is necessary to demonstrate that the remediation was completed according to the application. Again, since remediation is involved, the report is beyond the scope of a Phase I or II assessment. The following items should be included in the completion report.	
		+	• A final list of all site contaminants, along with the remaining concentrations, and any deviations from the original plan.	8-22
		+	• A final list defining which media are contaminated and the estimated vertical and lateral extent of contamination to each medium.	8-22
		+	A final list and map defining all source areas, areas of contamination or contaminant discharge areas.	8-22

		+	**Soil Contamination: Remediation by Excavation Only:**	
		+	• One confirmation sample per 500 ft2 as measured at the base on the excavation OR two confirmatory samples, whichever method results in the collection of the most samples.	N/A
		+	• One composite sample from each wall of the excavation. In excavations of an irregular shape, one composite sample for every 100 lineal feet of wall. For excavations grater than 5000 ft2, preparation of a grid for randomization of sampling.	N/A
		+	• Explanation of the sampling method in the narrative as well as any modifications to 1 and 2 above used to better characterize the remedial efforts.	N/A
		+	• If contamination is to be left in place, an additional sample should be collected from the area of the worst contamination, as verified or with a field-sampling device.	N/A
		+	• Depth of samples collected	N/A
		+	• Provision of waste disposal manifests	N/A
			In-Situ Soil Remediation	
		+	• Completion of a minimum of two soil borings, with at least one completed in the area identified in the site assessment as the area of highest contamination. For larger areas of contamination, one boring per 10,000 ft2 of plume area.	N/A
		+	• Completion of the borings should employ a field-screening device and borings should be logged.	N/A
		+	• Soil sample submitted for analysis from each boring would be the sample with the highest field screening or one located at the ground water interface for each boring.	N/A
		+	Ground Water Remediation	
		+	• Field testing should include aquifer and contaminant characteristics such as gradient, partition coefficients, original contaminant levels, etc.	N/A
		+	• At each regular monitoring event, a map showing ground water flow direction, depth to ground water and sampling locations	N/A
		+	• Tabular presentation of data collected	N/A
		+	Summary of Voluntary Clean-up Program participation	N/A
		+	Summary of field activities, remedial activities, any deviations from original plans	N/A
		+	Pertinent figures and drawings of remedial system	N/A
		+	Conclusions made after remedial activities are completed	N/A

2. General Information

This section contains general information concerning the Site, including information on the Site's owner, location, and contamination type and source.

2.1. Name and Address of Site Owner

The current owner is:

Mineral County Fairgrounds Association (MCFA)
Attn: Jenny Inge
P.O. Box 61
Creede, CO 81130
Tel. 719-658-2376

2.2. Location and Legal Description of MCFA Site

Mineral County Fairgrounds Association (MCFA) property is located about 0.75 miles south of the city limits of Creede in Mineral County, Colorado southeast of the junction of Airport Road and Highway 149. This property is henceforth referred to as "the Site" and is outlined on Figure 1. The Site covers almost 46 acres in the southwest quarter of Section 6, Township 41 North, Range 1 East, (N.M.P.M.). The elevation of the Site is approximately 8,640 feet.

The Site is zoned rural by Mineral County. The Site has been and is currently open space. Adjacent property uses include rural agriculture and open space to the east, the local airport and residential development to the west, open space to the north, and a recreational vehicle park to the south.

About 28 acres of the Site is located within the Willow Creek floodplain, and the remainder of the Site is a raised bench. A 0.16 mile portion of Willow Creek flows through the northeastern corner of the Site and converges southeast of the Site near the confluences with the Rio Grande River. This portion of Willow Creek is highly active and braided, and much of the floodplain alluvium consists of coarse gravels and cobbles. Wastewater treatment lagoons for Creede are located just to the north of the Site on the western edge of the floodplain. The effluent from the lagoons was directed in the 1980s into an old channel that transverses the property and now supports a string of wetland type plants.

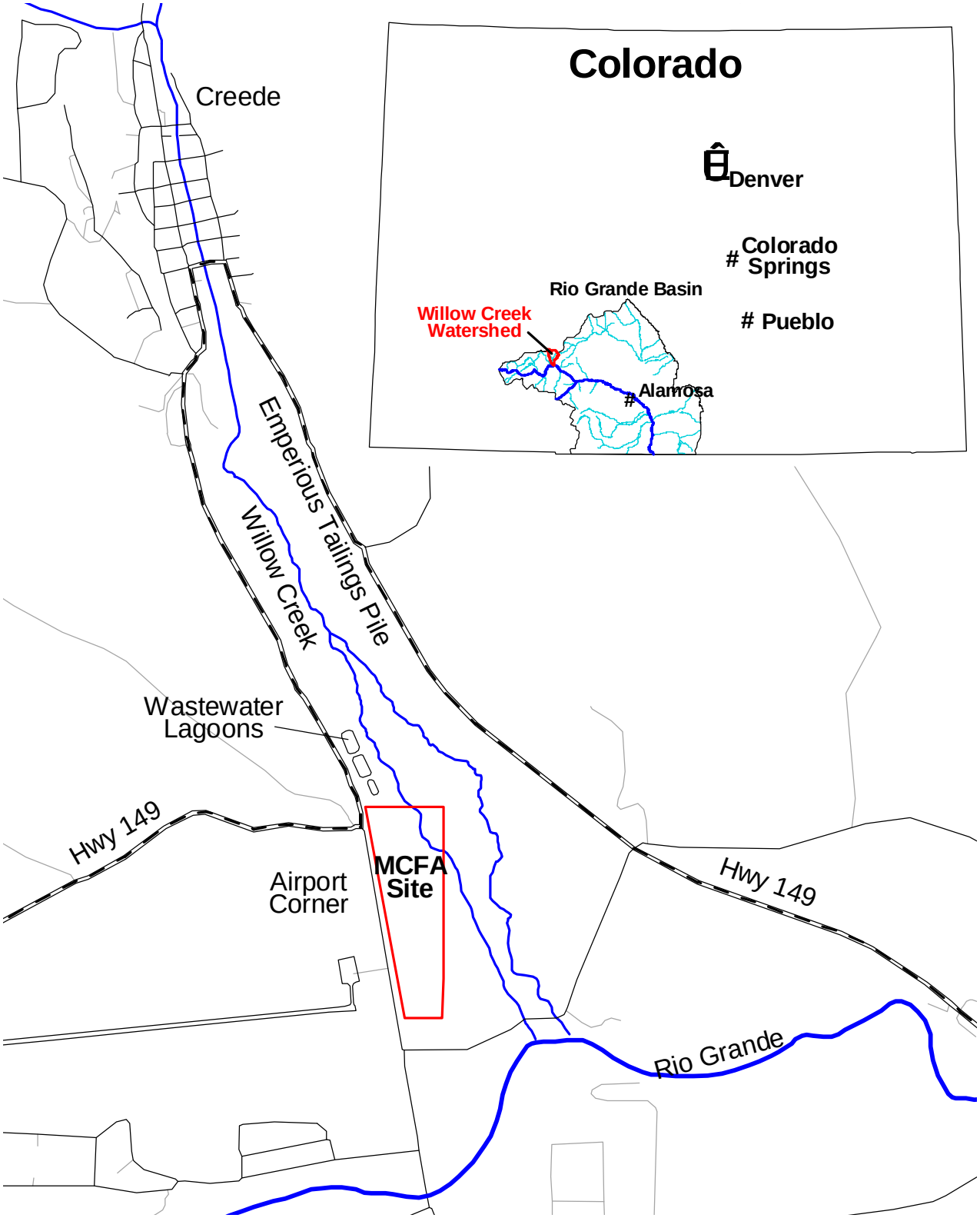

Figure 1 Regional and MCFA Location Map (Source: ABCA Report, WCRC, 2006)

2.3. Type and Source of Contamination

Lead-impacted soil is the primary contaminant of concern at the MCFA Site. The soils have been sampled and analyzed for metals as part of several environmental assessments and investigations conducted at the Site. Elevated metal concentrations were found in many portions of the Site, with most elevated concentrations occurring in the Willow Creek floodplain.

Mining or milling activities never occurred at the Site. However, the Site has been impacted from upstream mining and milling operations. Early mining and milling operations deposited waste directly into Willow Creek, and these wastes may have deposited and mixed into the floodplain alluvium. Mine waste and/or mill tailings may have also been inadvertently dumped directly on the Site. Following termination of direct dumping into Willow Creek, the Humphries Mill (located north of Creede) and the Emperious Mill (not located within the floodplain north of the MCFA Site) conveyed mill tailings to other properties north and west of the Site. Failures of conveyance (breaches of a wooden flume and ditch system directly from Humphries Mill) and impoundment structures on these adjacent properties deposited mill tailings on the Site that may have also been transported and mixed around the Site by flooding in Willow Creek. The potential also existed for wind transport of mill tailings from adjacent properties, particularly from west of the Site.

The surface water of Willow Creek remains heavily impacted by historical mining in the upper reaches of the watershed and contains elevated metals concentrations. The primary source of metal contamination is the Nelson Tunnel, which is located upstream of Creede. The cleanup alternatives for the MCFA Site do not consider cleanup of Willow Creek, as the creek is impacted upstream of the Site.

2.4. Voluntary Clean-up

The waste dump material located at the Mineral County fairgrounds contains elevated levels of metals that need to be mitigated by capping the mine tailings, relocating wetlands, and building surface water diversion ditches. This work is proposed to be accomplished under the Colorado Voluntary Clean-up and Redevelopment Act (C.R.S. 25-16-301) that was passed in 1994.

2.5. Current Land Use

The land is currently used as Open Space.

2.6. Proposed Land Use

The MCFA is planning to construct the Mineral County Fairgrounds at the Site, which will be a multi-purpose community facility. The proposed land use is illustrated in Figure 3 (Alternative 2) and described in Section 8.2 Alternative 2.

The 1997 CDPHE document describes a residential property as a property that is used for habitation by individuals or properties where more sensitive populations, such as children or the elderly, have the opportunity for exposure to contaminants. Residential soil remediation objectives are also appropriate for educational facilities, health care facilities, child care facilities, and playgrounds. Standards are developed to protect the most sensitive or potentially susceptible individual. Residential standards are designed to protect a young child up to seven years of age who may be exposed to lead in soil on a frequent or daily basis for several months to several years.

Industrial properties can be designated where the primary purpose for facilities is the manufacturing of commodities. Such facilities include power generation facilities, foundries, and machine shops where workers spend only an average of 8 to 9 hours per day at the site and are the primary individuals on any site. Commercial properties can be designated for stores and business enterprises of a retail or wholesale nature. Workers would be the primary individuals of contact although customers could potentially spend several hours per day at certain facilities. For the commercial and industrial scenario, it was assumed that women of child bearing age may work at a facility and are the most susceptible adult in the workplace. Standards were designed to prevent an unacceptable level of blood lead in the mother and fetus. The commercial and industrial land use settings assume that public access is short-term and intermittent compared to daily exposure to workers.

The CDPHE (1997) document states that the most conservative land use setting, residential, is applicable to all sites unless sufficient information is presented to justify the use of a commercial or industrial land use setting. If a land use setting other than residential is proposed, the site must meet all of the following criteria:

a) The site is currently zoned for non-residential use
b) The site is expected to be zoned for non-residential use into the foreseeable future
c) Appropriate and maintainable institutional controls (e.g. deed restrictions, restrictive covenants, ordinances adopted and administered by a local government) will be in force
d) Uses of the facility and uses of zoning of properties within 100 meters of the contaminated area are industrial, commercial or other uses where the exposure is limited and thus does not warrant application of the residential standard.

At the MCFA Site, young children may be present in facilities for extended hours, and a caretaker may potentially live at the Site. This would indicate that the residential standard would be applicable at the portion of the Site with fairgrounds facilities and structures. The floodplain portion of the Site could potentially be non-residential. In this case, the floodplain area would have to be fenced off permanently from public usage. It is the current intention that the floodplain area will be open to the public for recreational activities, and a public trail will enhance use of the area. Therefore, it is most appropriate that a residential/unrestricted land use scenario be applied to the entire Site.

3. Program Inclusion

The VCRA checklist includes criteria for determining the eligibility for inclusion under the VCUP program. This section addresses those criteria.

1. Is the applicant the owner of the Site for the submitted VC or NAD? ***The Site is owned by Creede Mines, Inc. This Site is under a written takeover option by John Parker dba Navajo Development Company (aka Navajo Development, LLC), and this VCUP application is being submitted by the MCFA, as future owners, and by permission from John Parker. This was transferred to the Mineral County Fairgrounds Association (MCFA) on September 9, 2004 by John Parker.***

2. Is the Site submitted for the VC or NAD the subject of corrective action under orders or agreements issued pursuant to provisions of Part 3 of Article 15 of this Title or the federal RCRA 1976 as amended? ***No notifications have been required to Mineral County emergency response personnel under the Emergency Planning and Community-Right-to-Know Act (aka Superfund Amendments and Reauthorization Act Title III). In addition, no documented spills or accidental release of hazardous substances requiring regulatory notification have been reported at the Site. However, it is understood that during the period of mining operations a flume was constructed to transport tailing material to properties located to the immediate west. On occasion the flume was breached or broken and some tailing material was discharged onto the Site.***

3. Is the Site submitted for the VC or NAD subject to an order issued by or an agreement with the Water Quality Control Division pursuant to Part 6 of Article 8 of this Title? ***The Site is not subject to an order issued by or an agreement (including permits) with the Water Quality Control Division pursuant to Part 6 of Article 8 of Title 25 CRS. The lower bench of the Site is located in the 100-year and 500-year floodplain as designated by the Federal Emergency Management Agency (FEMA).***

4. Is the Site submitted for the VC or NAD a facility that has or should have a permit or interim status pursuant to Part 3 of Article 15 of this Title for treatment, storage or disposal of hazardous waste? ***No, the Site does not have a permit or interim status pursuant to Part 3 of Article 15 of Title 25 CRS for treatment, storage or disposal of hazardous waste.***

5. Is the Site submitted for the VC or NAD subject to the provisions of Part 5 of Article 20 of Title 8 (Underground Storage Tanks) CRS or of Article 18 of this Title (RCRA)? ***No underground storage tanks (USTs) are in use or known to exist on the Site. The Site is not subject to the provisions of Part 5 of Article 20 of Title 8 (Underground Storage Tanks) CRS or of Article 18 of Title 25 (RCRA) CRS.***

6. Is the Site submitted for the VC or NAD listed or proposed for listing on the National Priorities List of Superfund sites established under the federal act (CERCLA)? ***No, the Site is not listed as a Superfund site under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) (EPA, 2003).***

3.1. Qualified Professional

The environmental assessments performed in support of this application were conducted by American Geological Services, Inc. (AGS), a Colorado corporation that has been conducting similar assessments since 1992. Qualified environmental professionals previously conducted environmental assessments and investigations of the Site and adjacent properties. AGS has prepared this VCUP application on behalf of the MCFA. AGS is recognized and well established environmental-consulting firm, and offers a diversity of professional services to a wide variety of industries. Qualifications of AGS personnel used to prepare this VCUP application were established by education, training, and experience in conducting environmental investigations and remediation.

4. Site History

4.1. History of Operations

The Site has been primarily used as open space. Regionally, the area is one of the major mining camps in Colorado, with at least 29 major mining sources within six square miles of the Site. Most of the mines were developed for silver extraction and were worked from the late 1800's to as recently as 1976. Milling activities occurred at the former Humphries Mill, which was located along the East and West Forks of Willow Creek and north of Creede (CDPHE, 2002).

4.2. Known Releases of Hazardous Substances

There are no known documented releases of hazardous substances at the Site. However, contaminated soil is believed to have originated from over bank deposits of tailing materials transported via Willow Creek and breach(es) of a wooden flume and ditch system connecting directly from Humphries Mill.

Previous site characterization investigations include the WCRC investigation and the TBA conducted by CDPHE. These investigations identified elevated soil metals concentrations at the Site associated with this VCUP. Metals concentrations in Subarea 1C were found to be below the residential/unrestricted land use for the CDPHE Soil Remediation Objectives (SRO) for lead, the indicator contaminant for this VCUP. However, lead concentrations in Subarea 1B, mostly located in the Willow Creek floodplain, exceed the commercial land use SRO of 2,920 ppm.

4.3. Known Hazardous Substances

Based on the assessments and investigations performed by WCRC, CDPHE, and EnviroGroup, lead is the primary indicator hazardous chemical of concern at the Property. Lead is considered a toxic heavy metal that can be leached from solid lead fragments and become a toxic salt. Other contaminants of concern at the Site include arsenic, cadmium, and zinc. It is assumed that lead could serve as an appropriate indicator contaminant for these other metals. Applicable standards and risk are presented in Section 7.0.

4.4. Wastes Generated by Current Activities

There are no current activities generating wastes at the Site. There have been no known manifested hazardous material shipments from this Site.

4.5. Permits

There have been no known permits issued for hazardous materials operations at this Site. A VCUP application was submitted to the CDPHE by John Parker dba Navajo Development Company (aka Navajo Development, LLC) in December 2002 for the parcels 1, 2, 3, 4, and 5 including Subareas 1C and the portion of 1B above the Willow Creek floodplain.

4.6. Land Use and Zoning

Subareas 1B and 1C have been zoned for rural land use. The area is currently used as open space. Subareas 1B and 1C are approximately 39.3 and 6.6 acres, respectively. The floodplain portion of 1B makes up 29 of the 39.3 acres, with the remaining 10.3 acres making up the bench portion of Subarea 1B.

4.7. Property Physical Characteristics

4.7.1. Topography

The Site is located on a relatively flat field that slopes gently toward the south and southeast along the Rio Grande Valley. Elevations at the property range from approximately 8,600 feet above mean sea level (msl) to 8,680 feet above msl.

4.7.2. Surface Water

Several braids of Willow Creek run through the Site and converge southeast of the Site near the confluences with the Rio Grande River. Environmental concerns with Willow Creek and the portions flowing through the Site will not be addressed by this VCUP, since the impacts to the creek originate upstream of the Site. It is assumed that contamination from the Site is not further degrading water quality of Willow Creek.

4.7.3. Other Characteristics

The lower bench of the Site is located in the 100-year and 500-year floodplain. No other major physical characteristics of concern exist at the Site including: groundwater and monitoring and supply wells; facility process units and loading docks; chemical and/or fuel transfer and pumping stations; railroad tracks and rail car loading areas; spill collection sumps and/or drainage collections areas; wastewater treatment units; surface and storm water runoff retention ponds and discharge points; building drainage or wastewater discharge points; above or below ground storage tanks; above and below ground piping; air emission control scrubber units; water cooling systems or refrigeration units; sewer lines; French drain systems; water recovery sumps and building foundations; surface impoundments; waste storage and/or disposal areas/pits, landfills; chemical or product storage areas; leach fields; dry wells or waste disposal sumps.

4.7.4. Groundwater

Groundwater in the vicinity of the Site typically occurs in the volcanic bedrock and alluvial aquifers, and flows under water-table or unconfined conditions. The water level in the alluvial aquifer is shallow and approximately 2-10 feet bgs. Groundwater in the alluvial aquifer is hydraulically connected to the bedrock aquifer and Rio Grande River flow system. Numerous groundwater supply wells are installed in the alluvial aquifer in the vicinity of the Site. However, groundwater supply wells downstream of the Site have been sampled and analytical results have indicated the water is free of contamination (CDPHE 2002).

Groundwater analytical data is not available for the Site since previous investigations have focused on metals in soils. Previous attempts to sample groundwater failed due to drilling limitations. It is assumed that groundwater has not been impacted from the contaminated soil, since most of the elevated metals concentrations have been found within the top 6-12 inches of the soil profile. Because the mobility of lead in unsaturated soil is low and the groundwater samples collected downstream did not indicate contamination (CDPHE 2002), the potential for ground water contamination at the Site is considered to be low. Therefore, further evaluation and evaluation of the groundwater is not considered to be required at this time.

5. Site Characterization

This section summarizes the previous assessment and investigations conducted at the Site. The investigation results have indicated that the primary concern at the Site is lead in the surface soil. These assessment and investigations have included:

- Airport Corner Land Characterization, Creede, Colorado (WCRC, 2001)
- Targeted Brownfields Assessment – Airport Corner Site, Creede, Colorado (CDPHE, 2002)
- VCUP Application – Airport Corner Site, Creede, Colorado (EnviroGroup, 2002)
- Analysis of Brownfields Cleanup Alternatives - Mineral County Fairgrounds, Creede, Colorado (WCRC, 2006)

The following sections summarize these assessments and investigations. Section 6 presents a discussion of the extent of contamination. Figure 2 outlines locations of the various samples collected from the above referenced investigations.

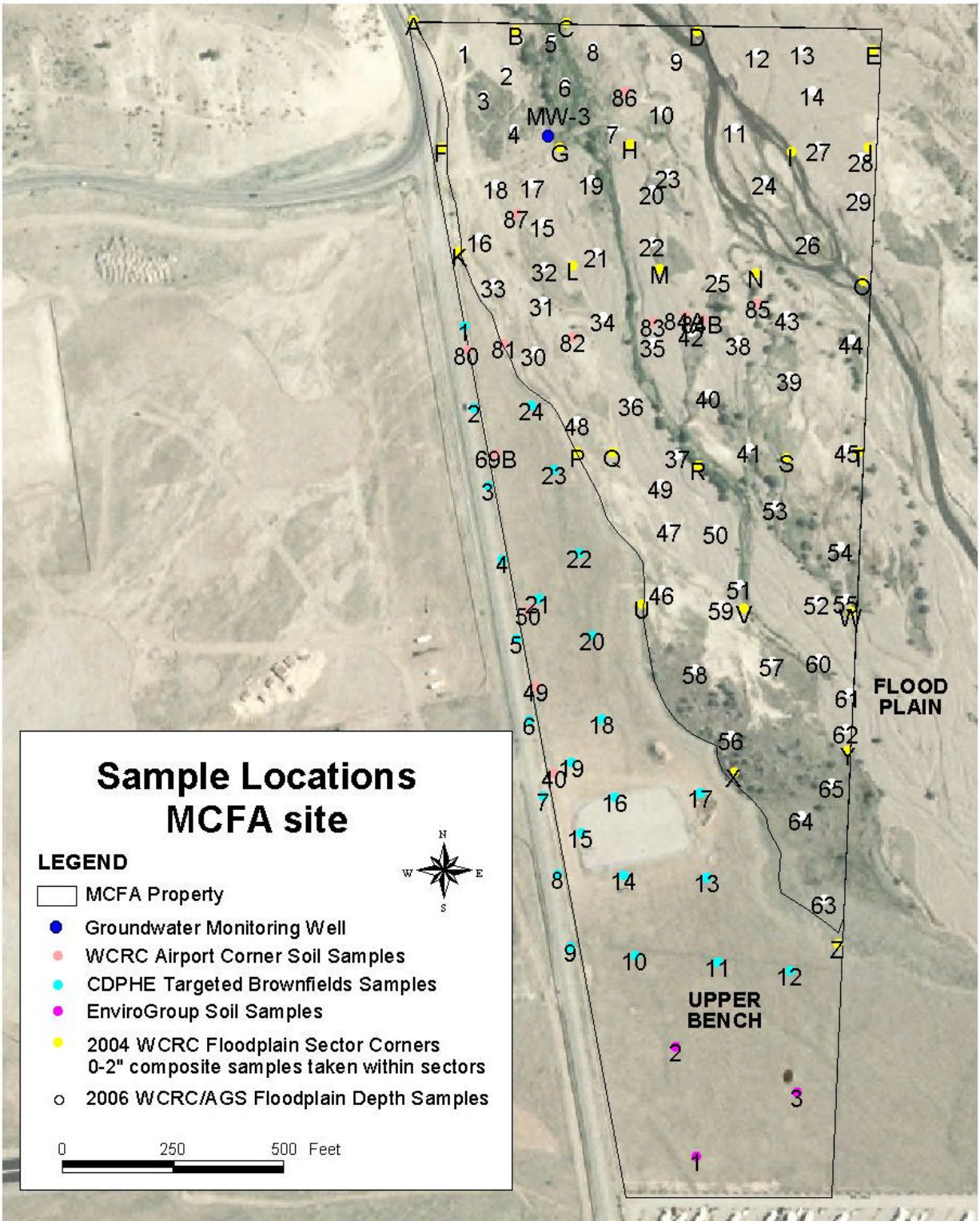

Figure 2. Location of Characterization Study Soil Samples (Source: ABCA Report, WCRC, 2006)

5.1. WCRC Airport Corner Land Characterization

In September 2000, the U.S. Army Corps of Engineers, Albuquerque District contracted the services of IS2e Inc. of Albuquerque, New Mexico to investigate soil lead concentrations at the property using X-ray fluorescence (XRF) equipment. A total of 13 soil samples were shot using XRF in Subarea 1B, and none were shot in Subarea 1C. Lead concentrations in Subarea 1B ranged from approximately 287 to 23,707 ppm, which exceeds the CDPHE SRO for residential/unrestricted land use lead concentrations of 400 ppm. The XRF data for samples shot in Subarea 1B are presented in Table 5-1 and sample locations are outlined in Figure 2.

Elevated soil metals concentrations were found in grassy areas as well as in bare areas that were suspected to contain phytotoxic soil. Lead and arsenic were found to be positively correlated (i.e., high levels of arsenic were found to be closely associated with correspondingly high levels of lead). As lead increases the levels of cadmium and zinc also tend to increase, although not as closely as arsenic. Because of these relationships, and its ubiquitous nature, lead was determined to be an effective indicator of elevated concentrations of arsenic, cadmium, and zinc.

5.2. Summary of Targeted Brownfields Assessment

The CDPHE conducted a TBA of the Property (CDPHE 2002). CDPHE collected a total of 248 soil samples, of which 54 were collected on the upper bench of Subareas 1B and 1C, as outlined on Figure 2. Soils samples were collected at three intervals:

- 0 to 6 inches bgs
- 12 to 16 inches bgs
- 30 to 36 inches bgs

The samples were analyzed for arsenic and lead (Tables 5-2, 5-3, and 5-4). Lead concentrations ranged from:

- 33 to 2500 ppm from 0 to 6 inches bgs;
- 11 to 390 ppm from 12 to 16 inches bgs; and
- 9.4 to 140 ppm from 30 to 36 inches bgs.

Arsenic concentrations ranged from:

- 1.4 to 44 ppm from 0 to 6 inches bgs;
- 1.1 to 25 ppm from 12 to 16 inches bgs; and
- 2.8 to 29 ppm from 30 to 36 inches bgs.

Table 5-1
XRF Lead Concentration Data
(WCRC Airport Corner Land Characterization)
All concentrations in ppm

Sample Location ID	Lead
40	943
49	287
50	1182
69B	1954
80	3963
81	11,288
82	12,815
83	6454
84A	6817
84B	23,707
85	15,800
86	7682
87	10,614

Table 5-2
Lead and Arsenic Concentrations in Surface Soil (0 to 6 inches bgs)
(CDPHE TBA Investigation)
All concentrations in ppm

Sample Location ID	Arsenic	Lead
EC01	24	810
EC02	14	400
EC03	21	350
EC04	11	140
EC05	20	190
EC06	16	170
EC07	21	320
EC08	1.4	33
EC09	19	260
EC10	8	71
EC11	12	65
EC12	7.9	170
EC13	8.7	70
EC14	8.8	70
EC15	9.9	170
EC16	12	190
EC17	9.8	160
EC18	9.7	160
EC19	11	120
EC20	11	150
EC21	14	280
EC22	12	250
EC23	33	2500
EC24	44	1900

Table 5-3
Lead and Arsenic Concentrations in Soil (12 to 16 inches bgs)
(CDPHE TBA Investigation)
All concentrations in ppm

Sample Location ID	Arsenic	Lead
EC01	8.9	11
EC02	13	11
EC03	10	66
EC04	19	43
EC05	7.1	24
EC06	3.1	20
EC07	3.5	21
EC08	3.2	16
EC09	18	46
EC10	6.2	32
EC11	25	18
EC12	4.3	14
EC13	1.1	14
EC14	6	26
EC15	6.9	37
EC16	12	33
EC17	7.9	16
EC18	13	44
EC19	8.4	39
EC20	5.2	17
EC21	4.7	13
EC22	9.3	73
EC23	10	40
EC24	15	390

Table 5-4 Lead and Arsenic Concentrations in Soil (30 to 36 inches bgs)
(CDPHE TBA Investigation)
All concentrations in ppm

Sample Location ID	Arsenic	Lead
EC02	3	12
EC08	16	140
EC13	29	68
EC16	2.8	9.4
EC21	12	31

5.3. Envirogroup Investigation

In July 2002, EnviroGroup collected 85 soil samples over the ground surface (0) to 2-inch depth interval from Subarea 1C and parcels 2, 3, and 4. Figure 2 outlines the sample locations in Subarea 1C. Three of the 85 soil samples were collected in Subarea 1C as part of the investigation. These limited data indicate a range from 210 to 290 ppm of lead concentrations in the soil, which are below the CDPHE SRO for commercial and residential/unrestricted land use. None of the samples collected in Subarea 1C for arsenic in soil exceeded the 70 ppm standard established by the CDPHE. The arsenic concentration in Subarea 1C was approximately 21 ppm. The analytical results for the soil samples are summarized in Table 5-5.

Table 5-5
Summary of Analytical Results for Subarea 1C
(EnviroGroup Investigation)
All concentrations in ppm

Sample ID	Arsenic	Lead
1	21	290
2	21	210
3	21	270

[1]Source: EnviroGroup 2002

5.4. Analysis of Brownfields Cleanup Alternatives (WCRC)

Following the 2004 WCRC study, it was evident that additional information was needed of the depth of lead contamination in the MCFA floodplain area. American Geological Services, Inc. (AGS) was contracted by the WCRC to perform additional site investigative activities. AGS collected soil samples from various depths within soil profiles in the floodplain area during late September of 2005. Collection depth intervals were from 0 to 3 inches, 3 to 6 inches, 6 to 9 inches, 9 to 12 inches, and 12 to 18 inches. The WCRC evaluated the samples for lead concentration using their XRF instrument during January and February of 2006. A total of 325 samples from 65 sites were collected and analyzed. For XRF analysis in the lab setting, only the portion of "fines" passing a 2mm sieve are prepared and analyzed. For the 2005 sampling, weights of gravel and cobble material not passing through the 2mm sieve were also recorded, and this allowed for calculation of "in-situ" lead concentrations. This in-situ concentration would be more comparable to XRF in field "shots" of in-situ material. Locations for these samples are outlined in Figure 2 and concentrations of lead in fines and in-situ at the various depths are shown in Table 5-6. Lead concentrations generally decreased with depth, but lead contamination was encountered in many areas to the 18 inch depth. Lead concentrations in fines ranged from 261 to 18,893 ppm at the 0 to 3 inch depth, to below detection limits to 26,599 ppm at the 12 to 18 inch depth. These site investigative activities were outlined in the *Analysis of Brownfields Cleanup Alternatives* (WCRC, 2006)

Table 5-6. WCRC-AGS Floodplain Depth-Interval Sample Data

Sample	Lead Concentration (ppm) in fines < 2mm					"In-Situ" Lead Concentration (ppm)					Location-UTM NAD83	
Depth:	0"-3"	3"-6"	6"-9"	9"-12"	12"-18"	0"-3"	3"-6"	6"-9"	9"-12"	12"-18"	X	Y
1	12595.2	16844.8	21094.4	6249.6	1524.8	10314.2	13160.0	14018.4	4751.8	1030.9	331256.0	4188673.0
2	18892.8	10198.4	1840.0	257.6	683.6	16915.6	9283.2	1717.3	182.9	146.9	331284.6	4188658.2
3	260.8	5704.0	11897.6	4998.4	1009.6	97.7	3961.1	8498.3	4192.2	797.1	331269.6	4188641.2
4	4067.2	13145.6	1929.6	203.2	94.4	1768.3	10316.8	1691.7	203.2	39.0	331289.9	4188618.1
5	3577.6	2299.2	1729.6	2019.2	1449.6	490.2	381.8	360.8	274.3	267.5	331315.2	4188680.2
6	2440.0	1868.8	2169.6	3019.2	3280.0	428.6	242.7	562.4	1935.4	796.7	331325.0	4188649.6
7	2729.6	1420.0	1708.8	1659.2	1220.0	448.7	368.3	383.0	408.7	195.3	331357.4	4188617.9
8	3449.6	2760.0	2499.2	1649.6	756.4	1094.6	780.2	591.2	183.5	106.2	331344.4	4188674.2
9	2948.8	2828.8	2249.6	2668.8	2748.8	1857.4	468.3	378.7	507.7	527.4	331401.4	4188667.7
10	2609.6	1760.0	1868.8	1640.0	1540.0	736.2	195.3	501.6	486.4	342.8	331391.2	4188631.0
11	2620.0	2329.6	1929.6	1549.6	1149.6	332.9	359.3	244.4	243.8	77.1	331441.0	4188618.6
12	5347.2	3827.2	3619.2	5120.0	15891.2	1667.7	1289.1	1057.5	2356.2	11466.9	331456.3	4188670.1
13	6169.6	15398.4	998.4	125.9	155.1	2009.4	7866.4	741.0	98.5	105.3	331487.0	4188671.9
14	5718.4	4897.6	3228.8	3188.8	3417.6	1892.0	614.5	361.6	517.8	460.2	331494.0	4188643.7
15	1300.0	82.8	57.6	<69.3	47.9	1127.8	43.4	17.0	<20.5	36.7	331309.8	4188554.6
16	5238.4	603.6	153.6	182.1	85.1	4431.7	211.8	45.1	37.6	18.7	331266.6	4188544.2
17	7929.6	918.4	394.8	168.1	92.6	5407.1	426.6	62.5	24.3	18.6	331302.8	4188581.0
18	7168.0	3529.6	350.0	141.7	141.4	4443.4	577.8	48.2	25.6	36.9	331277.3	4188580.3
19	2899.2	2668.8	1880.0	1529.6	1614.8	489.9	361.4	309.0	286.4	342.9	331342.5	4188583.1
20	5168.0	3657.6	488.4	230.8	146.0	3207.2	3279.0	459.5	225.5	142.9	331384.0	4188576.3
21	3337.6	3308.8	2299.2	2132.8	1939.2	750.7	463.2	348.8	482.0	258.8	331346.2	4188533.6
22	3520.0	2794.4	2640.0	1828.8	3299.2	2856.1	1152.0	732.7	309.2	539.5	331384.6	4188541.2
23	1819.2	385.4	102.3	95.1	68.7	1489.7	339.1	96.2	14.5	12.0	331395.0	4188587.4
24	3042.7	1899.2	1739.2	1668.8	1460.0	1393.0	232.3	300.1	297.9	202.5	331461.1	4188583.1
25	5929.6	2808.8	1699.2	1589.6	1389.6	2312.3	433.8	289.0	318.1	732.6	331429.5	4188516.4
26	4278.4	2579.2	3019.2	3079.2	1629.6	1481.8	996.1	866.8	865.3	553.6	331491.0	4188542.6
27	6249.6	3360.0	239.1	83.9	<61.8	4487.2	2573.2	221.4	67.6	<28.7	331498.4	4188606.1
28	4777.6	3358.4	2628.8	2628.8	2779.2	1884.3	1211.1	859.8	1522.4	1587.2	331527.1	4188599.0
29	4857.6	3888.0	2689.6	3009.6	2828.8	2115.7	553.8	707.8	659.9	805.7	331525.6	4188572.2
30	4368.0	766.4	260.4	264.1	129.4	2285.2	219.3	46.3	59.8	23.6	331303.8	4188466.0
31	16396.8	15296.0	4259.2	1149.6	293.8	13099.0	12237.9	3661.9	1086.5	205.1	331309.6	4188499.8
32	2948.8	195.7	60.7	<58.95	<64.65	2801.6	189.6	59.5	<58.3	<29.2	331311.1	4188524.2
33	7059.2	276.8	77.0	<87.83	<44.55	5821.7	251.2	56.6	<16.3	<7.7	331275.9	4188512.4
34	3587.2	2508.8	1800.0	2320.0	3657.6	1140.5	481.2	455.8	1024.9	872.1	331351.0	4188490.0
35	2329.6	2360.0	1939.2	1569.6	1988.8	867.4	461.0	285.1	408.6	421.0	331385.1	4188472.1
36	2769.6	2280.0	2589.6	1549.6	1369.6	572.1	649.7	773.8	193.1	162.9	331370.1	4188431.9
37	2200.0	1779.2	1849.6	1460.0	2228.8	398.7	326.2	432.7	281.4	311.5	331402.0	4188396.1
38	3868.8	1560.0	1824.0	850.4	803.2	1972.7	1106.6	625.5	326.3	371.3	331443.3	4188473.9
39	10995.2	5148.8	606.4	450.8	360.4	10098.4	4539.2	521.9	417.1	229.2	331478.2	4188449.3
40	7334.4	2304.0	1788.8	863.2	341.0	4021.4	717.6	434.3	278.5	110.0	331423.1	4188437.4
41	8876.8	9158.4	6604.8	4092.8	2209.6	6711.6	3516.2	1978.4	479.0	402.5	331450.7	4188399.9
42	4067.2	479.8	133.2	75.6	62.1	2964.3	392.7	118.7	58.6	23.0	331411.2	4188479.3
43	5427.2	694.4	392.0	78.1	<62.55	4812.7	368.6	269.8	61.0	<43.7	331476.7	4188490.4
44	8275.2	10195.2	4249.6	324.4	332.2	7634.9	9990.4	3671.3	255.1	260.1	331520.7	4188474.1
45	3968.0	8473.6	17996.8	24998.4	26598.4	2182.8	4386.4	12248.3	17829.0	23604.6	331517.3	4188400.3
46	7616.0	816.8	164.6	90.7	<57.9	6423.8	639.5	118.4	37.2	<34.8	331390.6	4188302.8
47	4358.4	2708.8	1620.0	1834.4	1908.8	2093.6	607.9	298.6	233.6	1041.9	331396.2	4188346.2
48	2519.2	712.8	64.3	77.1	2840.0	1395.6	528.7	60.3	71.2	2047.1	331333.0	4188418.4
49	3648.0	2889.6	1880.0	1739.2	2099.2	923.5	1035.2	207.6	267.1	387.0	331390.2	4188375.5
50	2299.2	1920.0	1819.2	1840.0	1569.6	831.5	142.8	278.1	129.1	52.7	331428.3	4188344.9
51	4707.2	4729.6	5008.0	5280.0	2659.2	3431.2	2362.6	3513.6	1522.2	802.7	331444.1	4188307.1
52	2480.0	3068.8	3968.0	2120.0	1449.6	878.3	1474.3	1011.1	375.9	283.0	331497.2	4188296.5
53	3619.2	1849.6	522.0	118.4	198.1	1936.3	1203.4	387.2	100.7	80.6	331468.8	4188360.8
54	7244.8	11699.2	8665.6	4518.4	4617.6	6529.3	10918.1	4220.5	2621.5	945.3	331513.1	4188333.1
55	3478.4	2249.6	1788.8	1720.0	1788.8	1085.0	689.7	1121.1	990.1	778.3	331516.6	4188297.3
56	6118.4	8249.6	2649.6	1440.0	345.0	5037.7	3440.1	383.9	327.3	107.8	331438.2	4188203.6
57	3520.0	973.6	173.7	220.8	160.1	2971.8	910.2	162.0	102.1	45.8	331466.6	4188254.2
58	3817.6	6537.6	837.6	405.0	94.3	3079.5	3508.5	159.0	124.5	55.0	331413.6	4188248.8
59	18745.6	11395.2	803.8	169.4	228.0	14512.7	11157.8	725.0	145.8	116.6	331431.5	4188292.5
60	1429.6	1680.0	1584.8	1309.6	1329.6	197.8	360.0	264.5	162.0	193.2	331498.3	4188256.6
61	3049.6	1580.0	1189.6	1120.0	1699.2	1011.5	191.1	190.8	174.1	297.0	331518.6	4188232.9
62	2809.6	2068.8	1729.6	1939.2	2320.0	824.0	268.6	271.8	272.0	659.6	331516.7	4188208.0
63	358.0	110.3	<55.65	66.2	64.1	294.3	66.0	<22.6	12.4	14.1	331502.0	4188092.1
64	1240.0	158.7	<52.8	<60.6	<55.05	858.5	129.0	<13.5	<13.8	<22.2	331486.7	4188149.0
65	407.8	48.0	<58.8	<57	<39.75	296.6	35.7	<26.3	<32.3	<16.5	331507.0	4188171.2

5.5. Sampling and Analytical Methods

The general approach to sampling the Mineral County Fairgrounds soils in the most recent Site assessment (WCRC 2006) is discussed in this section.

Soil samples were collected from the Site by an environmental technician wearing Nitrile gloves, and a decontaminated spade, trowel, or hand-operated coring devise. Any source waste rock and soil matrix samples were placed directly into the appropriate sample containers. Each sample collected from the Site was labeled with the sample sector, sample number, sample depth interval, date, and time. The sample locations were photographed and descriptions were logged into a field log book with standard geologic descriptions. Between soil samples, the sampling equipment was properly decontaminated.

In the laboratory environment, the total weight of each depth sample was weighted. For areas with high gravel or cobble content, each depth sample was sampled through a series of sieves with the final finest sieve being a standard #10 (2mm) sieve. The remainder of the material on the sieves also was weighed. These weight measurements were used following the XRF analysis to calculate in-situ “total” lead concentrations in addition to the XRF lead concentrations.

6. Extent of Contamination

This section summarizes the nature and extent, and pathway analysis of existing environmental conditions based on review of existing information, as previously presented Section 2.3.

6.1. Soil

Metal concentrations above the residential/ unrestricted land use recommended SRO for lead of 400 ppm have been detected in Subarea 1B and the floodplain. Metal concentrations in Subarea 1C are below the recommended SRO.

The investigation conducted by EnviroGroup (2002) collected samples from Subarea 1C. Lead concentrations, as presented in Table 5-5, ranged from 210 to 290 ppm; and arsenic concentrations were estimated to be approximately 21 ppm, which is below the 70 ppm recommended SRO. Based on these results, Subarea 1C will be designated clean and no further action will be required.

Based on the results from the CDPHE *Targeted Brownsfield Assessment* (2002), the WCRC *Airport Corner Land Characterization* (2001), and the WCRC *Analysis of Brownsfield Cleanup Alternatives* (2006), portions of the floodplain and Subarea 1B have lead concentrations that exceed the 400 ppm recommended SRO for residential/unrestricted land use. The total area of elevated metal concentrations was estimated to be approximately 32.5 acres. This area will be addressed in the remediation section of this VCUP application.

6.2. Groundwater

Groundwater in the vicinity of the Site typically occurs in the volcanic bedrock and alluvial aquifers, and flows under water-table or unconfined conditions. The water level in the alluvial aquifer is shallow and approximately 2-10 feet bgs. Groundwater in the alluvial aquifer is hydraulically connected to the bedrock aquifer and Rio Grande River flow system. Numerous groundwater supply wells are installed in the alluvial aquifer in the vicinity of the Site. However, groundwater supply wells downstream of the Site have been sampled and analytical results have indicated the water is free of contamination (CDPHE 2002).

Groundwater analytical data is not available for the Site since previous investigations have focused on metals in soils. Previous attempts to sample groundwater failed due to drilling limitations. It is assumed that groundwater has not been impacted from the contaminated soil, since most of the elevated metals concentrations have been found within the top 6-12 inches of the soil profile. Because the mobility of lead in unsaturated soil is low and the groundwater samples collected downstream did not indicate contamination (CDPHE 2002), the potential for ground water contamination at the Site is considered to be low. Therefore, further evaluation and evaluation of the groundwater is not considered to be required at this time.

6.3. Surface Water

Several braids of Willow Creek run through the Site, and converge southeast of the Site near the confluences with the Rio Grande River. Environmental concerns with Willow Creek and the portions flowing through the Site will not be addressed by this VCUP, since the impacts to the creek originate upstream of the Site. It is assumed that contamination from the Site is not further degrading water quality of Willow Creek. Water quality data for Willow Creek at the Site is not available.

7. Applicable Standards and Risk

This section summarizes the applicable standards and risk associated with this VCUP application.

Soil remediation at the Site will be conducted in accordance with the Colorado VCRA (CRS 25-16-301) requirements. For a VCUP to be approved, it is necessary to demonstrate that it will attain a degree of cleanup and control of hazardous substances that complies with the promulgated applicable state requirements, regulations, criteria, or standards. Additionally, it must be shown that the Site does not present an unacceptable risk to human health or the environment based upon the Site's current uses and future uses proposed by the Site owner(s).

The CDPHE developed recommended SRO, which are applicable to this VCUP application. As established by the VCUP submitted by Navajo Development, LLC, the CDPHE established an action level of 70 ppm for arsenic in soil for all land uses. Table 7-1 summarizes the soil remediation standards for the metals of concern at the Property associated with this VCUP application.

Table 7-1
Summary of Soil Remediation Standards[1]
All concentrations in ppm

Description	Arsenic	Lead
Residential/Unrestricted Land Use	70	400

[1]CDPHE, 2001.

The objective of the remediation plan will be to treat soil that contains lead concentrations above the 400 ppm and/or arsenic concentrations above 70 ppm using a stabilization/capping approach to reduce the mobility of metals in the soil. Since sensitive populations (e.g., young children and elderly) will be utilizing the Site, under the proposed SRO policy the Site would be classified as residential/unrestricted land use. In addition, to avoid additional land restrictions the residential/unrestricted land use recommended SRO's for lead were selected as recommended by MCFA.

8. Reclamation Plans

The following sections discuss and compare potential cleanup alternatives for the MCFA Site. Proposed alternatives include removal of contaminated soil and placement in a repository, capping of contaminated soil, and a “no-action” alternative to do nothing. The first two alternatives are sometimes referred to in the text as the soil removal and capping alternatives. Schematics for the first two cleanup alternatives are presented in the Figure 3.

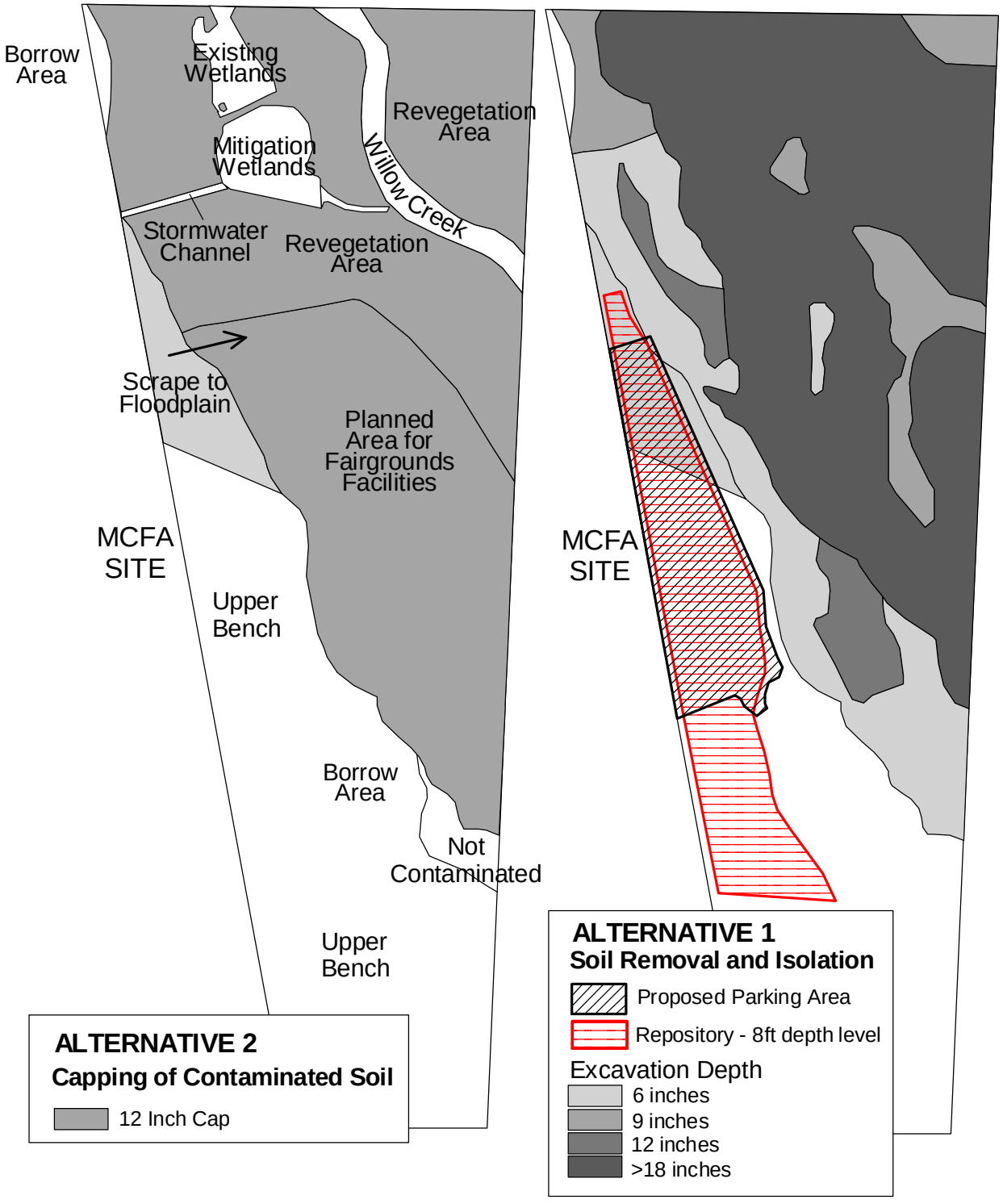

Figure 3. Schematics of Proposed Cleanup Alternatives(Source: ABCA Report, WCRC, 2006)

8.1 Alternative 1 - Removal of Contaminated Soil and Placement in Repository

The most extensive cleanup alternative is to excavate all soil with lead concentrations greater than the residential standard (400 ppm) and place this contaminated soil in an on-site repository. The repository would be dug into the upper bench, filled with the contaminated soil, and capped with an impermeable cap. The cap would most likely be constructed of asphalt and used as a parking area for the fairgrounds facilities. The depth of the repository would be limited to ensure that the contaminated soil would remain above groundwater.

Figure 3 shows a general schematic for the soil removal and repository alternative. The depth of excavation required to remove soil with lead above the residential standard is shown in greyscales. In much of the floodplain, contaminated soil was encountered to an 18 inch depth. For volume calculations, a depth of 2 feet was assumed for these areas, but the contaminated soil may extend deeper in some areas. Approximately 70,000 cubic yards of contaminated soil would have to be removed from the floodplain area and from the northern tip of the upper bench.

The upper bench is about 6 feet taller than the adjacent bench, and about 10 feet above the level of the creek in a perpendicular direction. A 6 to 8 foot deep repository could be dug in the upper bench depending on the permanent level of groundwater. A limited amount of contaminated material could also be placed under permanent building foundations or parking areas proposed in the floodplain, but depths would probably be limited to 2 to 4 feet.

Current architectural plans propose a parking area on the upper bench of about 4 acres. For placement of all contaminated material a repository area of 5.5 to 7.3 acres would be needed for repository depths of 8 and 6 feet. The repository could fit within the proposed parking area if the final cap level was raised between 3 and 5 feet above the surrounding land surface. Figure 3 shows the proposed parking area as well as the area of an 8 foot deep non-elevated repository. In order to avoid the need to purchase additional water rights, material dug from the repository would have to be spread into areas where excavation of contaminated soil exposed groundwater.

Local contractors were questioned about approximate earthmoving costs for the alternative. Earthmoving would include excavation of the repository, excavation of contaminated soil and hauling to repository, and spreading of the repository soil into the floodplain. Costs were estimated to be between $350,000 and $500,000 for earthwork. Placement of a 3” asphalt cap would cost approximately $150,000 for a 4 acre area or about $200,000 for a 5.5 acre area. Therefore, the total project cost would be between $500,000 and $750,000. This cost does not include replacing topsoil in excavated areas or re-vegetation of the floodplain.

This option would effectively remove the risk of direct human contact with contaminated soil through isolation of this soil in a repository. The option would also reduce the

potential for leaching of metals from the soils at the Site as long as asphalt cap was adequately maintained.

Effects on land use due to this alternative would be positive. Successful completion of the alternative would enable use of the Site as a public fairgrounds and allow unrestricted public access to all areas of the Site including the floodplain. Several additional land use controls would be required, but these land use controls would not be incompatible with the foreseen use of the Site into the future. Excavation into the cap or repository would be prohibited without approval from the CDPHE. In addition, the integrity of the asphalt cap would have to be maintained in perpetuity. This maintenance would include repairing any cracks in the cap and potentially re-asphalting the cap after its design life was exceeded. Maintenance of the asphalt cap would imply some continual financial burden on the MCFA.

The alternative is implemental from a construction standpoint if sufficient funds are available. However, the alternative is more costly than originally anticipated. Sufficient funds are not available at this time, and it would be difficult for the MCFA to secure additional funding. Therefore, the alternative may not be feasible from a funding standpoint.

If sufficient funds could be obtained for earthwork and the asphalt cap, it would be difficult to secure additional funds for re-vegetation of the floodplain area. All vegetation and, in many places several feet of soil, would be removed from the floodplain. Vegetation would probably not re-establish easily by itself, and without re-vegetation and possible placement of topsoil, the vegetative, habitat, stream stability, and aesthetic conditions of the floodplain could potentially worsen from current conditions due to the project.

8.2 Alternative 2 - Capping of Contaminated Soil

A second alternative to cleanup the MCFA Site is placement of a cap over areas with soil lead concentrations greater than the residential standard (400 ppm). A 12 inch cap of soil would effectively isolate the contaminated soil from direct human contact. Buildings and paving could also serve as caps in some places, but fill would probably be placed across the area for fairgrounds facilities prior to construction of foundations or paving. The caps would not be designed to be impermeable, but may tend to decrease infiltration and measures would be taken to ensure water application is not increased. Figure 3 shows the location for capping. Nearly the entire floodplain area would be capped. Contaminated soil on the northern tip of the upper bench would be scraped to a depth of 6 inches into the floodplain area and placed under the cap.

Vegetation would be established on the soil cap in areas not designated for fairgrounds facilities. Figure 3 shows the areas currently planned for fairgrounds facilities and for re-vegetation. The vegetation would minimize potential erosion of the cap, and would tend to increase consumption of precipitation and reduce infiltration through capped materials. After adequate establishment of the vegetation, capped areas would not be

irrigated to ensure that water application is not increased from current levels. In areas of fairground facilities, buildings and paving would reduce erosion potential and tend to reduce infiltration. Storm water runoff from fairground facilities would be managed so that infiltration through capped materials would not increase.

Vegetation in areas not designated for facilities would be monitored annually until vegetative criteria were met. Re-vegetation would be considered successful when the total cover measured in transects reached 75% of the cover of typical, undisturbed, unimpacted areas with similar moistures and soils near the Site. To ensure species diversity, at least two grass species and one forb or shrub species should also be present in the transects. It may be difficult to establish vegetation in some soil cap materials, and it may be necessary to apply an additional layer of topsoil or compost to achieve vegetation goals.

The largest area of wetlands at the Site created by the wastewater lagoon effluent would not be covered by the soil cap. Some amount of soil contamination may remain in the wetland soils, but it is not expected that the public will have direct contact with wetland soils. The narrow string of wetlands extending from this area is also supported by the lagoon effluent, and about one acre of these wetlands would be covered by the soil cap. A permit would be required to mitigate this wetland. Permit conditions would govern the required mitigation area although a one-to-one mitigation area of one acre is shown in Figure 3. Contaminated soil to the south of the current large wetland area would be removed and placed under the cap, and the area of mitigation wetlands would be placed in the cleaned area. Contaminated soil would also be removed to establish a conveyance channel between a culvert that has been installed on the northwestern side of the property and the new wetland area. The culvert was installed for a channel to divert storm water from running onto the central portion of the airport corner property. Contaminated soil may also be removed from some areas near the fairgrounds facilities planned for vegetation landscaping or trees that may require limited irrigation.

The active area of Willow Creek would not be capped as the cap material would be quickly eroded, and stream bed materials are continuously transported into and out of the reach. A corridor would be established for the stream channel and measures taken to stabilize the channel location. A project to restore and stabilize Willow Creek throughout the entire floodplain area is currently being designed by the Natural Resources Conservation Service (NRCS).

Figure 3 details construction areas for Alternative 2. Contaminated soil would be removed from 1.6 acres on the northern tip of the upper bench, about 1.0 acre for the mitigated wetlands, and 0.1 acres for the storm water channel. A corridor of about 1.2 acres would be left for the Willow Creek channel and not capped. The remaining floodplain area to be capped with at least 12 inches of soil is about 25.6 acres in size. This equates to at least 41,300 cubic yards of cap material. More material may be placed in some areas to raise foundation levels for fairgrounds facilities above flood levels. Approximately 11.5 acres of the capped area is currently planned for fairgrounds facilities and 14.1 acres of the capped area would be re-vegetated. If 2 to 3 inches of

topsoil or compost is needed to establish vegetation in non-fairground facility areas, approximately 3,800 to 5,700 cubic yards would be needed.

Source areas for fill for the soil cap would include an area to the southwest of the floodplain on the MFCA Site and an area to the northwest of the Site on the airport corner property. The on-site borrow area is currently proposed as a recessed area for onsite parking of horse trailers. The coarser fill from this area could be used when more than 12 inches of fill is desired to raise foundation levels for fairgrounds facilities. The off-site borrow area is a hill composed of relatively soft Creede formation material. Some parts of the Creede formation may be mineralized. However, the WCRC evaluated soil from the hill using XRF and no lead was detected. The Creede formation material may be more expensive to excavate and haul from the off-site area, but the formation does have a significant fine proportion that is of much lower permeability than floodplain sediments and would tend to slow infiltration through the cap and allow increased consumption by vegetation. Surrounding Creede formation materials appear to be fair for vegetative growth. Approximately 22,700 cubic yards of material is needed for the cap in the area planned for re-vegetation on the site.

As with Alternative 1, successful completion of Alternative 2 would be positive for land use and enable use of the Site as a public fairgrounds and allow unrestricted public access to the entire site including the floodplain area. Some existing contamination may remain in the current area of wetlands, but it is not expected that the public would contact the soils in these wetlands. Several additional land use controls would be required. Excavation through the soil cap into the contaminated soils would be prohibited without approval by the CDPHE. Adequate vegetative cover would have to be established on areas of the soil cap planned for fairgrounds facilities for the remediation to be considered complete. After vegetation establishment, irrigation in areas of contaminated soils would be prohibited. The soil cap would have to be maintained and areas with significant erosion must be repaired. Potential management of vegetation and erosion would imply some continual burdens on the MCFA.

The estimated cost to scrape the contaminated soil on the northern bench, excavate contaminated soil for the mitigation wetlands and storm water channel, level topography, place the soil cap, and re-vegetate the non-fairgrounds area of the floodplain is estimated between $200,000 and $300,000. This cost does not include application of topsoil or compost to the Site which may also be required to adequately establish vegetation. It is anticipated that if any extra funding is available, it will be used to haul and apply a layer of topsoil or compost. A two inch layer of compost for re-vegetated areas would cost about $200,000, so use of locally available topsoil may be more feasible.

8.3 Alternative 3 - No Action Alternative

A No-Action Alternative must be considered as part of the ABCA process. Constructions costs of the No-Action Alternative would obviously be zero although limited costs have already been incurred for site investigations.

As far as land use, the no action alternative would preclude public use of the Site for a fairgrounds facility due to lead contamination and risks to young children and pregnant mothers. Although currently not visibly restricted, public access to floodplain areas should be restricted or prohibited in the future if the site is not cleaned up. Environmental conditions and risks would probably not worsen or improve with no action at the Site.

8.4 Comparison of Alternatives

Both the capping and soil removal alternatives would isolate contaminated soil on the site from direct human contact and effectively reduce the health risks to workers, residents, and the public associated with direct contact with lead contaminated soil. Both of these cleanup alternatives would provide for adequate protection of human health. The no-action alternative would not satisfy requirements for adequate protection of human health as significant lead contamination would still be available for direct human contact at the Site.

The soil removal alternative would reduce, and potentially eliminate, infiltration through contaminated soils that have shown a potential to leach metals, particularly lead, into the groundwater. This would fully satisfy environmental protection requirements.

The capping alternative would not eliminate infiltration of water through the contaminated soils on the Site, as the cap would not be designed to be impermeable. Infiltration through contaminated soils may be reduced somewhat due to potential use of soils with a lower permeability than current floodplain sediments in the cap, additional cover of areas with structures or paving, establishment of vegetation, and control of storm water runoff. The requirement to not irrigate capped areas following adequate establishment of vegetation would ensure that water available for infiltration through contaminated soils would not increase above current levels. Available data have not indicated that current levels of infiltration through soils at the MCFA Site are impacting Willow Creek. As infiltration would not increase and may decrease, impacts to Willow Creek would not be expected following implementation of the capping alternative. Therefore, the capping alternative should provide for adequate protection to the environment to satisfy requirements of the Colorado VCUP program.

If adequate funding was secured for the soil removal and isolation alternative, it is probable that additional funding would not be secured to replace topsoil and re-vegetate the floodplain area. Therefore, the soil removal alternative could potentially result in negative impacts to vegetative, habitat, stream stability, and aesthetic conditions in the MCFA floodplain. A requirement of the capping alternative would be to restore vegetation to the floodplain area. Therefore, the capping alternative would have positive impacts on vegetation, habitat, and aesthetic conditions in the floodplain. However, it may be necessary to bring in additional topsoil or compost to be able to achieve re-vegetation goals.

Both the soil removal and capping alternatives would necessitate the land use control to prohibit excavation into contaminated soils without approval by the CDPHE. For the soil removal alternative, the asphalt cap would have to be maintained in perpetuity and periodically re-asphalted after its design life was exceeded. For the capping option, the soil cap would have to be maintained to avoid erosion of the cap. Maintenance of adequate vegetative cover at the site may be difficult, especially if drought conditions persist in the area. Therefore, both alternatives would imply continual management and financial burdens on the MCFA. However, these controls are compatible and feasible with future use and management of the site. The no-action alternative would preclude use of the site as a public fairgrounds and is not compatible with the use goals envisioned for the site.

For the soil removal and isolation alternative, the estimated cost of $500,000 to $750,000 is more than the current available cleanup funding. An additional EPA Brownfields grant could probably not be obtained for the site, and other significant funding for cleanup would be difficult to secure. For the soil capping alternative, the estimated cost of $200,000 to $300,000 is feasible given the current available Brownfields related funding. The no-action alternative would obviously incur no cleanup construction costs.

In summary, the soil removal and isolation alternative would provide for protection of human health and the highest degree of protection for the environment. However, the alternative is probably not feasible due to the high cost. The capping alternative would provide for similar human health protection but less environmental protection than the soil removal alternative. However, the alternative is feasible from a funding standpoint and environmental protection is adequate. The alternative would also result in more positive impacts to the vegetative, habitat, and aesthetic conditions of the floodplain than the soil removal alternative. The no-action alternative is obviously feasible, but would not be compatible with the land use goals for the Site.

9. Selected Alternative, Proposed Cleanup Plan, and VCUP Reclamation Standards

The alternative “Capping of Contaminated Soil” described above is selected as the most feasible alternative meeting land use goals and is proposed as the cleanup plan for the MCFA Site.

The floodplain area of the Site will be capped with at least 12 inches of non-contaminated soil. Contaminated soil will be scraped from a 1.6 acre area at the northern tip of the upper bench to a depth of 6 inches. In addition, contaminated soil will be removed from the area for the mitigated wetlands for a storm water channel. The removed contaminated soil will be placed into the floodplain area, and then covered with the cap. The active Willow Creek stream channel will not be capped. In addition, wetland areas maintained or established at the site will not be capped.

The capped area not envisioned for fairgrounds facilities will be re-vegetated, and re-vegetation will be considered successful when the total cover reaches 75% of the cover of un-impacted areas with similar moistures and soils near the site. Cover will be measured in transects and defined as live stems, litter (dead vegetation both standing and down), moss, and rock. Combinations of rock and moss may not exceed 20 percent of the area. At least two grass species and one forb or shrub species must be present in the transects. To determine cover, five random transects 100 feet long will be measured with determination of cover made at 1-foot intervals. Vegetation monitoring will continue annually during late summer or early fall until the vegetative criteria are met.

The capped floodplain area will not be irrigated once vegetation has been adequately reestablished. An environmental covenant will be placed on the deed of the fairgrounds property to prohibit digging through the 12 inch cap in the floodplain without prior approval of the CDPHE. The MCFA will also be responsible to maintain the cap to prevent erosion.

The proposed cleanup plan is estimated to cost between $200,000 and $300,000. Additional funds may be need if additional topsoil or compost is needed to achieve re-vegetation goals.

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