

Handbook of Wetland Vegetation Communities of New Mexico

Volume II: Wetland Reference Sites for New Mexico

Mike Bradley, Esteban Muldavin, Paula Durkin and Patricia Mehlhop
New Mexico Natural Heritage Program, Biology Department
University of New Mexico, Albuquerque, New Mexico 87131

Summary

To support the assessment of wetland (including riparian) ecosystems for the state of New Mexico, a database of “reference” sites was developed. These sites serve as extant benchmarks of composition and condition of these important biological resources, and can provide useful information for a variety of assessment techniques such as Hydrogeomorphic classification (HGM), or Proper Functioning Condition (PFC). Over 300 sites have been evaluated to date through a combination of aerial and ground surveys. Of these, Volume II presents, in detail, 48 sites which support the best representatives of the major community types described in Volume I of the “Handbook of Wetland Vegetation Communities of New Mexico.” Each site is described with respect to vegetation community composition, physical characteristics, quality and location. Accompanying the descriptions are site photographs, 1:24,000 scale maps showing site boundaries, and representative stream channel cross-sections that provide information on vegetation community relationships, soils, and stream flows. A preliminary rank has been assigned to each site in the database with respect to condition (A=excellent, B=good, C=fair, D=poor) following protocols developed from the National Heritage Network standards. The parameters used in this ranking process are provided here in detail. Each site is cross-referenced to community types in Volume I.

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INTRODUCTION

The assessment of functionality or health of wetland areas (including riparian) is a concept that has implications for conservation, management, mitigation, and public policy. Assessing the value of these areas is complex due to the wide array of assessment needs (water quality, biodiversity, ecological, recreational, agricultural, etc.). From an environmental and ecological perspective, wetlands assessment must take into account aspects of ecosystem processes, function, and structure when determining ecosystem integrity. The integrity of wetland ecosystems, like all other ecosystems, is based primarily on the ecological processes that maintain ecosystem structure and function (Karr 1995, Meyer 1997).

In the arid and semi-arid Southwest, most wetlands occur in river and stream floodplains, and to a lesser degree around lakes, depressional swales and playas. They include not only the typical emergent herbaceous marshes, but also the forested and shrubland wetlands of our riparian zones that are dependent on surface and/or groundwaters (see Volume I for details). In these river-oriented wetland ecosystems, one of the main physical processes that affects wetland function and integrity is the cyclic inundation by floodwaters. Without such flooding, the sustainability and maintenance of these systems is threatened. Because of flooding, wetland areas are dynamic. Vegetation patterns in these landscapes change as floods redistribute nutrients (in the form of woody debris and sediment), change channel morphologies, remove stands of vegetation and create fresh sites on which new ones can grow. Hence, healthy wetland/riparian areas are diverse in species and communities, with early to late seral successional stages occurring in a natural mosaic across the landscape. A healthy stream reach should also be able to maintain its ecological structure over time, and is both resilient and resistant to natural disturbance (Meyer 1997). Vegetation changes are normal at any one site, but the overall composition of the reach or site should remain fairly constant under a consistent hydrological regime.

The assessment of viability and integrity requires some forethought on the future effects of land-use patterns and hydrological impacts. For example, the viability of the Rio Grande cottonwood bosque in the Middle Rio Grande is in serious doubt due to the regulated conditions of the Rio Grande (Howe and Knopf 1991 and Crawford et. al 1993). Under natural hydrologic conditions, the channel in the Middle Rio Grande would overflow its banks with seasonal snowmelt and larger floods, enabling lateral movement across the floodplain. With the construction of Cochiti Dam and Bureau of Reclamation channel-straightening projects, however, the channel essentially became "locked" in place and the natural flow of water significantly altered (Crawford et. al. 1993). Although these stands are currently in relatively good shape, the significant changes in hydrological regime have all but eliminated the natural reproductive potential of the cottonwoods in most of the remaining floodplain, and hence the long-term sustainability of these forested wetlands is brought into question.

As a result, a common theme in assessment protocols for evaluating wetland status is the nature of the hydrological regime. Several ecologically based assessment techniques have been developed by various agencies, but currently there are two main assessment surveys used by land managers. The Bureau of Land Management's Proper Functioning Condition (1994 and 1995), or PFC, is an interagency set of protocols that relies on relative measures of condition and the opinions of an interdisciplinary team of experts. The Army Corps of Engineers' Hydrogeomorphic Assessment (Smith 1995), or HGM, is supported by the EPA and approaches assessment more quantitatively in the context of "reference" and "reference standard" sites. The development of

reference sites is used as a comparative assessment tool to determine as objectively as possible levels of degradation (Steedman 1994, Karr 1995, and Smith 1995). In essence, both PFC and HGM reflect the main tenets of ecosystem health: integrity, function, and diversity, in the context of reference sites or expert knowledge. To support these types of wetland assessments, the New Mexico Natural Heritage Program (NMNHP) has developed a database of “reference” sites that can serve as benchmarks of condition for the wetland (including riparian) communities in New Mexico.

Reference Wetland Sites Ranking and Selection

Currently, there are over 300 sites in the NMNHP Wetlands Database, each with associated information on location, biological diversity, impacts and condition. The database is derived from aerial reconnaissance, field studies and surveys that the NMNHP has conducted since 1991 along the major rivers and tributaries of the state. These include the Pecos (Durkin et al. 1994a and Muldavin 1991 and 1993a), playas (Durkin et al. 1994b), the Rio Grande (Durkin et al 1995a and 1995b, and Muldavin 1997), the Gila, San Francisco, and Mimbres watersheds (Durkin et al 1996), and the San Juan watershed (Durkin et al. 1997). The final major basins of the state, the Canadian and Arkansas, were surveyed in the summer of 1997. The distribution of field inventory sites is shown in Figure 1.

To effectively organize the database for use in assessment, we have developed an operational set of criteria for broadly ranking the status of each site (Table 1). These criteria are based on procedures developed by the National Heritage Network for ranking a given occurrence of a community type within a site (The Nature Conservancy 1995 and Rondeau and Kittel 1996). All stands of vegetation from a community type at a given site are considered part of the same “element occurrence” (EO). At a site, individual stands are sampled and evaluated on weighted factors of quality/condition, viability, and size. The weightings reflect an interpretation of the importance of a given factor as a component of ecosystem health. Only those factors are used for which information is available. The emphasis is on biodiversity status, but the ranking process also draws heavily on functional aspects of wetland ecosystems in similar ways to PFC and HGM. There are three general components to the ranking criteria:

1) Quality and Condition of a community type occurrence. These factors reflect the current status of an occurrence with an emphasis on community species composition and structure as they reflect human impacts such as grazing, fuel-wood removals, off-road vehicle use, etc. Physical site characteristics such as fuel loads and streambank conditions are also considered with the degree of overall landscape fragmentation.

2) Landscape Factors. These factors reflect the influence of landscape-level factors that may affect the long-term sustainability of wetland/riparian communities at a site. Here, various aspects of the hydrological regime are used as the primary indicators of status. The overall fire regime is evaluated because of the threat that increased fire frequency poses to wetland/riparian communities. The nature of the vegetation mosaic the occurrence is imbedded in is then considered, and the degree of conversion of natural vegetation to other uses in the landscape (e.g. degree of fragmentation). Also included in this is the diversity of communities and dynamic (successional) stages provides as they provide an indicator of overall ecosystem health i.e., the more diversity of communities and stages, the greater the functionality of the ecosystem.

3) Size. This factor is used as a general indicator of the ability of an occurrence to withstand direct impacts over the long term and be sustained at a site.

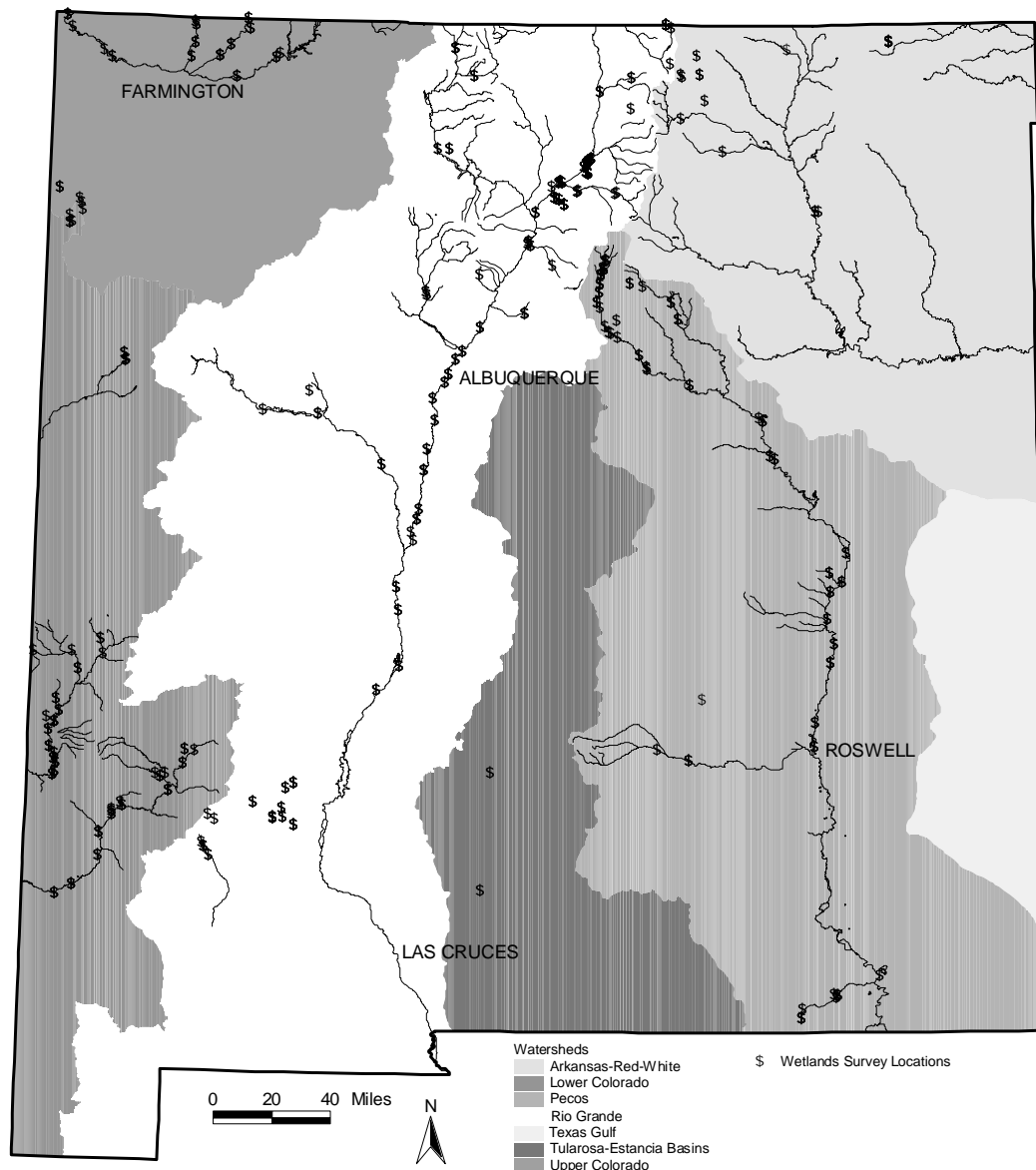


Figure 1. Distribution of wetland survey sites with ground inventory and assessment data.

Table 1. General evaluation guidelines for ranking wetland (including riparian) vegetation community occurrences. A vegetation occurrence is evaluated on each factor where information is available, and then scored by multiplying the numerical point value (pt) of a rank by the weighting factor (W). The maximum total score (T) for each factor is also shown in the right-most column. Next, a rank for each component (Condition, Landscape Context and Size) is computed as Sum of the Scores/Sum the Weights for that component. Component scores are then averaged to arrive at an overall community occurrence rank. To arrive at a final rank for an entire site, average all community occurrence ranks. An “A” site is >3.50, “B” is 2.75 to 3.5. “C” is 1.75 to 2.75, and D = C, and <1.75.

Condition Factors	W	A Rank (4 pt)	B Rank (3 pt)	C Rank (2 pt)	D Rank (1 pt)	T
<i>Exotics versus Natives Canopy.</i> Percent of the highest structural layer (trees, shrubs, or herbs) represented by exotic plant species.	10	Natives dominate the highest structural layer; exotic species poorly represented or absent; <5% of the cover in the same structural layer.	Natives dominate, but exotics compose between 5% and 15% of the cover in the same structural layer.	Natives still dominate, but exotics may co-dominate with 15% - 50% of the cover in the highest structural layer.	Exotics dominate > 50% of the cover in the highest structural layer.	40
<i>Undergrowth Exotics</i>	8	Exotics less than 10% of undergrowth cover.	Exotics between 10% and 50% of the cover.	Exotics between 50% and 75% of the cover.	Exotics >75% of the vegetative cover.	32
<i>Structural Diversity and Cover</i> Presence of expected structural layers, i.e. trees, shrubs, and herbaceous layers and their measured loss due to human impacts (grazing, fuelwood removals, logging, human-caused fire, etc.).	5	All expected structural layers present; human induced impacts have reduced potential cover by less than 5%.	All expected structural layers present, but impacts have reduced cover in one or more layers by 5%-25% of potential.	One of the expected structural layers significantly reduced in potential cover (50%-75%), or two or more layers have lost up to 50% of their potential cover.	One or more expected structural layers reduced by >75% of potential cover. Other layers cover reduced by up by more than 50% of potential.	20
<i>Species Richness</i> Common associates or characteristic species, or loss of, due to unnatural disturbances.	3	Very high species richness; >90% of expected native species associates present. Grazing indicators and weedy species minimal (<5% of the cover).	High species richness; 75%-90% of expected native species associates present. Limited amounts of grazing indicators or weedy species (5%-15% of the cover).	Moderate species richness; 50-75% of expected native species present. Grazing indicators or weedy species may be prevalent (15%-50% of the cover).	Low species richness; < 50% of the expected native species are present. Grazing indicators and/or weedy species abundant and dominant (>50% of total cover).	12
<i>Fire Fuel loads</i>	1	Light fuel loads; little or no fire hazard.	Greater than normal fuel loads, possible fire hazard.	Moderate fuel loads representing a definite fire hazard.	Excessive fuel loads, catastrophic fire likely.	4
<i>Streambank Conditions</i>	1	Streambanks well vegetated and stable.	Streambanks are mostly vegetated and stable.	Many streambanks are poorly vegetated and unstable.	Most streambanks are poorly vegetated and unstable.	4

Table 1. General evaluation guidelines for ranking wetland (including riparian) vegetation community occurrences (continued).

Landscape Factors	W	A Rank (4 pt)	B Rank (3 pt)	C Rank (2 pt)	D Rank (1 pt)	T
<i>Hydrology-- Stream Flow</i>	10	Intact; no irrigation ditches, no dams upstream, or dams are small and far enough upstream that stream flow through the year is approximately normal, reflecting long-term historical conditions. Flooding and normal groundwater levels act to rejuvenate and sustain wetland/riparian communities.	Light Impacts. Small diversions, such as irrigation ditches or acequias may be present and may reduce stream flow or ground water near the sites. Dams are absent or small and far enough upstream that stream flow through the year is more or less normal, reflecting long-term historical conditions. Flood peaks and base flows may be reduced somewhat, but rejuvenation and maintenance of wetland/riparian communities can occur with minimal intervention.	Moderate Impacts. Diversions and dams have modified stream flow such that peak flood flows are dampened, but natural seasonal fluctuations still occur to some degree. Sites that once flooded historically no longer do, but minimum flows are still adequate to sustain current wetland/riparian vegetation. Community rejuvenation is unlikely without significant intervention.	Heavy Impacts. Diversions and dams have modified stream flow such that peak flood flows are dampened, and natural seasonal fluctuations are distorted or absent. Sites that once flooded historically no longer do, and minimum flows may not be adequate to sustain current wetland/riparian vegetation.	40
<i>Hydrology -- Lateral Stream Movement</i>	5	Lateral stream movement is associated with natural sinuosity (no channelization or flood plain barriers levees, riprap, jetty jacks, etc.). New sites for community reproduction continually being created.	Minor modifications that alter lateral stream movement in a few places, but there is still an overall natural sinuosity. New sites for community reproduction still common.	Major modifications such as channelization and levees that significantly restrict the floodplain and limit lateral stream movement. New sites for community reproduction are limited.	Modifications such as channelization, levees, riprap, jetty jacks, etc., severely restrict the floodplain and more or less eliminate lateral movement of the stream. New sites for community reproduction are rare.	20
<i>Hydrology -- Channel Conditions</i>	4	Channel width and depth, and gradient are in equilibrium with landscape setting reflecting excellent watershed conditions with normal erosional processes. System is vertically stable and sediment loads normal, and there is no net loss of vegetated wetland/riparian area.	Limited disequilibrium reflecting good watershed conditions with more or less normal erosional processes. Minor channel morphology changes; some down cutting or light sedimentation is occurring. Small losses of vegetated wetland/riparian area are occurring.	Moderate disequilibrium reflecting only fair watershed conditions. Stream is either degrading with noticeable down cutting; or stream channel is unnaturally aggrading from excessive deposition. Moderate losses of vegetated wetland/riparian area are occurring.	Extreme disequilibrium reflecting poor watershed conditions. Stream is strongly degrading with extensive down cutting and entrenchment leading to accelerated terracing, or stream channel is unnaturally aggrading from excessive deposition and is becoming braided. Large losses of vegetated wetland/riparian area are occurring.	16
<i>Fire Regime</i>	1	Natural fire regime compatible with long-term sustainability of occurrence; natural ignitions not suppressed, but human-caused ones are.	Somewhat modified natural fire regime; fire frequency has increased up to 25% of historical rates, with associated short-term risks, but long-term sustainability of occurrence still expected.	Modified natural fire regime with increased fire frequencies up to 50% of historical rates, long-term sustainability of occurrence is questionable.	Highly modified natural fire regime with >75% increase in fire frequencies over historical rates. Long-term sustainability of occurrence unlikely.	4

Table 1. General evaluation guidelines for ranking wetland (including riparian) vegetation community occurrences (continued).

Landscape Factors (con't)	W	A Rank (4 pt)	B Rank (3 pt)	C Rank (2 pt)	D Rank (1 pt)	T
<i>Landscape Mosaic and Fragmentation</i> Percent of landscape converted to exotic-dominated communities, agricultural lands, or disturbed ground (buildings, roads, dumping and other human impacts).	3	Intact; occurrence imbedded in a natural landscape mosaic whose pattern is driven by natural fluvial processes; < 5% of the area converted.	Mostly Intact; some modification due to human activities has occurred such that between 5%-25% of the natural vegetation has been converted.	Moderately Fragmented; occurrence imbedded in a mixed landscape mosaic where 25% to 75% of the natural vegetation has been converted (some corridors may still exist, and distances between patches of natural vegetation is not excessive).	Highly Fragmented. Occurrence is isolated in a landscape where >75% of the natural vegetation has been converted.	12
<i>Landscape Community Diversity and Function</i>	3	Occurrence surrounded by a wide variety of community types representing early, mid and late successional stages in approximately equal proportions, indicating a functional wetland/riparian ecosystem.	One community type and successional stage is more prevalent than others (50%-66% of the vegetation), but a wide range of expected community types is still present, suggesting limited wetland/riparian ecosystem disfunction.	The landscape is strongly dominated by one community type and successional stage (66%-90% of the vegetation); one expected community type and successional stage is significantly reduced (<5% of the vegetation) indicating moderate wetland/ riparian ecosystem disfunction.	One community type or successional stage dominates to the near exclusion of all others (>90% of the vegetation) indicating excessive wetland/riparian ecosystem disfunction.	12
Size Factor	W	A Rank (4 pt)	B Rank (3 pt)	C Rank (2 pt)	D Rank (1 pt)	T
<i>Size</i>	1	Very Large; the size exceeds that expected under natural fluvial processes. Buffering more than adequate against catastrophic disturbance events, weedy or exotic incursions. Edge effects are minimal.	Large; the size equals that expected under natural fluvial processes. Only minor reductions in stand size due to impacts; adequate buffering against catastrophic disturbance events, weedy or exotic incursions. Some edge effects may be apparent.	Moderate; size reduced below that expected under natural processes. Limited buffering against catastrophic disturbance events, or weedy or exotic incursions. Edge effects are readily apparent.	Small; size reduced well below that expected under natural processes. Little or no buffering against catastrophic disturbance events, or weedy or exotic incursions. Edge effects dominate the character of the occurrence.	4

Each occurrence is evaluated and ranked on these criteria with the average of all occurrence ranks then taken as the final, overall site rank. The final rankings generally reflect the best estimate of the quality and degree of human impacts on the ecosystem, and its potential for recovery that are summarized as follows:

- "A" Excellent (>3.5). A diverse mosaic of natural vegetation community occurrences that are nearly undisturbed by humans, or have recovered from early human disturbance. Highest quality and condition with respect to species diversity and community structure, with ecological processes that are fully functional. Stand sizes are relatively large and are well-buffered; long-term viability is expected.
- "B" Good (2.75-3.5). A diverse mosaic of natural vegetation community occurrences that are still recovering from early human disturbance or have been subjected to current or recent light disturbance. Vegetation expression and ecosystem processes may have been slightly modified. In particular, some exotic species encroachment and/or reversible, small modifications to the hydrological regime may have occurred. The stand may recover to A-grade with minimum management intervention. Stand sizes are moderate and the buffer areas are adequate; long-term viability is likely, given no further environmental degradation occurs.
- "C" Fair (1.75-2.75). A vegetation community occurrence in the early stages of recovery or that has been significantly altered by moderate disturbance resulting in a mixed mosaic of natural vegetation communities and tracts converted to human use (agriculture, structures, roads, etc.). Vegetation expression and ecosystem processes have been significantly modified and may be declining. In particular, exotic encroachment may be significant, and/or permanent small-scale modifications to the hydrological regime may have occurred. Stand recovery to at least B-grade is still possible with proper management intervention. Size of the stand may be relatively small and/or the buffer significantly compromised; long-term viability is questionable unless declines are stopped and actively reversed.
- "D" Poor (<1.75). Highly fragmented landscapes and/or vegetation community occurrences that are severely disturbed. Species composition and structure have been greatly altered, and natural recovery is not expected. Exotics probably dominate and/or large, irreversible modifications to the hydrological regime may have occurred. Restoration and sustainability are unlikely without intensive management and/or major landscape level manipulations.

The intensity of occurrence evaluation varies, from aerial reconnaissance to brief ground surveys, to detailed plot sampling and analysis. Aerial surveys or the use of aerial photography was often adequate to determine low ranked (D) sites where no significant stands of natural wetland/riparian vegetation occurred. But if patches of natural vegetation were present, ground surveys were usually necessary to determine actual stand conditions.

WETLAND REFERENCE SITES OF NEW MEXICO

Of the 302 sites evaluated, 38 reference sites were selected to represent all the established and provisional wetlands Community Types (including riparian) in the New Mexico Wetlands Classification (see Volume I). The distribution of the sites across New Mexico is shown in Figure 2 (these are a subset of the sites shown in Figure 1). The name, location by watersheds, stream reaches and county along with the site rank are provided in Table 2. The reference site selection was based on the highest ranked site of that particular community type (Table 3). In the case of a tie (more than one site with the same rank and community type), the bigger, or the site with more high quality community types, was chosen as the reference site.

Below we present detailed descriptions of the wetland reference sites of New Mexico. All sites were field sampled and evaluated. Site descriptions are ordered alphabetically by site name. Each site description contains information on vegetation composition, site characteristics and site condition. Accompanying each description is: 1) a site photograph; 2) a stream channel cross-section(s) of the site detailing typical vegetation community location in the landscape with their soil textures, and modeled flows required to flood each community; and 3) a site map with site boundaries. On each map, primary site boundaries attempt to incorporate the area ground-covered and field sampled, the 100-year floodplain, and stands of contiguous community types.

These sites represent the best benchmark stands sampled by NMNHP to date, but the surveys that this database is based on were not intended to be comprehensive. They focused on the mainstems and associated major tributaries of each of the state's major river drainages, and many tributaries remain to be evaluated. Further, the surveys focused on private lands with their associated issues of access. Public lands were included, but the effort was made to not duplicate government agency research. Hence, the database is dynamic and continues to grow as new information becomes available. We strongly encourage the participation of individuals, groups and agencies in further building the database, to make an even more effective tool for wetlands conservation planning.

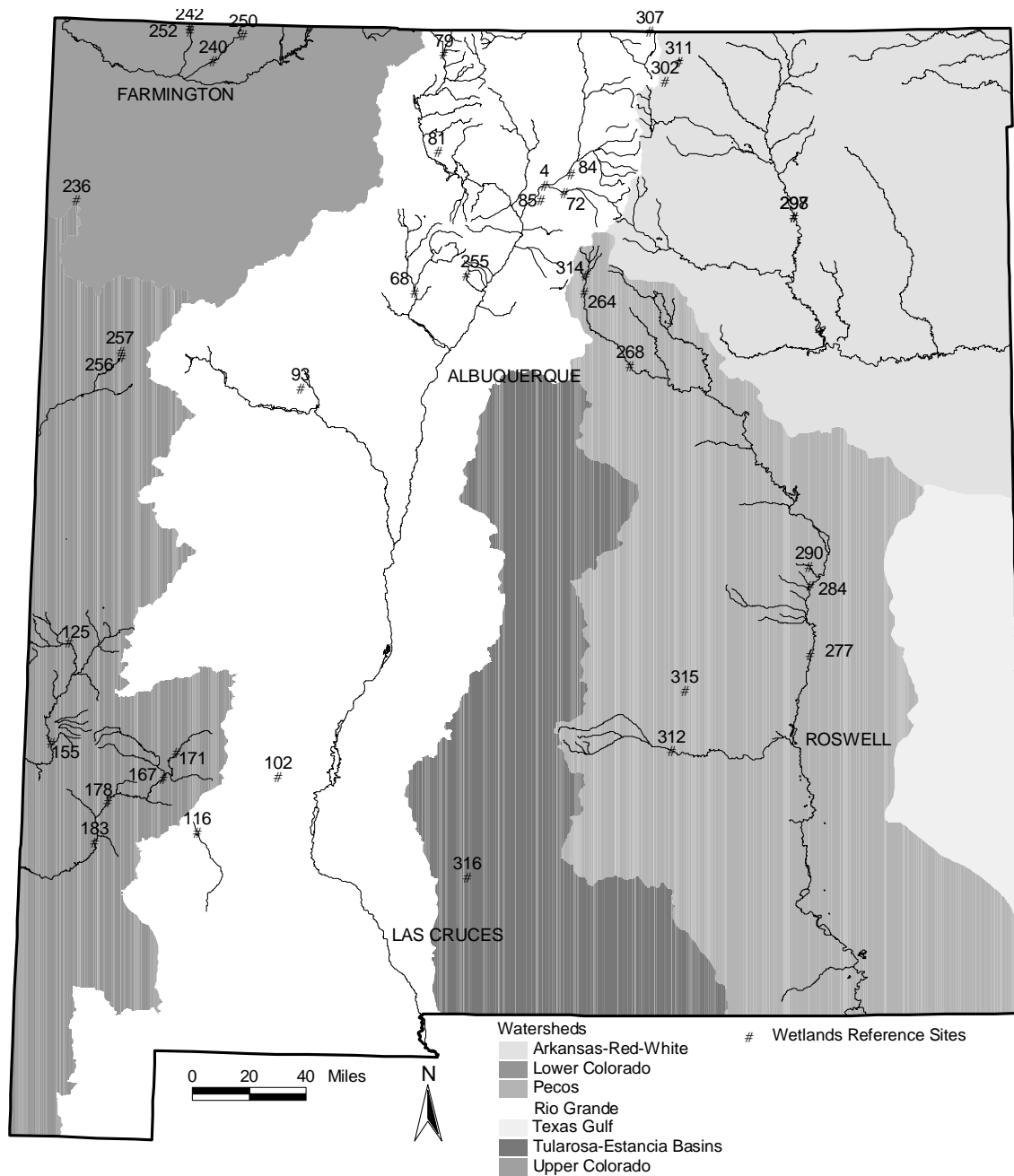


Figure 2. Location of 38 selected Wetland Reference Sites representative of the major wetland community types of New Mexico. See Table 2 and Table 3 for cross-references to Site Names and Community Types, respectively.

Table 2. Reference sites for the major wetland community types described for New Mexico in Volume I, ordered by site number as indicated in Figure 1. See text for definitions of quality ranks.

Site No.	Site Name	Watershed	River	Reach	County	Quality
4	Embudo	Rio Grande	Rio Grande	Rio Grande Gorge	RIO ARRIBA	B+
68	Canon	Rio Grande	Jemez	Middle Jemez	SANDOVAL	B
72	Embudo Canyon	Rio Grande	Embudo Creek	Embudo Canyon	RIO ARRIBA	A-
79	Upper Chama	Rio Grande	Rio Chama	Upper Chama	RIO ARRIBA	B+
81	Middle Chama	Rio Grande	Rio Chama	Middle Chama	RIO ARRIBA	B-
84	Agua Caliente	Rio Grande	Agua Caliente	Aqua Caliente	TAOS	A-
85	Rio Truchas	Rio Grande	Rio Truchas	Rio Truchas	RIO ARRIBA	B-
93	Rio Paguete	Rio Grande	Rio Paguete	Rio Paguete	CIBOLA	A-
102	Lower Palomas	Rio Grande	Palomas	Lower Palomas	SIERRA	A-
116	Bear Canyon Reservoir	Mimbres Watershed	Mimbres	Middle Mimbres	GRANT	B
125	Frisco Hot Spring	San Francisco Watershed	San Francisco	Dillon Mountain	CATRON	A-
155	Sundial Mountain	San Francisco Watershed	San Francisco	Wilson Mountain	CATRON	A-
167	Alum Mountain	Gila Watershed	Gila	Upper Mainstem	CATRON	A-
171	Fall Spring	Gila Watershed	East Fork Gila	Fall Spring	CATRON	B-
178	Gila Upper Valley	Gila Watershed	Gila	Cliff/Gila Valley	GRANT	B
183	Gila Lower Valley	Gila Watershed	Gila	Cliff/Gila Valley	GRANT	B
236	Closed Basin-Washington Pass	Little Colorado	N/A	Chuska Mountain Summit	SAN JUAN	B-
240	Cook Arroyo at Aztec	San Juan	Animas	Animas	SAN JUAN	C+
242	Manuel Arroyo	San Juan	La Plata	La Plata	SAN JUAN	B-
250	Ditch Canyon	San Juan	Ditch Canyon	Ditch Canyon	SAN JUAN	B
252	Thomas Arroyo	San Juan	La Plata	La Plata	SAN JUAN	B
255	Cochiti Canyon	Rio Grande	Rio Chiquito	Cochiti Canyon	SANDOVAL	A-
256	Upper Nutria Canyon	Little Colorado	Rio Nutria	Rio Nutria	MCKINLEY	A-
257	Tampico Draw	Little Colorado	Tampico Draw	Tampico Draw	MCKINLEY	A-
264	Macho Canyon	Pecos	Pecos	Upper Pecos	SAN MIGUEL	B
268	Sena	Pecos	Pecos	Glorieta Mesa	SAN MIGUEL	C+
277	Cottonwood Draw	Pecos	Pecos	Middle Pecos	CHAVES	C+
284	Baldy Mountain	Pecos	Pecos	Middle Pecos	DE BACA	D
290	Yeso Creek	Pecos	Yeso Creek	Yeso Creek	DE BACA	C+
297	Canon Colorado	Canadian	Canadian	Mill Canyon	MORA	C+
298	Mills Canyon Campground	Canadian	Canadian	Mill Canyon	HARDING	C

Table 2. Reference sites (continued)

Site No.	Site Name	Watershed	River	Reach	County	Quality
302	Middle Ponil	Canadian	Middle Ponil	Middle Ponil	COLFAX	A-
307	Glacier Lakes	Rio Grande	N/A	Glacier Lakes	TAOS	A-
311	Van Bremmer Park	Canadian	N/A	Van Bremmer Park	COLFAX	A-
312	Rio Hondo	Pecos	Rio Hondo	Rio Hondo	LINCOLN	C+
314	Terrero	Pecos	Pecos	Upper Pecos	SAN MIGUEL	B+
315	Arroyo Serrano Lake	Pecos	N/A	Arroyo Serrano Lake	LINCOLN	C+
316	White Sands	Tularosa Basin	N/A	WSMR	OTERO	A-

Table 3. Alphabetical listing of all established and provisional community types with their associated Reference Site(s) and their community and site ranks.

<u>Community Type</u>	<u>Community Rank</u>	<u>Reference Site Name</u>	<u>Site Quality</u>
Arizona Sycamore-Arizona Alder/Seepwillow	A-	Sundial Mountain	A-
Arizona Walnut-Boxelder/Skunkbush Sumac	A-	Bear Canyon Reservoir	B
Arizona Walnut-Netleaf Hackberry/California Brickellbush	B	Alum Mountain	A-
	B	Lower Valley	B
Blue Spruce/Kentucky Bluegrass	B+	Terrero	B+
Blue Spruce/Thinleaf Alder-Wood's Rose	B+	Terrero	B+
Bluestem Willow-Coyote Willow/Sparse	B	Rio Truchas	B-
	A-	Tampico Draw	A-
Boxelder/Thinleaf Alder	A-	Cochiti Canyon	A-
Broadleaf Cattail/Monotypic Stand	B-	Yeso Creek	C+
Coyote Willow/Baltic Rush	B	Rio Truchas	B-
Coyote Willow/Creeping Bentgrass	B	Canon	B
	B-	Canon Colorado	C+
	B	Embudo	B+
	B-	Sena	C+
Coyote Willow/Redtop	B	Canon	B
	B-	Canon Colorado	C+
	B	Embudo	B+
	B-	Sena	C+
Coyote Willow/Scour	C	Mills Canyon Campground	C
	B-	Rio Truchas	B-
Coyote Willow/Smooth Horsetail	B+	Middle Chama	B-
Coyote Willow/Threesquare	B	Manuel Arroyo	B-
Coyote Willow/Water Sedge	A-	Embudo Canyon	A-
Diamondleaf Willow/Water Sedge	A	Glacier Lakes	A-
	B+	Glacier Lakes	A-
Emory's Baccharis-Coyote Willow	B-	Cottonwood Draw	C+
Emory's Baccharis/Alkali Sacaton	B-	Yeso Creek	C+
Fremont's Cottonwood-Arizona Sycamore	A-	Upper Valley	B
Fremont's Cottonwood-Goodding's Willow/Coyote Willow	A-	Sundial Mountain	A-
	B+	Sundial Mountain	A-
Fremont's Cottonwood-Goodding's Willow/Seepwillow	B+	Lower Valley	B
Fremont's Cottonwood-Goodding's Willow/Seepwillow	A-	Upper Valley	B
Fremont's Cottonwood/Seepwillow	B+	Sundial Mountain	A-
	B	Upper Valley	B
Mud Sedge-Fewflower Spikerush	A	Glacier Lakes	A-
Narrowleaf Cottonwood-Arizona Alder	B	Bear Canyon Reservoir	B
	A-	Rio Paguete	A-
Narrowleaf Cottonwood-Boxelder/Kentucky Bluegrass	B+	Bear Canyon Reservoir	B
Narrowleaf Cottonwood-Rocky Mountain Juniper/Sand Dropseed	B	Agua Caliente	A-
Narrowleaf Cottonwood/Coyote Willow	B-	Rio Truchas	B-
	A-	Upper Chama	B+
Narrowleaf Cottonwood/Kentucky Bluegrass	B	Macho Canyon	B
	B	Upper Chama	B+
Narrowleaf Cottonwood/Thinleaf Alder-Redosier Dogwood	B	Middle Ponil	A-
	B+	Terrero	B+

Table 3. (continued)

<u>Community Type</u>	<u>Community Rank</u>	<u>Reference Site Name</u>	<u>Site Quality</u>
Nebraska Sedge/Smooth Horsetail	B+	Middle Chama	B-
Northern Mannagrass-Beautiful Spikerush	B-	Closed Basin at Washington Pass	B-
Redtop-Baltic Rush	B	Rio Truchas	B-
Rio Grande/Plains Cottonwood-Goodding's Willow	A-	Lower Palomas	A-
Rio Grande/Plains Cottonwood-Russian Olive	B-	Rio Truchas	B-
	C	Sena	C+
Rio Grande/Plains Cottonwood-Russian Olive/New Mexico Olive	C+	Cook Arroyo at Aztec	C+
Rio Grande/Plains Cottonwood-Russian Olive/Saltcedar	B-	Thomas Arroyo	B
Rio Grande/Plains Cottonwood/Alkali Sacaton	C	Cottonwood Draw	C+
Rio Grande/Plains Cottonwood/Big Sagebrush	B+	Ditch Canyon	B
	B-	Manuel Arroyo	B-
Rio Grande/Plains Cottonwood/Coyote Willow	A-	Agua Caliente	A-
	B+	Embudo	B+
	A-	Lower Palomas	A-
Rio Grande/Plains Cottonwood/Indian Ricegrass	A-	White Sands	A-
Rio Grande/Plains Cottonwood/New Mexico Olive	B+	Canon	B
Rio Grande/Plains Cottonwood/Rubber Rabbitbrush	B-	Ditch Canyon	B
Rio Grande/Plains Cottonwood/Saltcedar	B-	Rio Hondo	C+
Rio Grande/Plains Cottonwood/Sideoats Grama	B-	Canon Colorado	C+
Rio Grande/Plains Cottonwood/Smooth Horsetail	B+	Embudo	B+
	B-	Middle Chama	B-
Rubber Rabbitbrush/Sand Dropseed	A-	Alum Mountain	A-
Saltcedar/Alkali Sacaton	D	Baldy Mountain	D
Saltcedar/Inland Saltgrass	D	Baldy Mountain	D
Saltcedar/Sparse	D	Mills Canyon Campground	C
Saltcedar/Sparse Undergrowth	D	Mills Canyon Campground	C
Softstem Bulrush Monotypic Stand	B+	Fall Spring	B-
Thinleaf Alder-Bluestem Willow	A-	Agua Caliente	A-
	B	Middle Ponil	A-
Thinleaf Alder-Pacific Willow	A-	Upper Nutria Canyon	A-
Thinleaf Alder/Redosier Dogwood	B+	Terrero	B+
	A-	Upper Chama	B+
Threesquare-Common Spikerush	B-	Cook Arroyo at Aztec	C+
	B+	Fall Spring	B-
	B+	Lower Palomas	A-
Threesquare/Smooth Horsetail	B-	Embudo	B+
	A	Frisco Hot Spring	A-
Vine Mesquite/Texas Blueweed	C+	Arroyo Serrano Lake	C+
Water Sedge-Beaked Sedge	B	Macho Canyon	B
Woolly Sedge-Common Spikerush	A	Van Bremmer Park	A-

Agua Caliente

Watershed: Rio Grande **River:** Agua Caliente **Reach:** Agua Caliente
Site Number: 84 **Basin Number:** 13020101 **County:** TAOS
Town: 24N **Range:** 11E **Section:** 33 **Northing:** 4013670 **Easting:** 430800
Quad. Map Name: CARSON **Site Size:** 16.3 Ha **Stream Length:** 1.83 km
Site Quality: A- **Rosgen Stream Type(s):** B3a

Site Description: Agua Caliente is a perennial mountain stream that flows primarily in response to snowmelt. It is a narrow stream (width/depth ratios between 5 and 7) and is well confined by steep side slopes that are dominated by pinyon pine, juniper and ponderosa pine. The channel is dominated by cobbles, stones and woody debris. The riparian vegetation is diverse and lush and exotic species are low. Riparian forests are dominated by narrowleaf and Rio Grande cottonwoods, thinleaf alders, and boxelders. Bluestem and coyote willows and a variety of herbaceous species dominate the understory of these forests. Banks are well vegetated by rushes and sedges in most areas. Overall, the riparian communities along Agua Caliente are in good to excellent condition and quality. The site seems to be recuperating from historical grazing, mining, and logging. The main threat to the site is the possibility of logging at the upper portion of the watershed.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Thinleaf Alder-Bluestem Willow	B+	A	A	A-
Narrowleaf Cottonwood-Rocky Mountain Juniper/Sand Dropseed	B	A	B	B
Rio Grande/Plains Cottonwood/Coyote Willow	B+	A	A	A-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Excellent **Overall Hydrologic Regime:** Excellent

Landscape Mosaic: Good

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But herbaceous exotics, like sweet clover, are common.
Grazing: no	But the site has been grazed historically.
Fuel Wood: unknown	
Dumping: unknown	
ORV Use: no	
Roads: no	
Mowing: no	
Other Impacts: unknown	

Data Sources: Ground reconnaissance; field sampling.

Cross Section: BLM22, BLM10, BLM11,
 BLM5, BLM14, BLM13

Jurisdiction: BLM ACEC (Area of Critical Environmental Concern)

Plots: 92EM025, 92EM017, 92EM018

Survey Date: 8/28/92

Investigators: Muldavin, Wallace

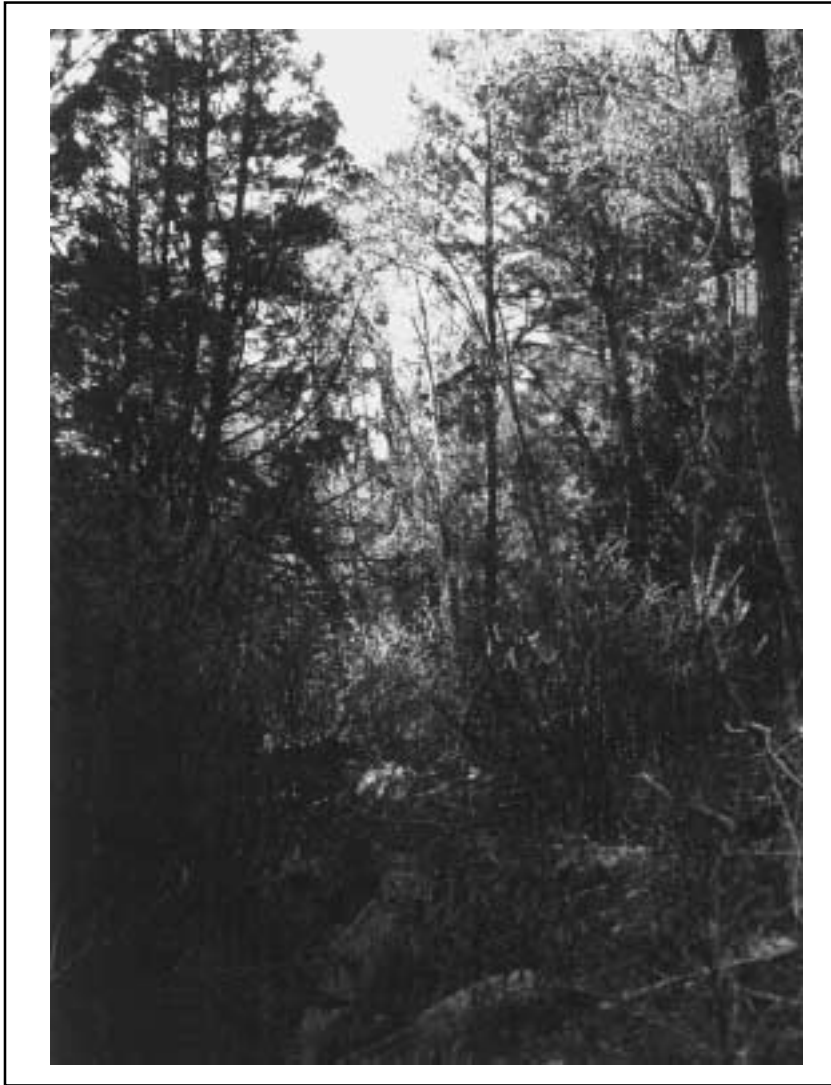


Photo: Mike Bradley

Figure 3. The Agua Caliente Site is dominated by well-developed stands of narrowleaf cottonwood. Generally, streambanks are well vegetated s well.

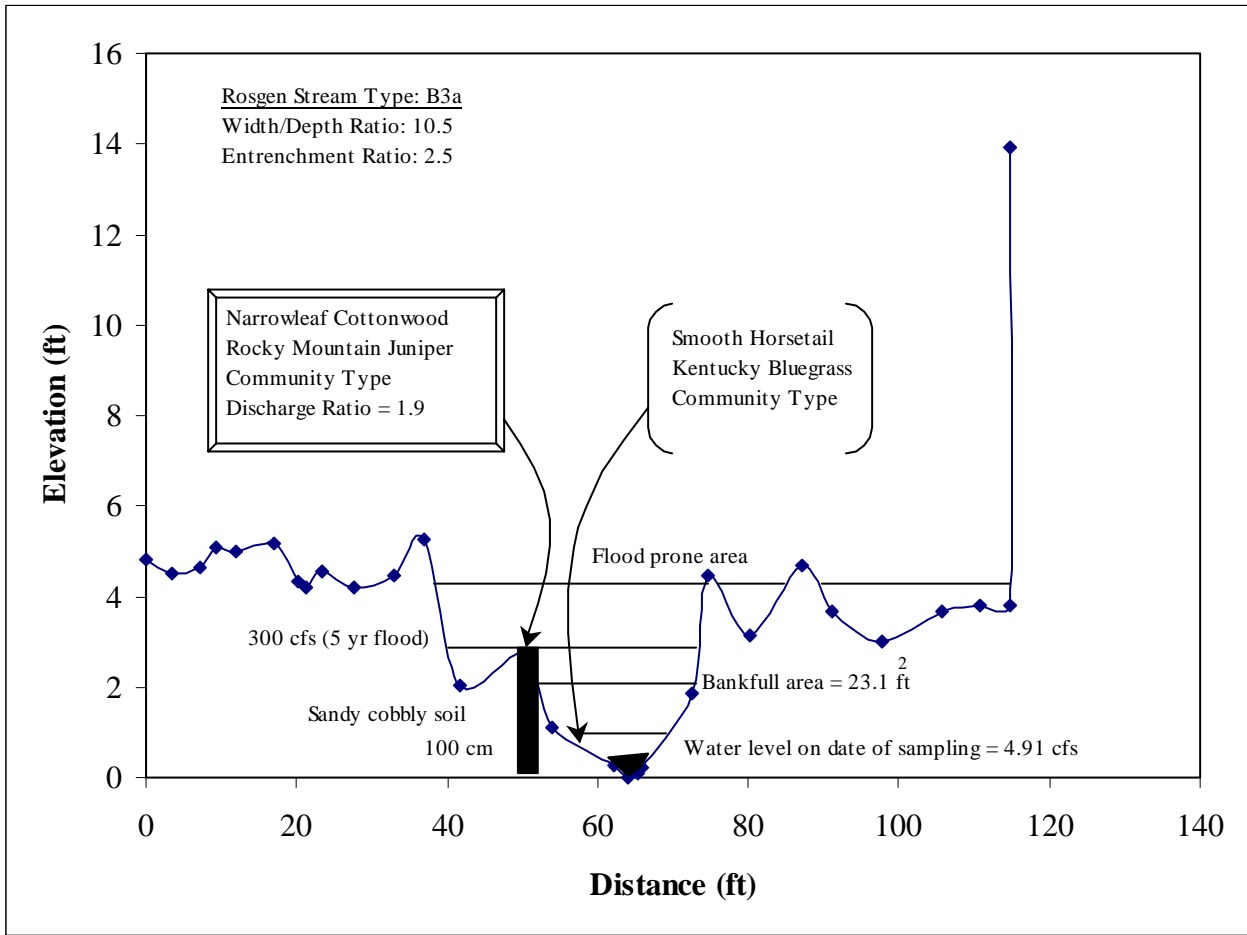


Figure 4. Cross-section of the Agua Caliente (BLM-3) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

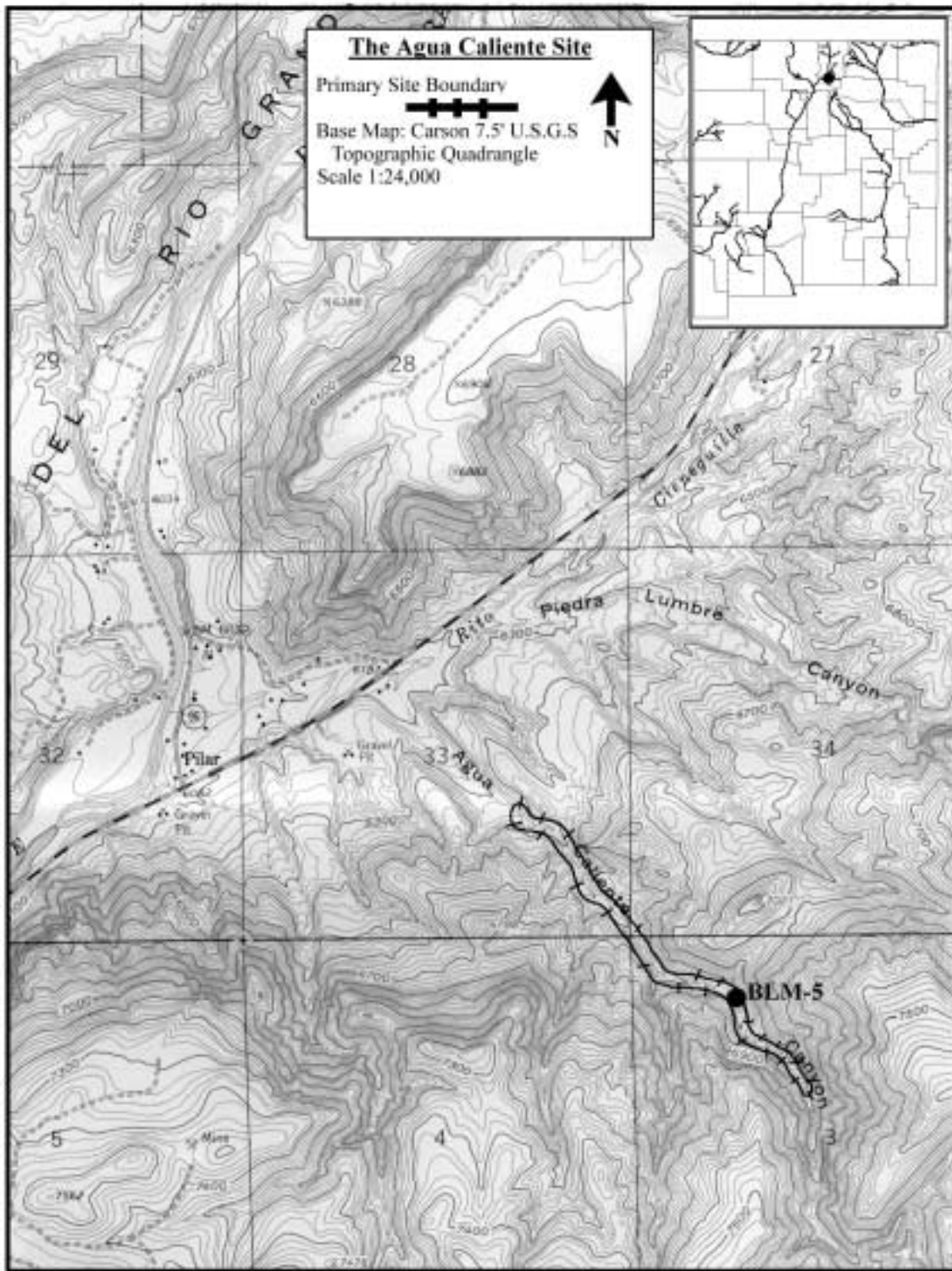


Figure 5. The site boundary of the Agua Caliente Site. The black dot indicates the location of the stream cross-section.

Alum Mountain

Watershed: Gila Watershed **River:** Gila **Reach:** Upper Mainstem
Site Number: 167 **Basin Number:** 15040001 **County:** CATRON
Town: 13S **Range:** 13W **Section:** **Northing:** 3673528 **Easting:** 200868
Quad. Map Name: GILA HOT SPRINGS **Site Size:** 39.9 Ha **Stream Length:** 4.2 km
Site Quality: A- **Rosgen Stream Type(s):** F3

Site Description: The Alum Mountain Site is on the mainstem of the Gila River just downstream of the cliff dwellings. It is characterized by a wide variety of wetland communities. Elevated cobble bars are dominated by rubber rabbitbrush with a grassy understory of sand dropseed. The Alum Mountain Site is considered a reference site for this community type. Narrow stands of Arizona alder with a dense understory dominated by rice cutgrass are common along streambanks. Mature trees are widely scattered on terraces and include Arizona sycamore, both lanceleaf and narrowleaf cottonwoods, and boxelder. Netleaf hackberry and Arizona walnut dominate the fringe of old fluvial terraces although oaks and junipers are common as well. Encroachment by weedy herbaceous exotics is low, but white clover is common. Other impacts are few and the riparian communities are in excellent condition.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Arizona Alder/Rice Cutgrass	B+	A	A	A
Arizona Walnut-Netleaf Hackberry	B	B+	B	B
Rubber Rabbitbrush/Sand Dropseed	B+	A	A	A

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Excellent **Overall Hydrologic Regime:** Good

Landscape Mosaic: Good

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But herbaceous exotics are common.
Grazing: no	No observable evidence.
Fuel Wood: no	
Dumping: no	
ORV Use: no	
Roads: no	
Mowing: no	
Other Impacts: yes	Moderate use from a hiking trail to hot springs.

Data Sources: Ground reconnaissance; field sampling.

Cross Section: Gila 1	Jurisdiction: Gila National Forest
Plots: 95PD052 95PD053 95PD054	Survey Date: 8/ 4/95
	Investigators: Bradley, Durkin



Photo: Mike Bradley

Figure 6. The Rubber Rabbitbrush/Sand Dropseed Community Type in the Alum Mountain Site. Arizona sycamores are also common on these dry cobble bars along the upper portion of the Gila River.

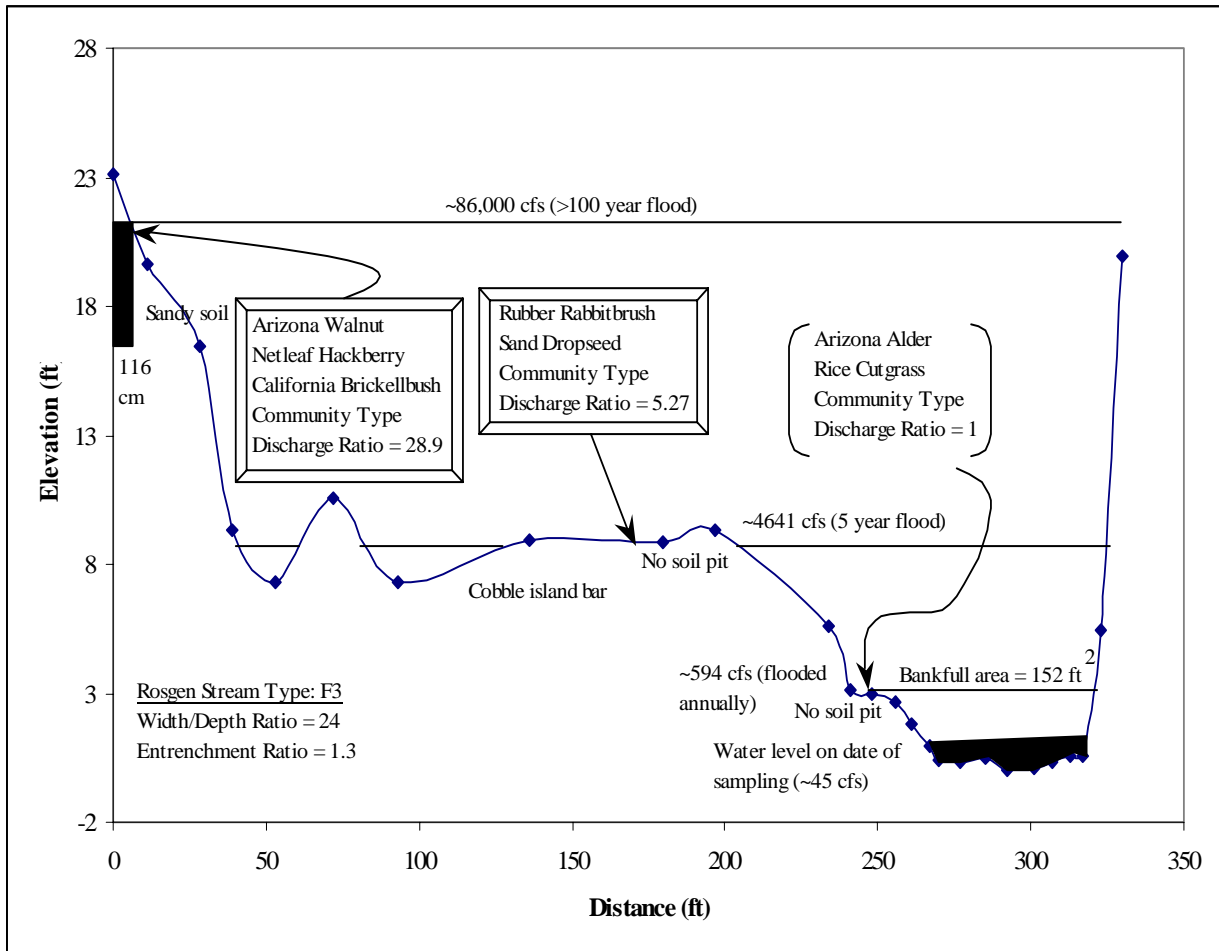


Figure 7. Cross-section of the Gila River (Gila-1) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

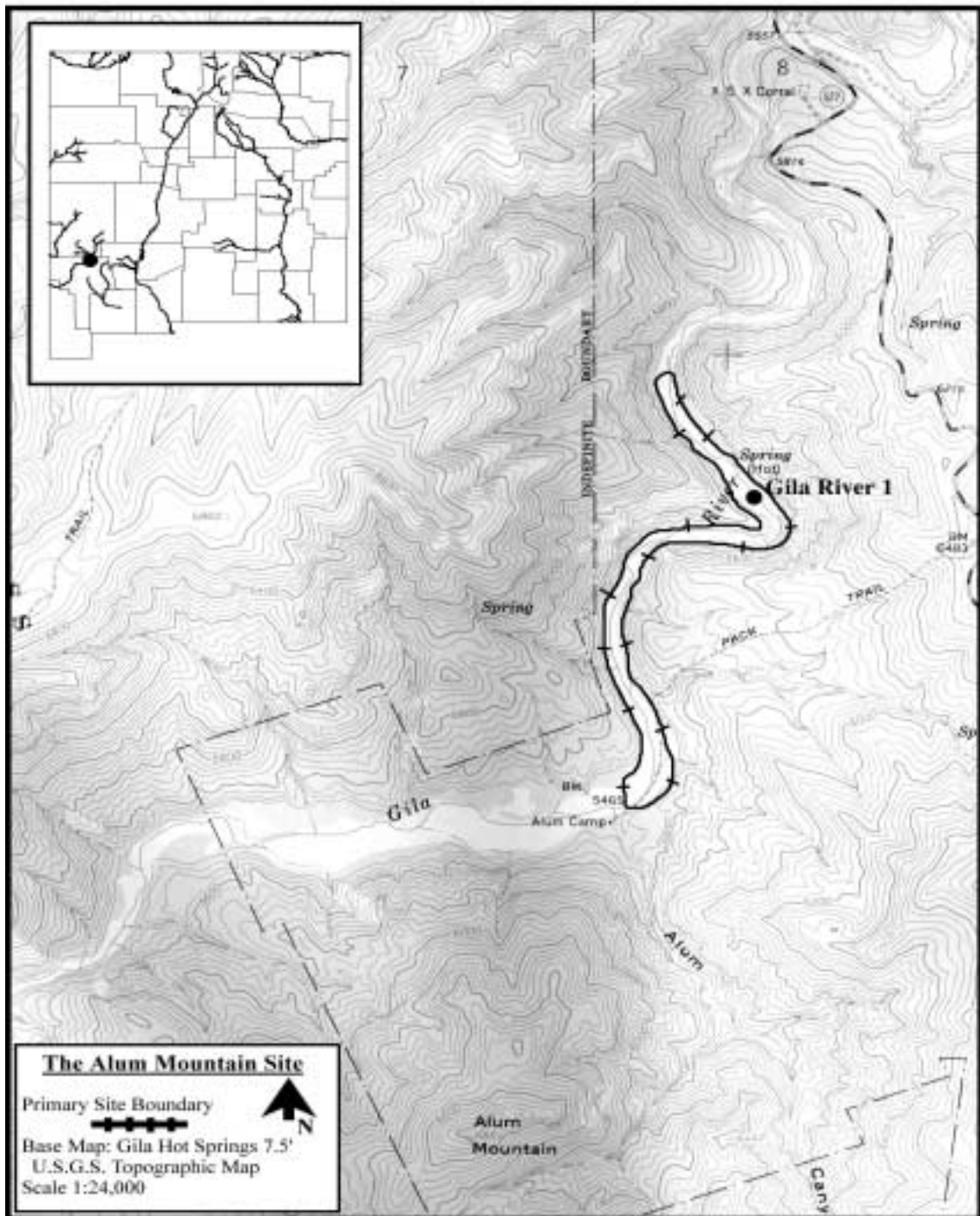


Figure 8. The boundary of the Alum Mountain Site. The black dot indicates the location of stream cross-section.

Arroyo Serano Lake

Watershed: Pecos **River:** N/A **Reach:** Arroyo Serrano Lake
Site Number: 315 **Basin Number:** 13060005 **County:** LINCOLN
Town: 08S **Range:** 19E **Section:** 04 **Northing:** 3722900 **Easting:** 494650
Quad. Map Name: ARROYO SERRANO EAST **Site Size:** .1 Ha **Stream Length:** N/A
Site Quality: C+ **Rosgen Stream Type(s):** N/A

Site Description: The Arroyo Serrano Site is located in eastern Lincoln County, just northwest of Roswell. The playa at the Arroyo Serrano Lake Site represents the best conditions in which we sampled the Vine Mesquite/Blueweed Sunflower Community Type. The community is situated along the drier fringe of the playa while common spikerush is more abundant closer to the water's edge. The impacts of grazing on this site include trampling and the proliferation of herbaceous exotics like silverleaf nightshade. Due to the amount of cattle evidence observed, the overall condition of the site is only fair.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Vine Mesquite/Texas Blueweed	C	C	B	C+

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** **Overall Hydrologic Regime:** Good

Landscape Mosaic: Fair
Floodplain Impacts: **Comments:**
Exotic veg dominant: No But herbaceous exotics are common.
Grazing: Yes The playa is heavily grazed.
Fuel Wood: No
Dumping: No
ORV Use: No
Roads: Yes But the road does not appear to be in the playa floodplain.
Mowing: No
Other Impacts: No

Data Sources: Field sampling; aerial and ground reconnaissance.
Cross Section: Playa 7 **Jurisdiction:** Private
Plots: 93NR010 **Survey Date:** 8/21/93
 Investigators: Runyan, Bradley, Durkin



Photo: Mike Bradley

Figure 9. The playa of the Arroyo Serrano Lake Site. Cattle grazing affects the condition of the Vine Mesquite/Texas Blueweed Community Type that occurs here.

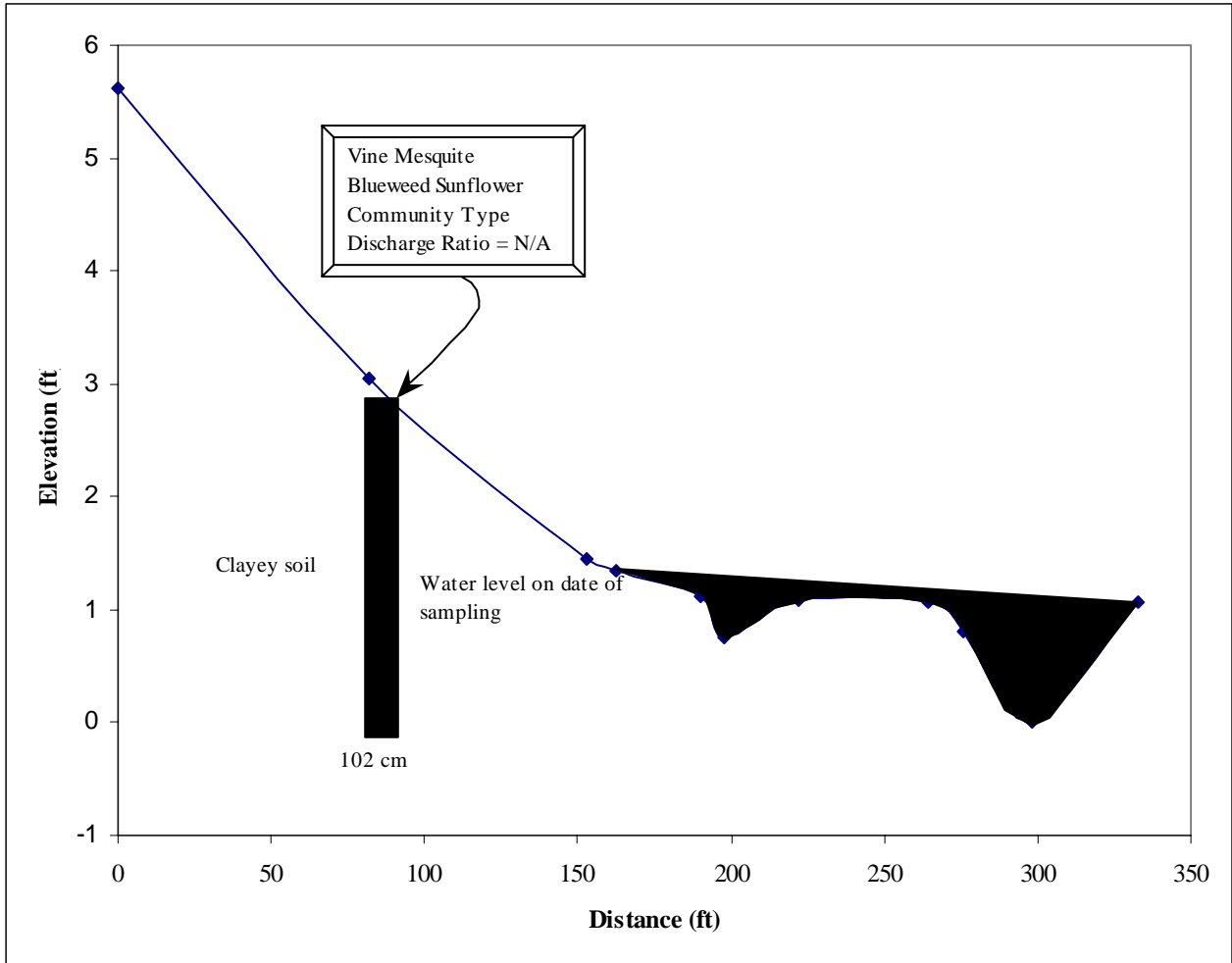


Figure 10. Cross-section of the playa (Playa-7) at the Arroyo Serrano Site showing the location of the community types (incidental types are in brackets), predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

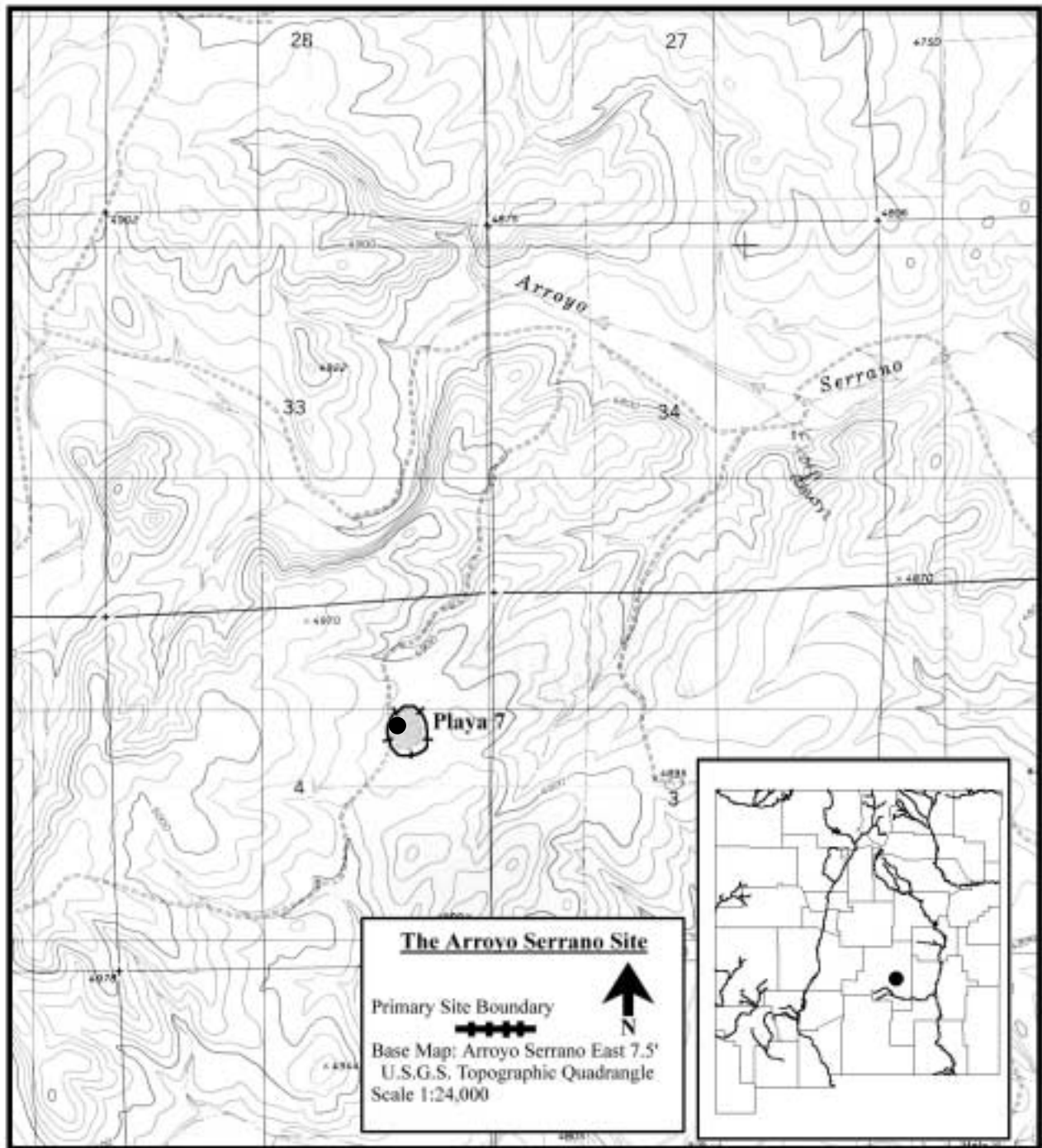


Figure 11. The boundary of the Arroyo Serrano Site. Black dot indicates location of playa cross-section.

Baldy Mountain

Watershed: Pecos **River:** Pecos **Reach:** Middle Pecos
Site Number: 284 **Basin Number:** 13060003 **County:** DE BACA
Town: 01S **Range:** 25E **Section:** 35 **Northing:** 3782080 **Easting:** 565430
Quad. Map Name: CONEJO CREEK EAST **Site Size:** 49 Ha **Stream Length:** 1.5 km
Site Quality: D **Rosgen Stream Type(s):** C5

Site Description: The Baldy Mountain Site on the Pecos River is located between Fort Sumner and Roswell. Flows on the Pecos at this site are regulated by Sumner Lake. The Pecos here is a low gradient stream (<.05%) dominated by sand, silt and clay. It is characterized by large stands of saltcedar occurring in somewhat different areas of the floodplain. Along banks, island bars, and on the other side of the levee, saltcedar co-dominates with alkali sacaton. In overflow channels, saltcedar co-dominates with more mesic grasses and sedges such as inland saltgrass and threesquare. One cottonwood was observed. Impacts are extensive to this site and site quality is poor.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Saltcedar/Inland Saltgrass	D	N/A	N/A	D
Saltcedar/Alkali Sacaton	D	N/A	N/A	D

Hydrologic Impacts:
Flow Regulation: Yes **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: Partial **Streambank Condition:** Fair **Overall Hydrologic Regime:** Poor
Landscape Mosaic: Fair

Floodplain Impacts:
Exotic veg dominant: Yes **Comments:** Saltcedar dominates streambanks, overflow channels, and much of the floodplain.

Grazing: Yes
Fuel Wood: Unknown
Dumping: No
ORV Use: No
Roads: Yes But the road is on the fringe of the old floodplain.
Mowing: No
Other Impacts: No

Data Sources: Aerial photography; ground reconnaissance; field sampling.

Cross Section: Pecos 22 **Jurisdiction:** Private

Plots: 93PD047 93PD048 **Survey Date:** 9/ 9/93
Investigators: Bradley, Durkin



Photo: Mike Bradley

Figure 12. Saltcedars of the Baldy Mountain Site on the Pecos River. Natural vegetation at this site is primarily herbaceous.

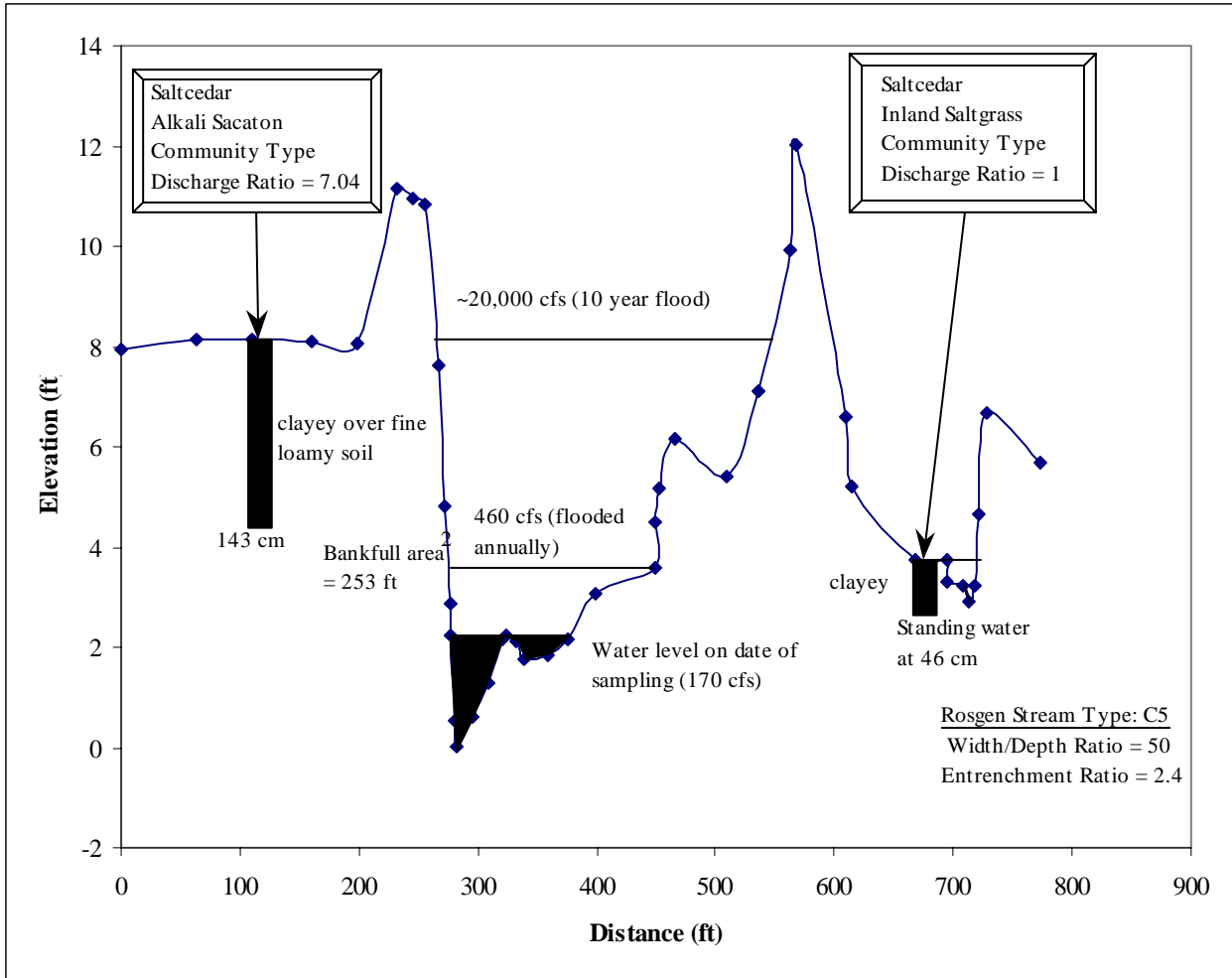


Figure 13. Cross-section of the Pecos River (Pecos-22) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

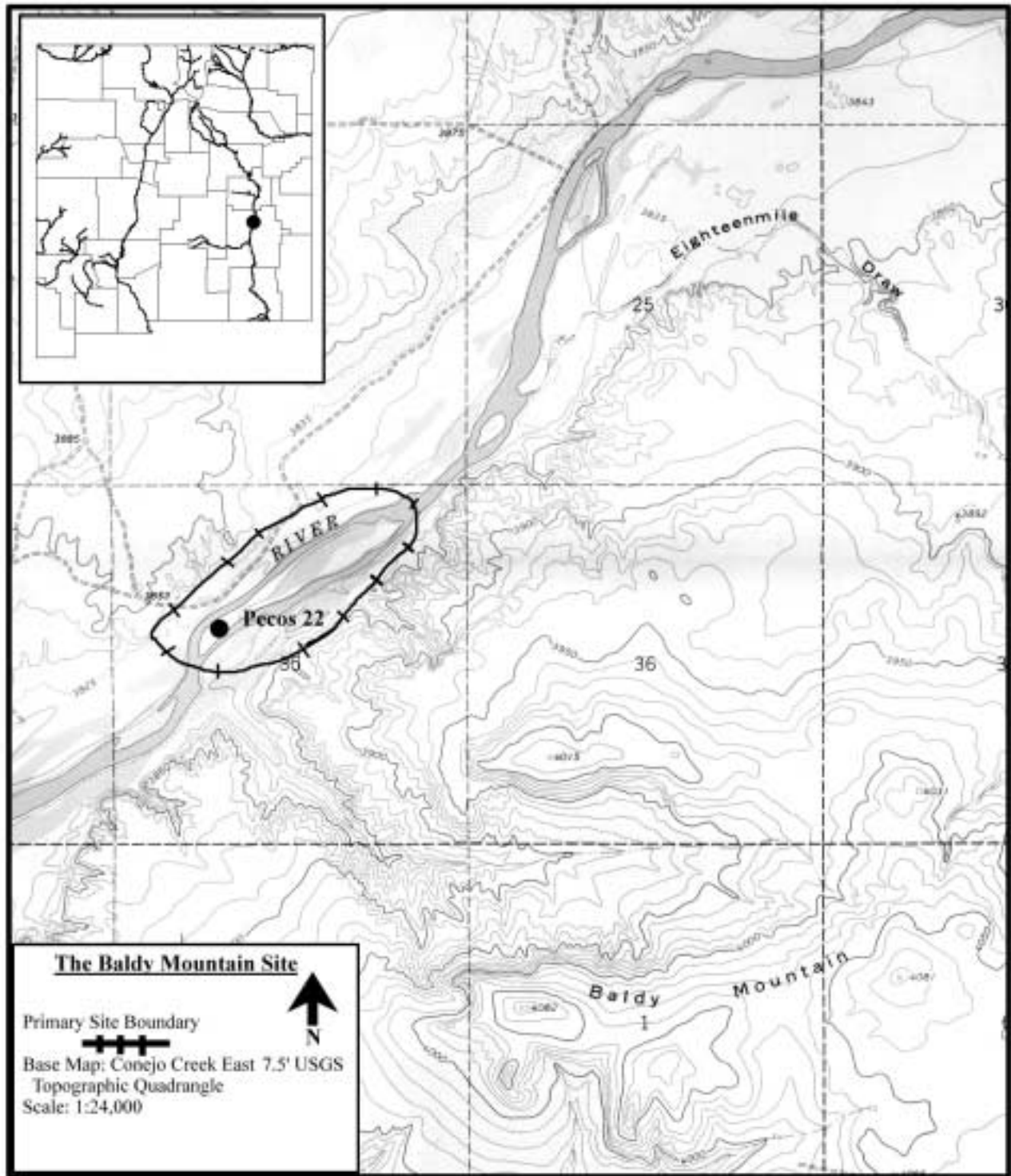


Figure 14. The boundary of the Baldy Mountain Site. The black dot indicates the location of the stream cross-section.

Bear Canyon Reservoir

Watershed: Mimbres Watershed **River:** Mimbres **Reach:** Middle Mimbres
Site Number: 116 **Basin Number:** 13030202 **County:** GRANT
Town: 16S **Range:** 11W **Section:** 29 **Northing:** 3643050 **Easting:** 220120
Quad. Map Name: HENDRICKS PEAK **Site Size:** 23.5 Ha **Stream Length:** .6 km
Site Quality: B **Rosgen Stream Type(s):** C3

Site Description: The Mimbres River at this site is dominated by good quality stands of fragmented, mature narrowleaf cottonwood and boxelder forests. Interspersed are smaller Arizona alder and Goodding's willow communities. These forests occur on low terraces that flood probably every 10 to 25 years. Along the fringe of old terraces Arizona walnut and boxelder forests are extensive. Streambanks are not well vegetated and the channel shows signs of eutrophication. Old pastures are extensive in the floodplain and dominated by herbaceous exotics. The hydrograph appears intact despite a gravel mine and irrigation ditches upstream.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Arizona Walnut-Boxelder/Skunkbush Sumac	B-	B+	B	B
Narrowleaf Cottonwood-Boxelder/Kentucky Bluegrass	B+	B+	B	B+
Narrowleaf Cottonwood-Arizona Alder	B	B+	B-	B

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Good

Landscape Mosaic: Fair

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But exotic herbaceous species are common.
Grazing: no	Historically, the floodplain was historically grazed and cattle still trespass.
Fuel Wood: no	
Dumping: no	
ORV Use: no	
Roads: yes	A dirt road fords the river on both ends of the site and affects stream turbidity and bank vegetation.
Mowing: no	
Other Impacts: yes	A gravel mine is a few kilometers upstream, and old irrigation ditches are found on the edge of the floodplain.

Data Sources: Personal communication; field sampling.

Cross Section: Mimbres 2

Jurisdiction: private

Plots: 95PD003 95PD004 95PD069

Survey Date: 6/15/95

Investigators: Bradley, Durkin, Hartmann



Photo: Ted Cline

Figure 15. The Bear Canyon Reservoir Site on the Mimbres River. Old pastures, narrowleaf cottonwoods, and boxelders dominate much of the riparian zone at this site. Arizona walnut and boxelder are common along the fringe of old alluvial terraces.

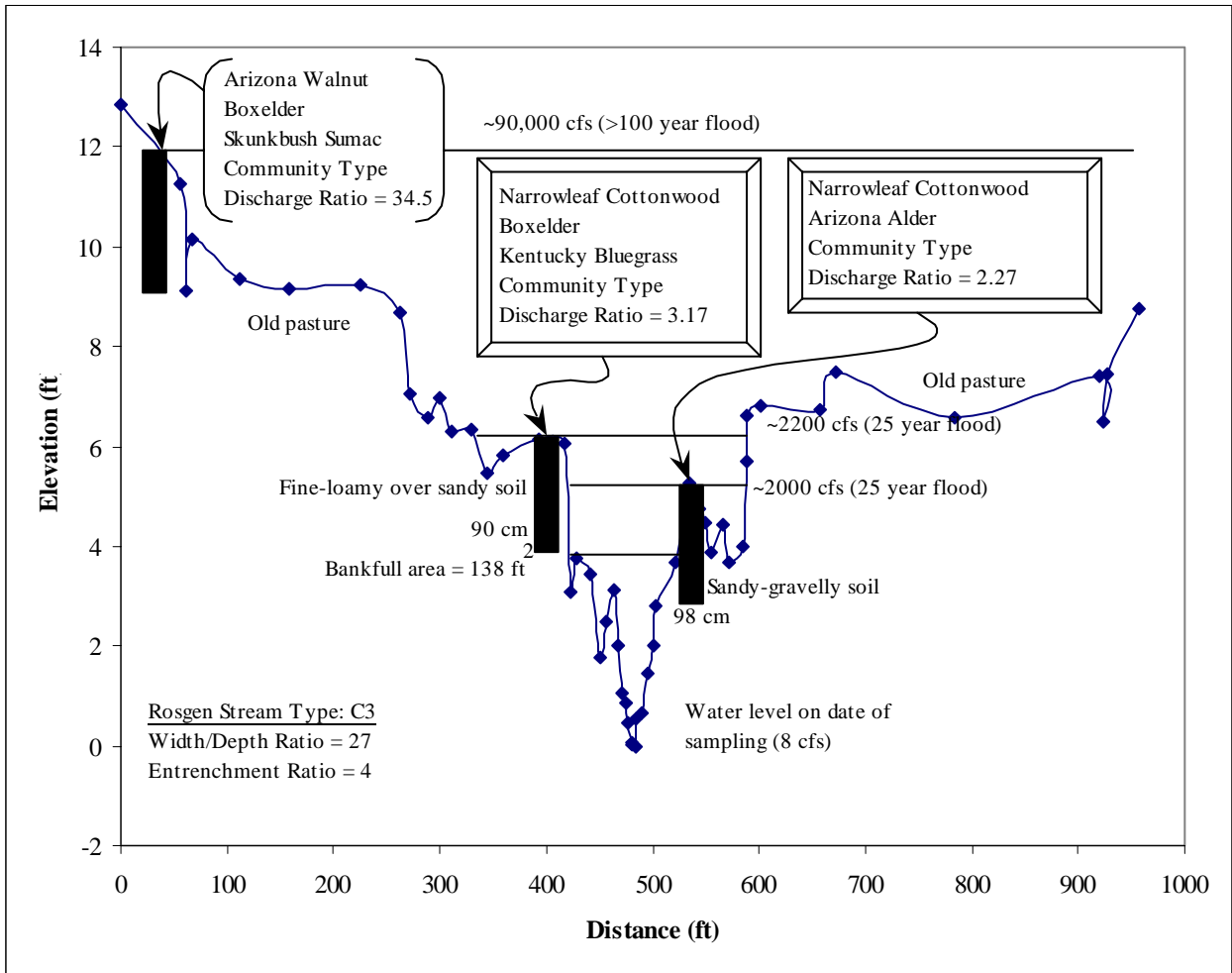


Figure 16. Cross-section of the Mimbres River (Mimbres-1) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

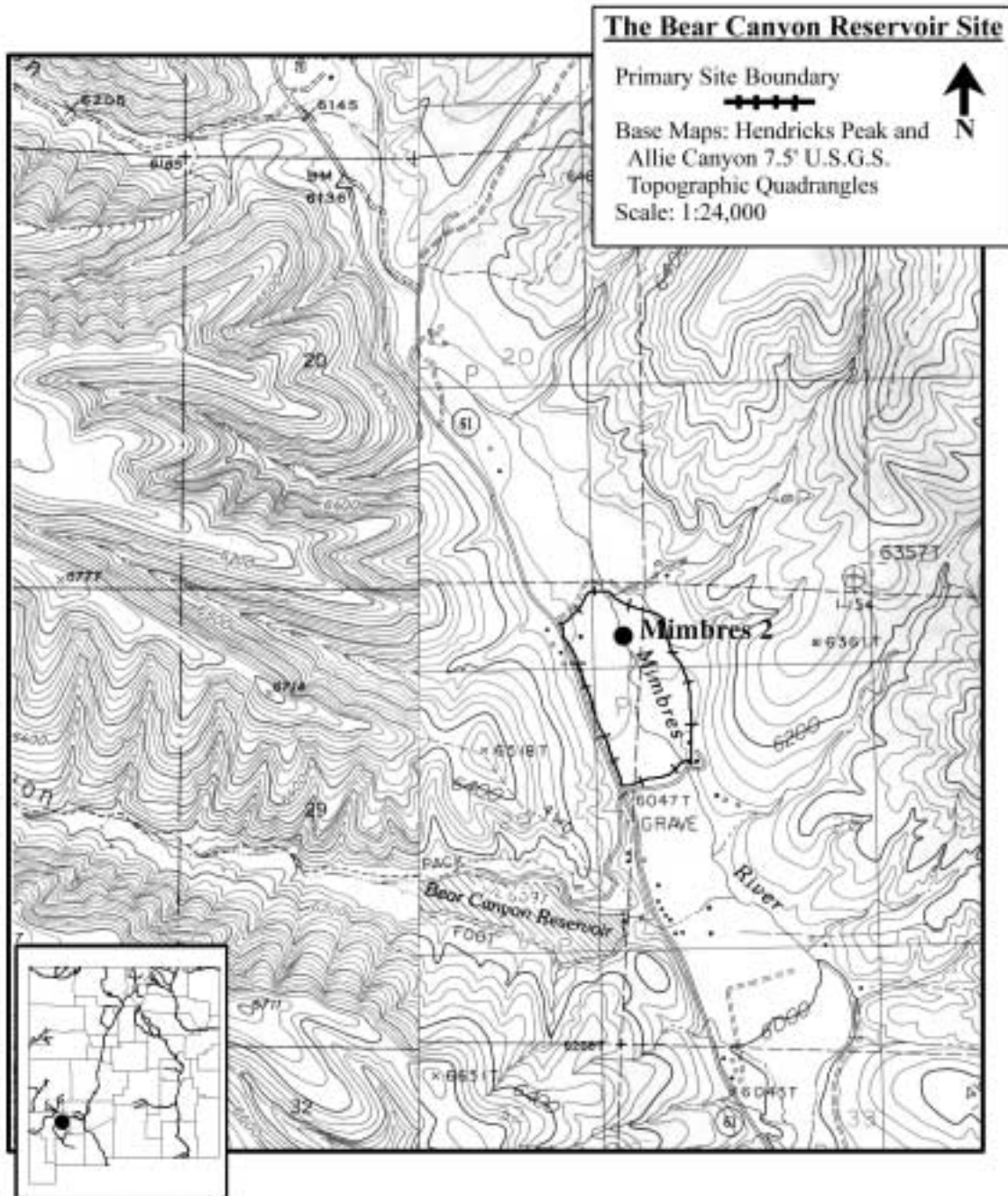


Figure 17. The boundary of the Bear Canyon Reservoir Site. The black dot indicates the location of the stream cross-section.

Canon

Watershed: Rio Grande **River:** Jemez **Reach:** Middle Jemez
Site Number: 68 **Basin Number:** 13020202 **County:** SANDOVAL
Town: 17N **Range:** 02E **Section:** 32 **Northing:** 3947490 **Easting:** 342480
Quad. Map Name: PONDEROSA **Site Size:** 34.85 Ha **Stream Length:** .4 km
Site Quality: B **Rosgen Stream Type(s):** B3c

Site Description: The Canon Site on the Jemez River is located just upstream of the Pueblo of Jemez. It has relatively few impacts and represents some of the higher quality Rio Grande Cottonwood/New Mexico Olive and Coyote Willow/Creeping Bentgrass types in the state. Except for a small diversion dam and a levee on the west side, the hydrologic regime is unregulated. Although fragmented by urbanization and agriculture, the Rio Grande Cottonwood/New Mexico Olive community forms some dense stands along this reach. Overall, the riparian/wetland communities at the Canon Site are well developed and in excellent condition.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Coyote Willow/Redtop	B	B+	B	B
Rio Grande/Plains Cottonwood/New Mexico Olive	B-	B+	B+	B+

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: Partial **Streambank Condition:** Good **Overall Hydrologic Regime:** Good

Landscape Mosaic: Good

Floodplain Impacts: **Comments:**
Exotic veg dominant: no But a few individual saltcedars seen and herbaceous exotics are common.
Grazing: no No observable evidence.
Fuel Wood: unknown
Dumping: unknown
ORV Use: no
Roads: yes The road is adjacent to floodplain.
Mowing: no
Other Impacts: yes An agricultural field on the west side fragments riparian forests.

Data Sources: Air photo interpretation; ground reconnaissance; field sampling.

Cross Section: Jemez 1 **Jurisdiction:** Private and Santa Fe National Forest

Plots: 94PD068 94PD067 **Survey Date:** 7/28/94
Investigators: Bradley, Durkin, Carr

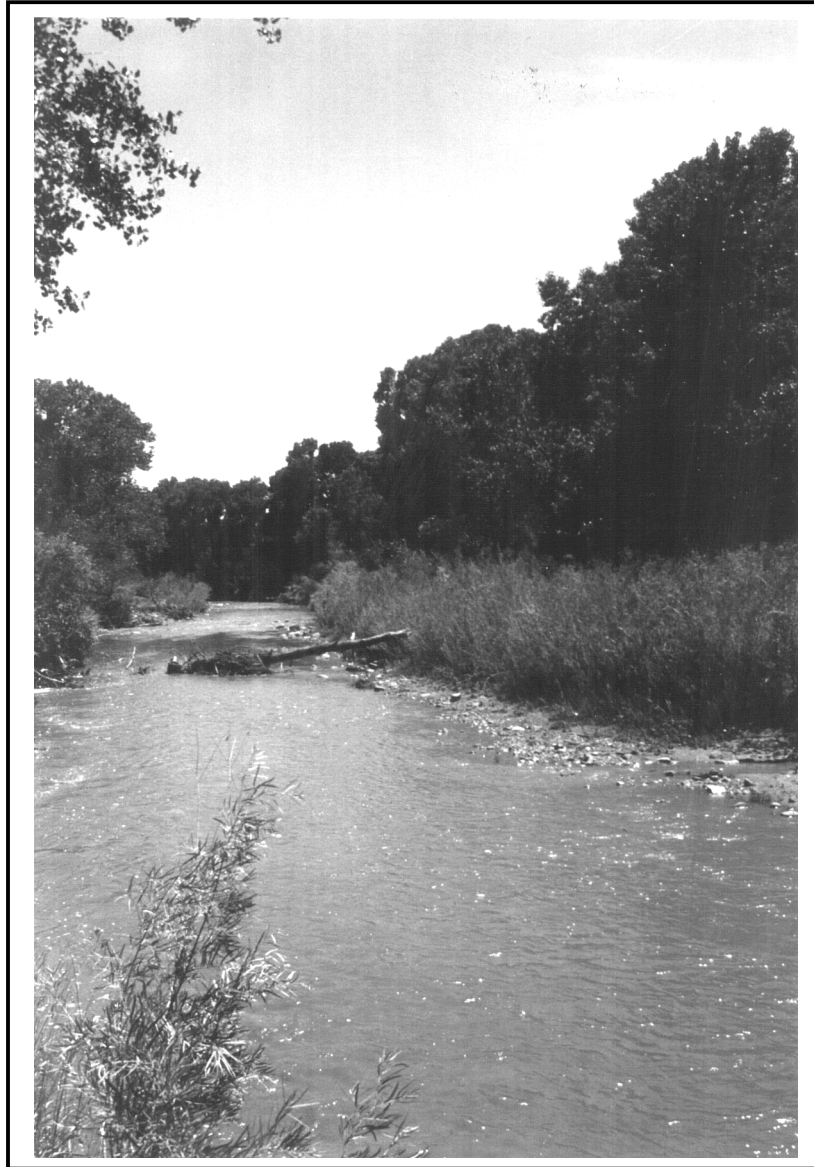


Photo: Mike Bradley

Figure 18. The Jemez River at the Canon Site. Lush side bars dominated by coyote willow and low terraces dominated by Rio Grande cottonwoods characterize this site.

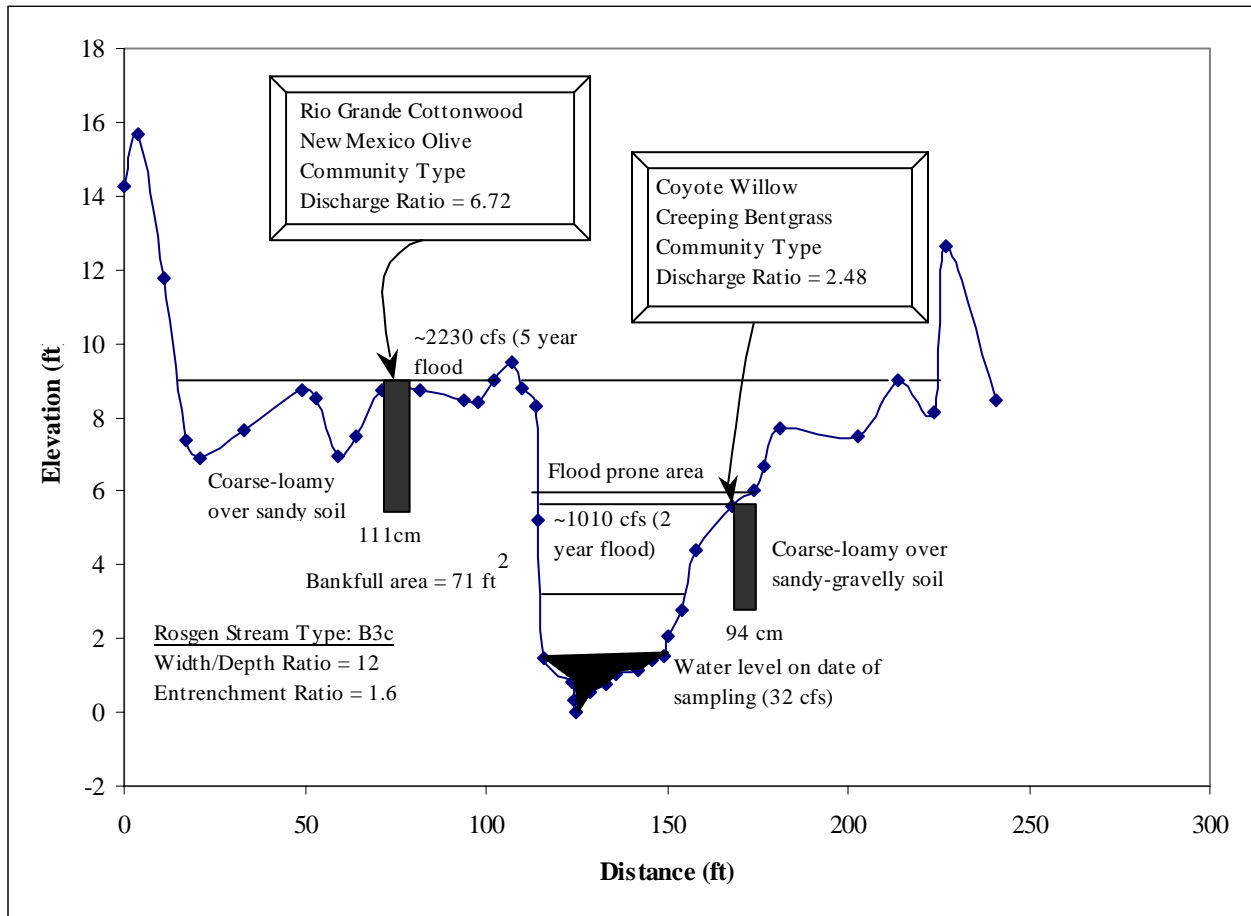


Figure 19. Cross-section of the Jemez River (Jemez-1) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

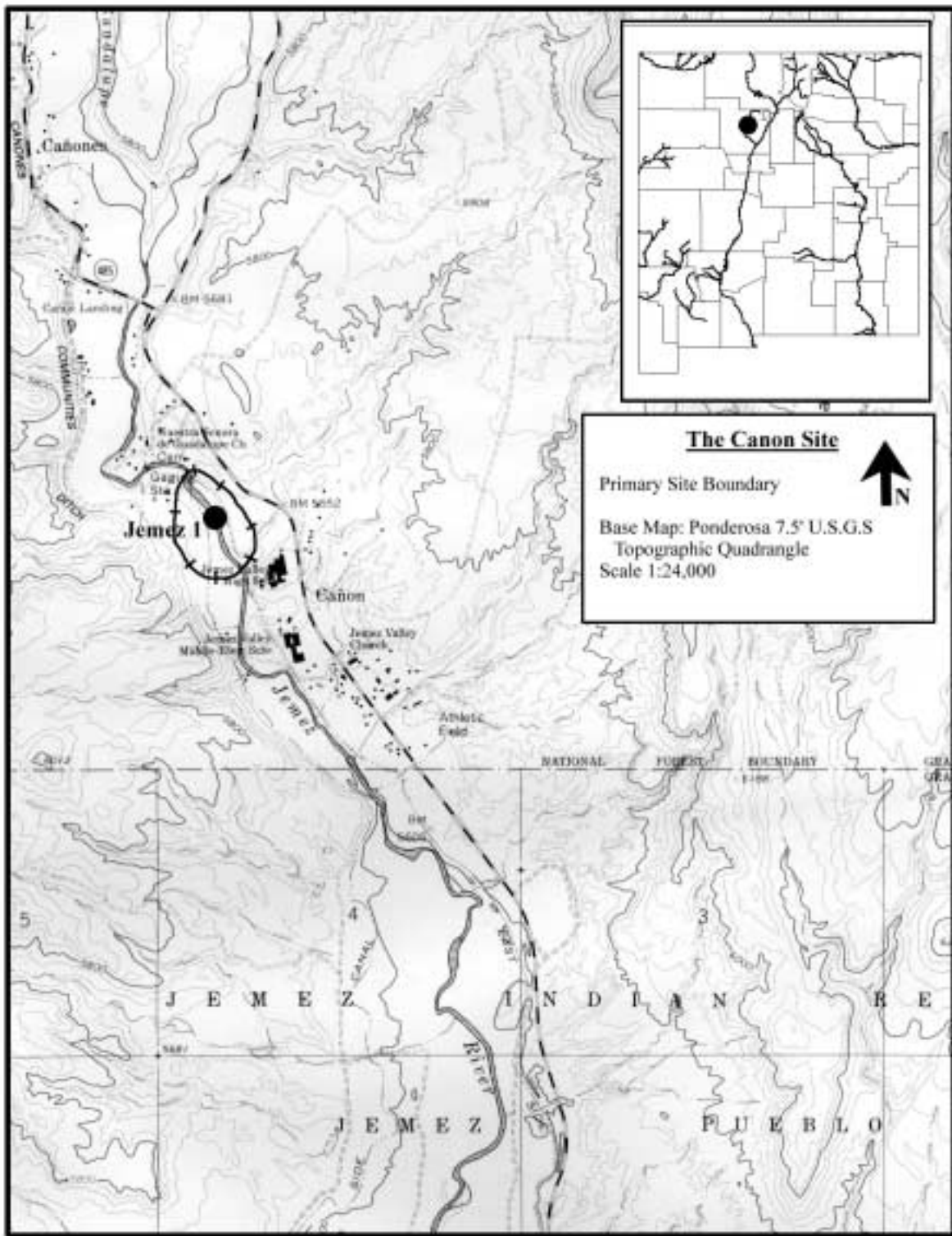


Figure 20. The boundary of the Canon Site. The black dot indicates the location of the stream cross-section.

Canon Colorado

Watershed: Canadian **River:** Canadian **Reach:** Mill Canyon
Site Number: 297 **Basin Number:** 11080003 **County:** MORA
Town: 21N **Range:** 24E **Section:** 10 **Northing:** 3191600 **Easting:** 556100
Quad. Map Name: CANON COLORADO **Site Size:** 37.2 Ha **Stream Length:** 1.4 km
Site Quality: C+ **Rosgen Stream Type(s):** C3

Site Description: The Canon Colorado Site is located in Mill Canyon on the Canadian River. The site is composed of large dense stands of Rio Grande cottonwood with coyote willows and saltcedar thickets. One of the largest stands of cottonwoods along the Canadian River occurs at the mouth of Canon Colorado. This stand forms a closed canopy and understories are sparse. Along elevated cobble bars, mature Rio Grande cottonwoods form a more open canopy with an understory dominated by sideoats grama, one seeded juniper, and buffalo grass. Coyote willows form dense stands along streambanks and side bars. Generally saltcedar is scattered throughout this site, but in nearby areas, saltcedar forms its characteristic dense thickets along streambanks. Upstream, irrigation diversions are extensive, but overall impacts are moderate and riparian forests are in good condition. The main threats to this site are further invasion from woody and herbaceous exotics and cattle impacts.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Coyote Willow/Redtop	B	B	B	B
Rio Grande/Plains Cottonwood/Sideoats Grama	B-	B	B-	B-
Threesquare-Inland Saltgrass	C+	B	B	B-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Good

Landscape Mosaic: Fair

Floodplain Impacts: **Comments:**
Exotic veg dominant: no But streambanks in this reach are composed entirely of saltcedar thickets.
Grazing: yes Grazing is permitted for seasonal use.
Fuel Wood: unknown
Dumping: no
ORV Use: yes
Roads: yes Roads traverse terraces and ford the river.
Mowing: no
Other Impacts: yes Old orchards and pastures fragment cottonwood forests.

Data Sources: Aerial and ground reconnaissance; field sampling.

Cross Section: Canadian 1 **Jurisdiction:** Kiowa Grasslands National Forest

Plots: 97MB004 97MB005 **Survey Date:** 97MB006 8/ 2/97
Investigators: Bradley, Archer



Photo: Ted Cline

Figure 21. The Canon Colorado Site along the Canadian River. This is one of the two large Rio Grande cottonwood stands remaining along the Canadian River in New Mexico.

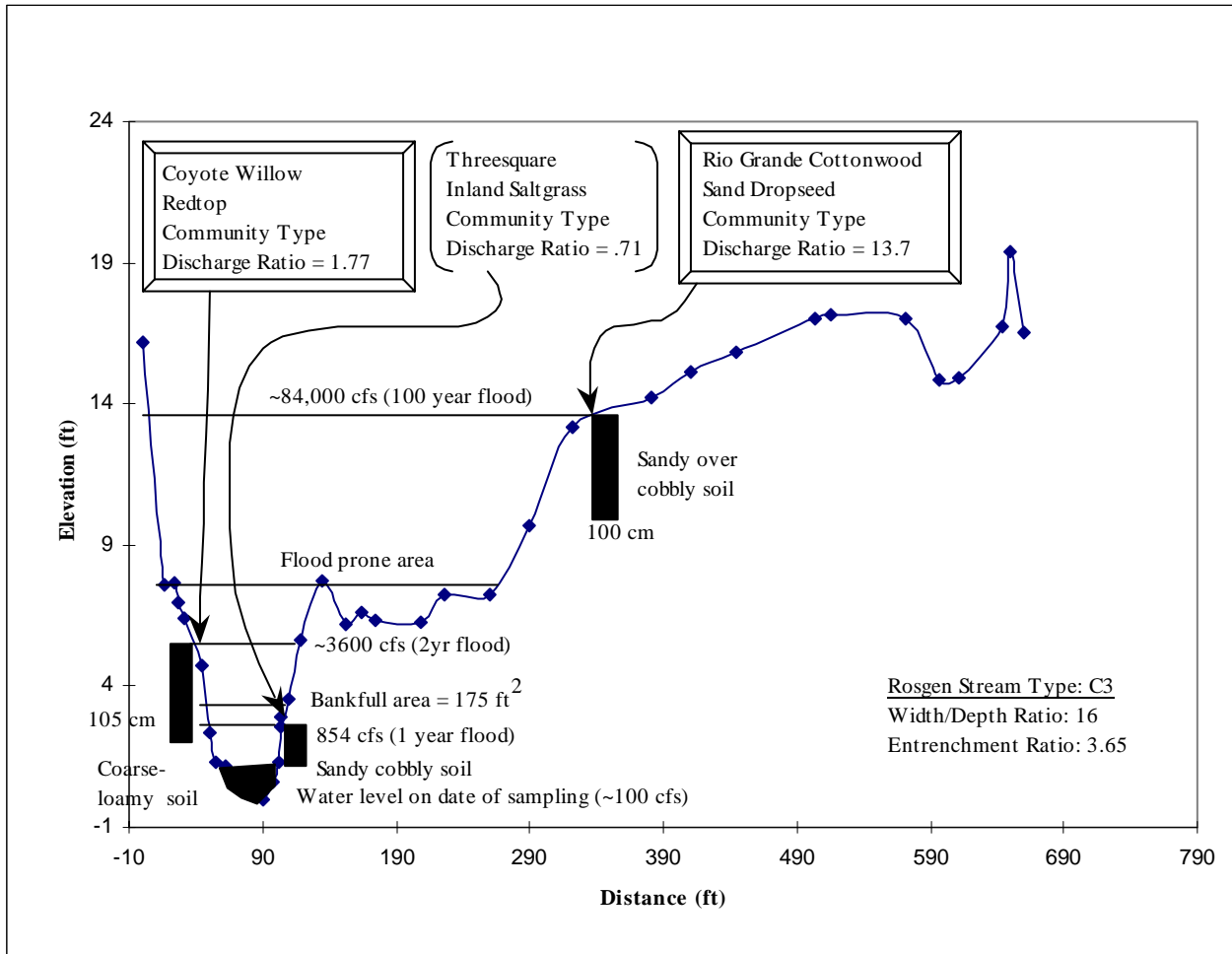


Figure 22. Cross-section of the Canadian River (Canadian 1) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

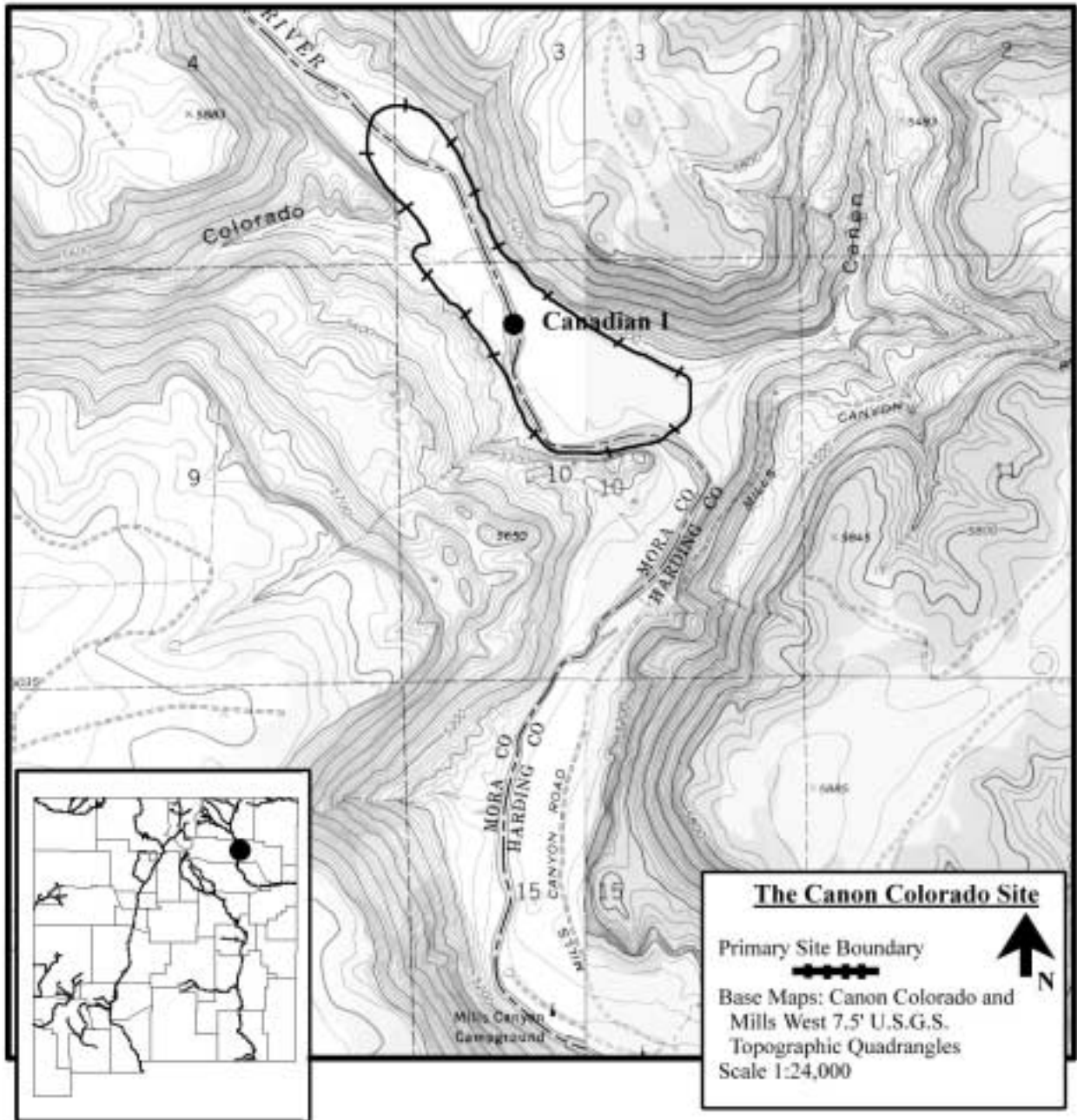


Figure 23. The boundary of the Canon Colorado Site. The black dot indicates the location of stream cross-section.

Closed Basin at Washington Pass

Watershed: Little Colorado **River:** N/A **Reach:** Chuska Mountain Summit
Site Number: 236 **Basin Number:** 15020006 **County:** SAN JUAN
Town: **Range:** **Section:** **Northing:** 3999379 **Eastng:** 152414
Quad. Map Name: WASHINGTON PASS **Site Size:** 2.35 Ha **Stream Length:** N/A
Site Quality: B- **Rosgen Stream Type(s):** N/A

Site Description: Unlike the surrounding lakes in the Chuska Mountains, the Closed Basin at Washington Pass is characterized by clear water and high zoological activity. Many salamanders, snails, and shrimp were observed. Unlike the others, this basin is isolated from other lakes. The lake is located at the summit of the mountain, and as a result, runoff into the lake may be minimized. The dominant vegetation is the American Mannagrass-Beautiful Spikerush Community Type. The drier periphery of the lake is grazed and trampled fairly heavily, but deeper water areas remain undisturbed by cattle. Dirt roads surround the lake with a fire lookout and radio facility located in the immediate vicinity. Douglas fir, ponderosa pine, and aspen dominate the surrounding uplands which are not logged as heavily as some other areas in the Chuskas.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Northern Mannagrass-Beautiful Spikerush	B	B-	B	B

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Fair **Overall Hydrologic Regime:** Fair

Landscape Mosaic: Poor

Floodplain Impacts: **Comments:**

Exotic veg dominant: no Grazing: yes Fuel Wood: no Dumping: no ORV Use: no Roads: yes Mowing: no Other Impacts: yes	Cows, sheep and horses graze the surrounding area extensively. Roads surround the wetland and affect basin hydrology. The area is extensively logged. Structures in the immediate vicinity include a radio tower and a fire lookout.
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Data Sources: Ground reconnaissance; NWI Maps; field sampling.

Cross Section: Closed Basin 2 **Jurisdiction:** Navajo Nation

Plots: 96PD006 **Survey Date:** 7/ 1/96
Investigators: Durkin, Bradley, Kirtman



Photo: Ted Cline

Figure 24. The Closed Basin at Washington Pass Site located in the summit of the Chuska Mountains. Ponderosa pine and aspens are in the surrounding uplands. The white building in the photo is a radio facility.

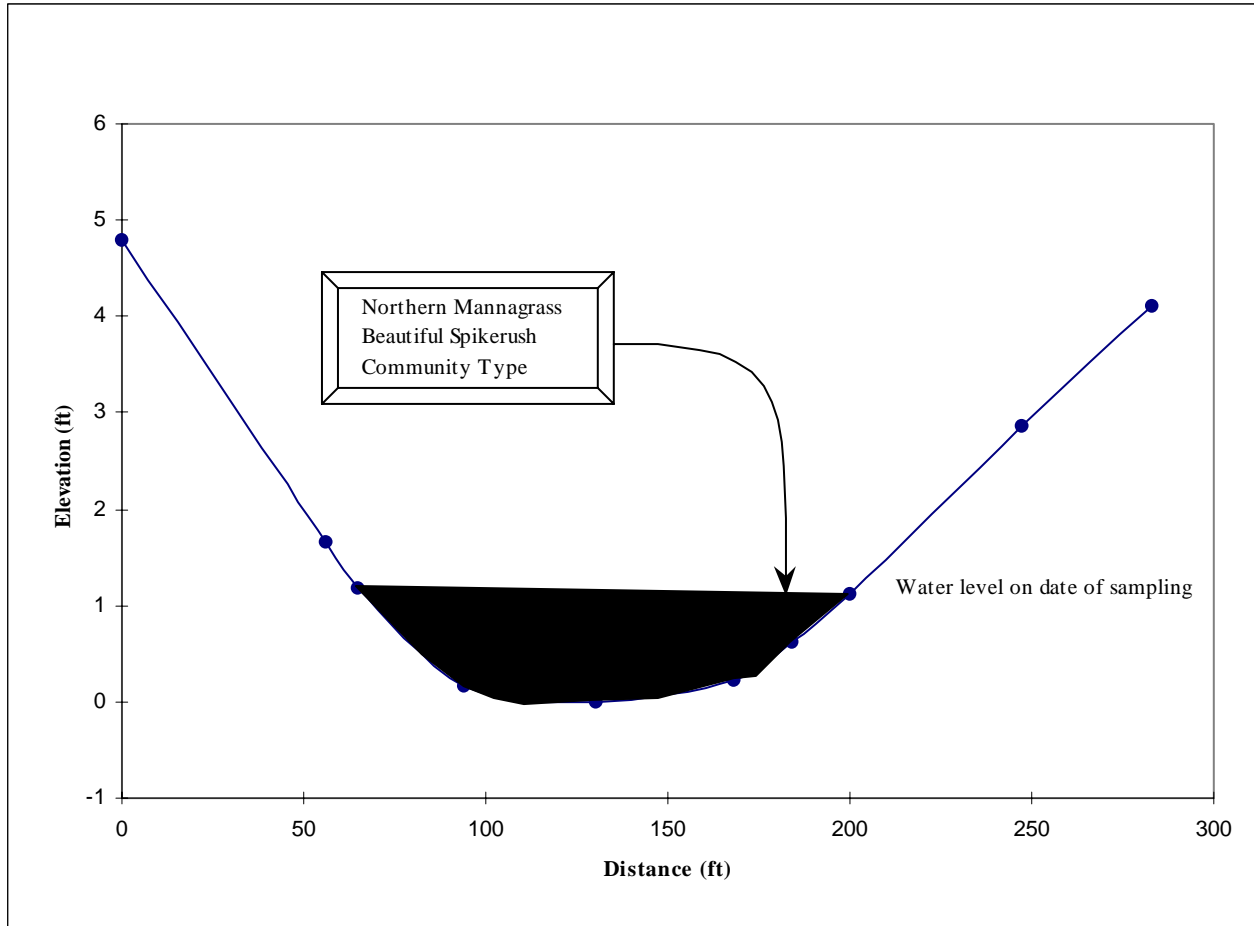


Figure 25. Cross-section of the closed basin at Washington Pass (CB-2) showing the location of the community types, the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

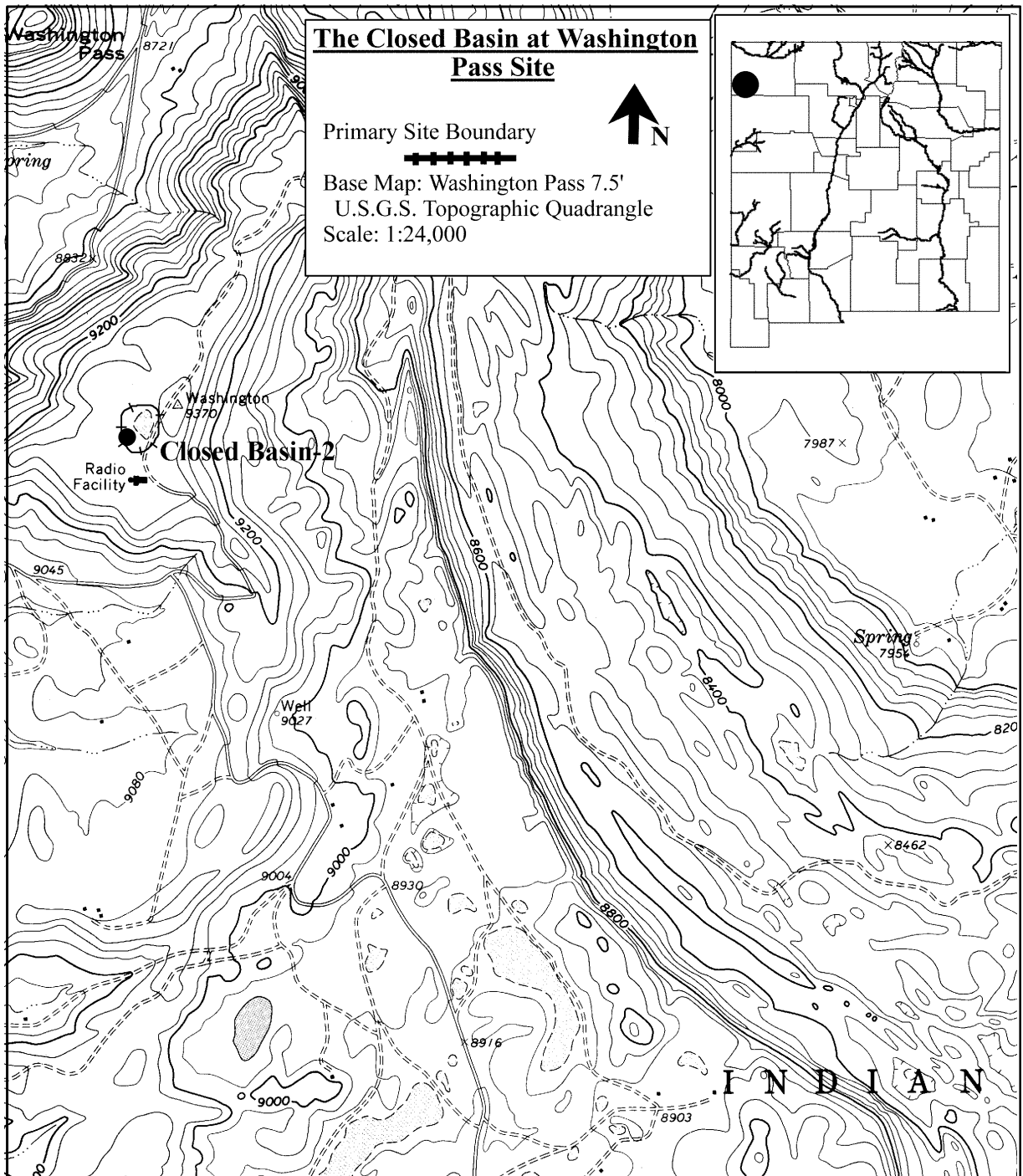


Figure 26. The boundary of the Closed Basin at Washington Pass Site. The black dot indicates the location of the lake cross-section.

Cochiti Canyon

Watershed: Rio Grande **River:** Rio Chiquito **Reach:** Cochiti Canyon
Site Number: 255 **Basin Number:** 13020201 **County:** SANDOVAL
Town: **Range:** **Section:** **Northing:** 3957007 **Easting:** 371807
Quad. Map Name: BLAND **Site Size:** 35 Ha **Stream Length:** 4.85 km
Site Quality: A- **Rosgen Stream Type(s):** E3b

Site Description: The Cochiti Canyon Site is located just west of Cochiti Reservoir. It is characterized by forested wetlands that are well developed. At lower elevations in the canyon, thinleaf alder and boxelder dominate. Blue spruce and thinleaf alder dominate at the upper elevations. Except for the road which fords the creek several times, impacts to this site are few and riparian communities are in excellent condition.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Boxelder/Thinleaf Alder	B+	A	A	A-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Excellent **Overall Hydrologic Regime:** Excellent

Landscape Mosaic: Good

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But herbaceous exotics present.
Grazing: no	But some cows were observed downstream.
Fuel Wood: yes	Some wood is collected by campers.
Dumping: no	
ORV Use: no	
Roads: yes	The dirt road fords the river many times as it goes up the canyon.
Mowing: no	
Other Impacts: no	

Data Sources: Ground reconnaissance; field sampling.

Cross Section: Rio Chiquito 1	Jurisdiction: Santa Fe National Forest
Plots: 96PD038	Survey Date: 8/12/96
	Investigators: Durkin, Bradley



Photo: Mike Bradley

Figure 27. Boxelders and thinleaf alders form dense stands at the Cochiti Canyon Site.

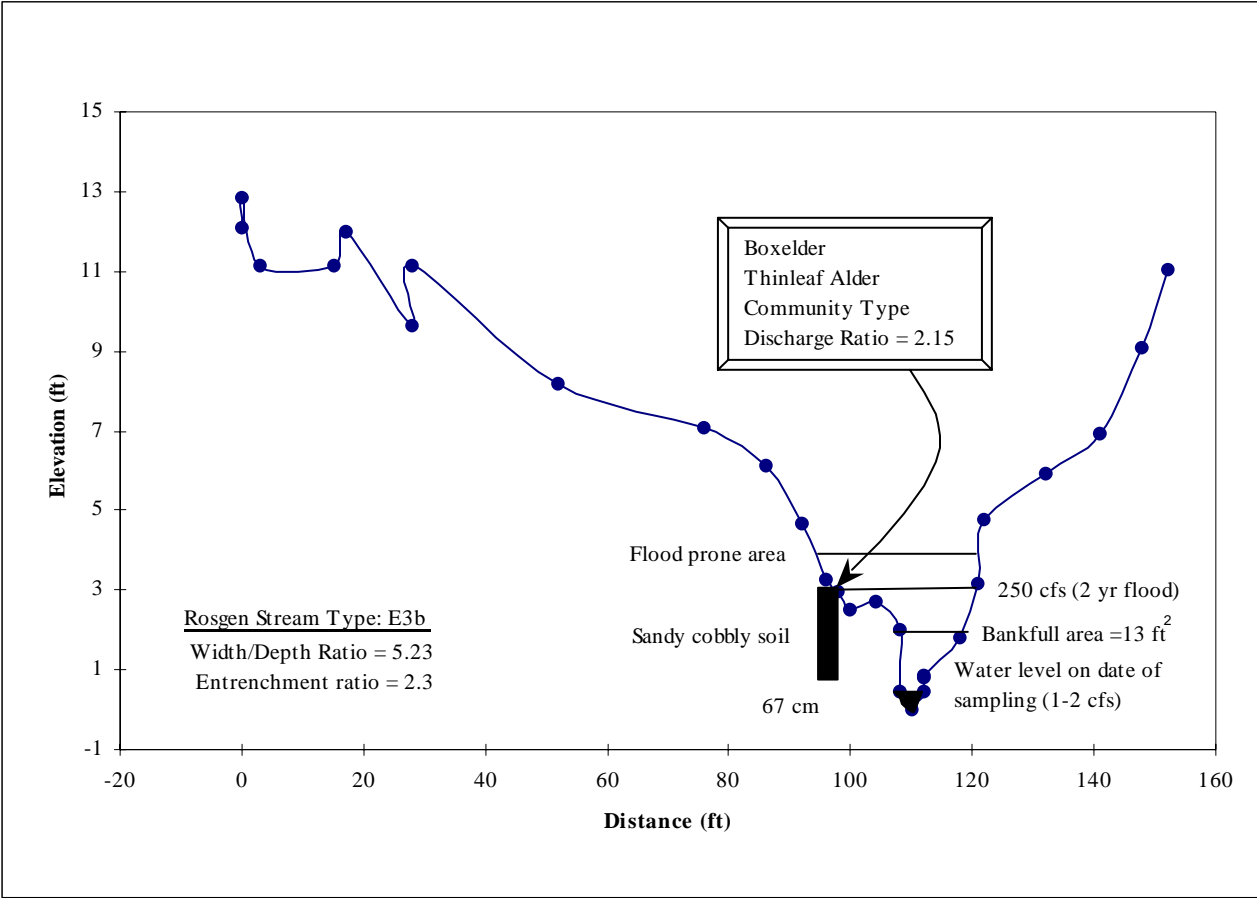


Figure 28. Cross-section of the Rio Chiquito (Rio Chiquito-1) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

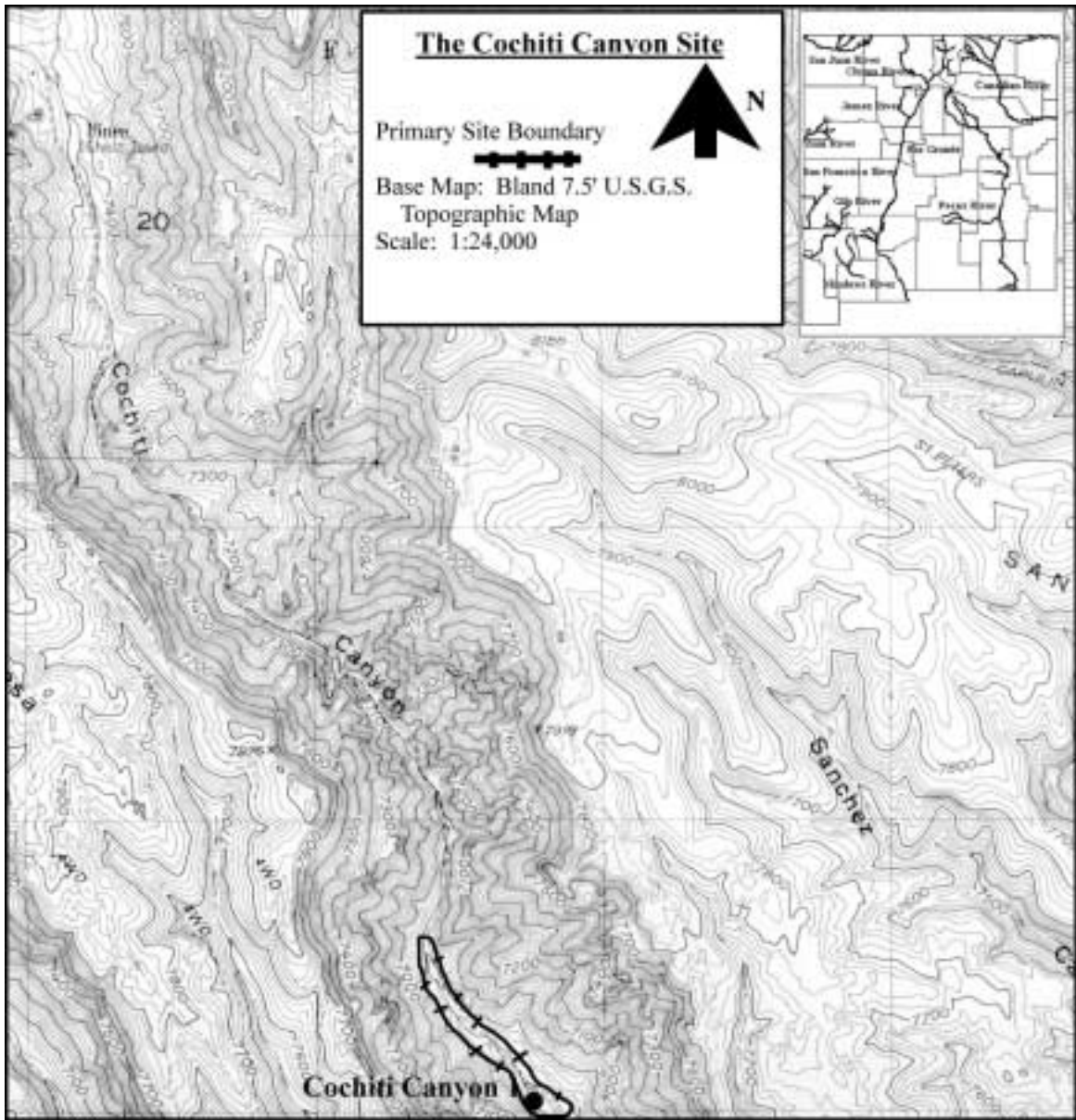


Figure 29. The boundary of the Cochiti Canyon Site. The black dot indicates the location of the stream cross-section.

Cook Arroyo at Aztec

Watershed: San Juan **River:** Animas **Reach:** Animas
Site Number: 240 **Basin Number:** 14080104 **County:** SAN JUAN
Town: 30N **Range:** 12W **Section:** 18 **Northing:** 4077671 **Easting:** 229472
Quad. Map Name: FLORA VISTA **Site Size:** 80 Ha **Stream Length:** 1.8 km
Site Quality: C+ **Rosgen Stream Type(s):** C3

Site Description: The Cook Arroyo Site is located on the Animas River near the town of Aztec. It is dominated by Rio Grande cottonwood-Russian olive forests with a shrubby understory of New Mexico olive. Overflow and secondary backwater channels are marshy and support diverse wetlands dominated by reed canarygrass or threesquare. Recent high flows have eroded streambanks at this site; as a result, they have been built by bulldozers. Old cars, tires, and appliances are also used to protect pastures and agricultural fields from erosion. The river is also confined by an old railroad grade. Despite these impacts, riparian communities remain in good to fair condition, but they are threatened by encroachment from Russian olive, grazing, and further fragmentation.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Reed Canarygrass/Broadleaf Cattail	B-	B-	B-	B-
Threesquare-Common Spikerush	B-	B-	B	B-
Rio Grande/Plains Cottonwood-Russian Olive/New Mexico Olive	C-	B	B	C+

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** Partial **Dredged:** Partial **Jetty Jacked:** No
Leveed: Partial **Streambank Condition:** Poor **Overall Hydrologic Regime:** Good

Landscape Mosaic: Fair

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But Russian olive co-dominates.
Grazing: yes	The floodplain has been moderately grazed.
Fuel Wood: no	
Dumping: yes	Old tires and cars are used for protection against bank erosion.
ORV Use: no	
Roads: yes	The main highway is out of the active floodplain, but dirt roads leading down to the river are common.
Mowing: no	
Other Impacts: yes	Old railroad grade serves as a levee for much of this site.

Data Sources: Aerial reconnaissance; field sampling.

Cross Section: Animas 1 **Jurisdiction:** Private
Plots: 96PD010 96PD011 96PD012 **Survey Date:** 7/10/96
Investigators: Durkin, Bradley



Photo: Ted Cline

Figure 30 The Cook Arroyo at Aztec Site on the Animas River. This is one of the largest stands of Rio Grande cottonwoods remaining on the Animas River. Brown areas are old overflow channels or oxbows.

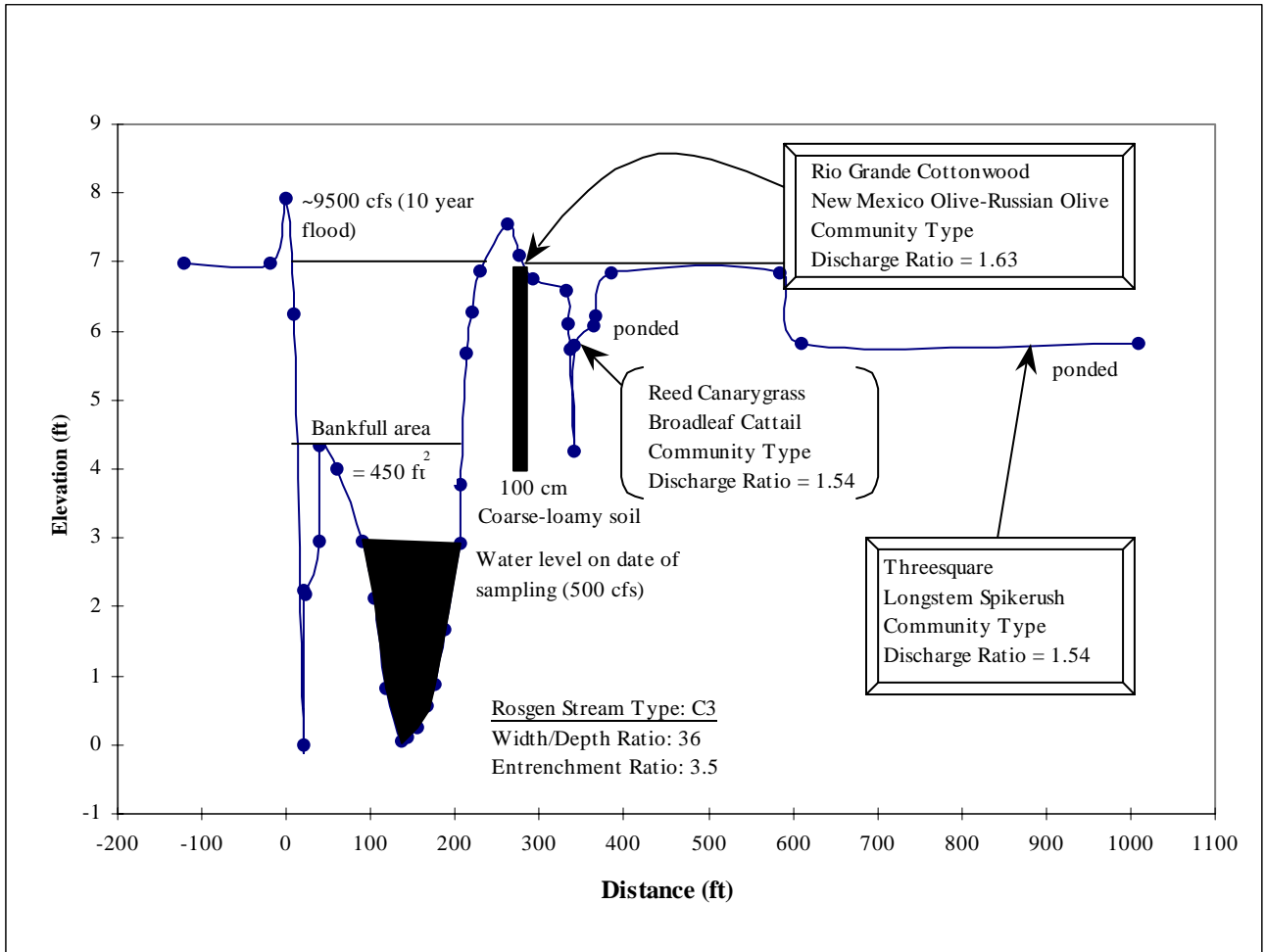


Figure 31. Cross-section of the Animas River (Animas-1) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

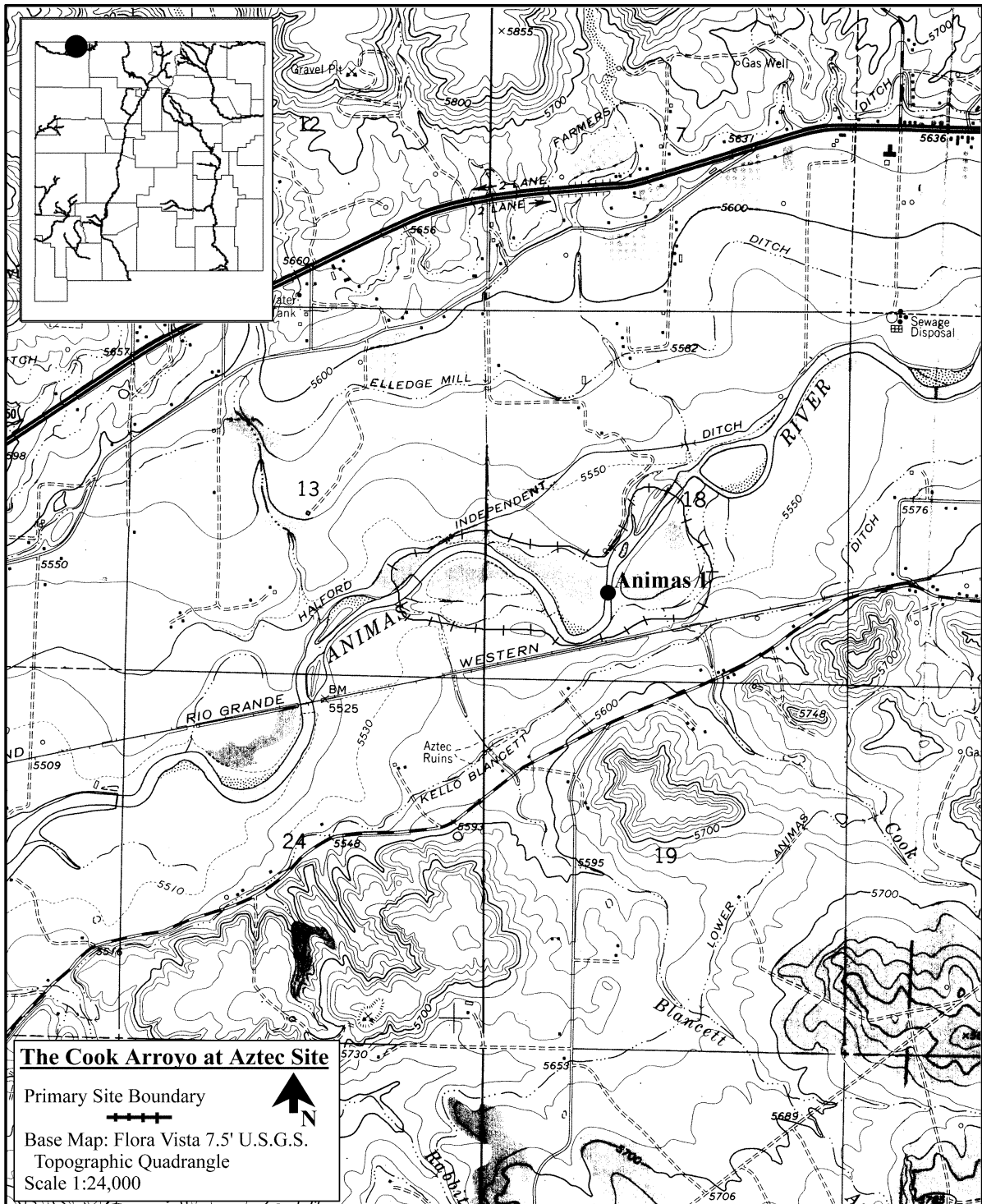


Figure 32. The boundary of the Cook Arroyo at Aztec Site. The black dot indicates the location of the stream cross-section.

Cottonwood Draw

Watershed: Pecos **River:** Pecos **Reach:** Middle Pecos
Site Number: 277 **Basin Number:** 13060003 **County:** CHAVES
Town: 05S **Range:** 25E **Section:** 35 **Northing:** 3743180 **Easting:** 565430
Quad. Map Name: COTTONWOOD DRAW **Site Size:** 37.5 Ha **Stream Length:** .7 km
Site Quality: C+ **Rosgen Stream Type(s):** C5

Site Description: The Cottonwood Draw Site is located on the Pecos River between Fort Sumner and Roswell. The Pecos at this site has a low gradient (<.05%) and is dominated by sand, silt, and clay. Wetland vegetation is characterized by a small stand of Rio Grande cottonwoods and seepwillow and coyote willow stands along the banks. Other common community components include saltcedar, Russian olive, alkali sacaton and in more mesic areas threesquare and Rio Grande cottonwood seedlings. Although stream flows through this site are regulated, side drainages appear to be providing enough supplementary flow to flood lower bars. Coarse flood debris along the front of the island bar indicates that much of the bar was inundated fairly recently (5 or 10 years ago). As a result, these stands appear to be viable even though the area is grazed heavily. Overall the riparian communities are in good to fair condition. The main threats to this site appear to be grazing and encroachment from exotic species. Of the sites sampled along this reach of the Pecos, the Cottonwood Draw Site probably has the most natural riparian vegetation.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Rio Grande/Plains Cottonwood/Alkali Sacaton	C	C-	C	C
Emory's Baccharis-Coyote Willow	B-	B-	B	B-

Hydrologic Impacts:
Flow Regulation: Yes **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Fair

Landscape Mosaic: Fair

Floodplain Impacts: **Comments:**
Exotic veg dominant: no But saltcedar and Russian olive are very common.
Grazing: yes Evidence of cattle was abundant.
Fuel Wood: no
Dumping: no
ORV Use: no
Roads: no
Mowing: no
Other Impacts: no

Data Sources: Aerial photography; ground reconnaissance; field sampling.

Cross Section: Pecos 16 **Jurisdiction:** BLM, private

Plots: 93PD032 93PD033 93PD034 **Survey Date:** 8/25/93
Investigators: Bradley, Durkin

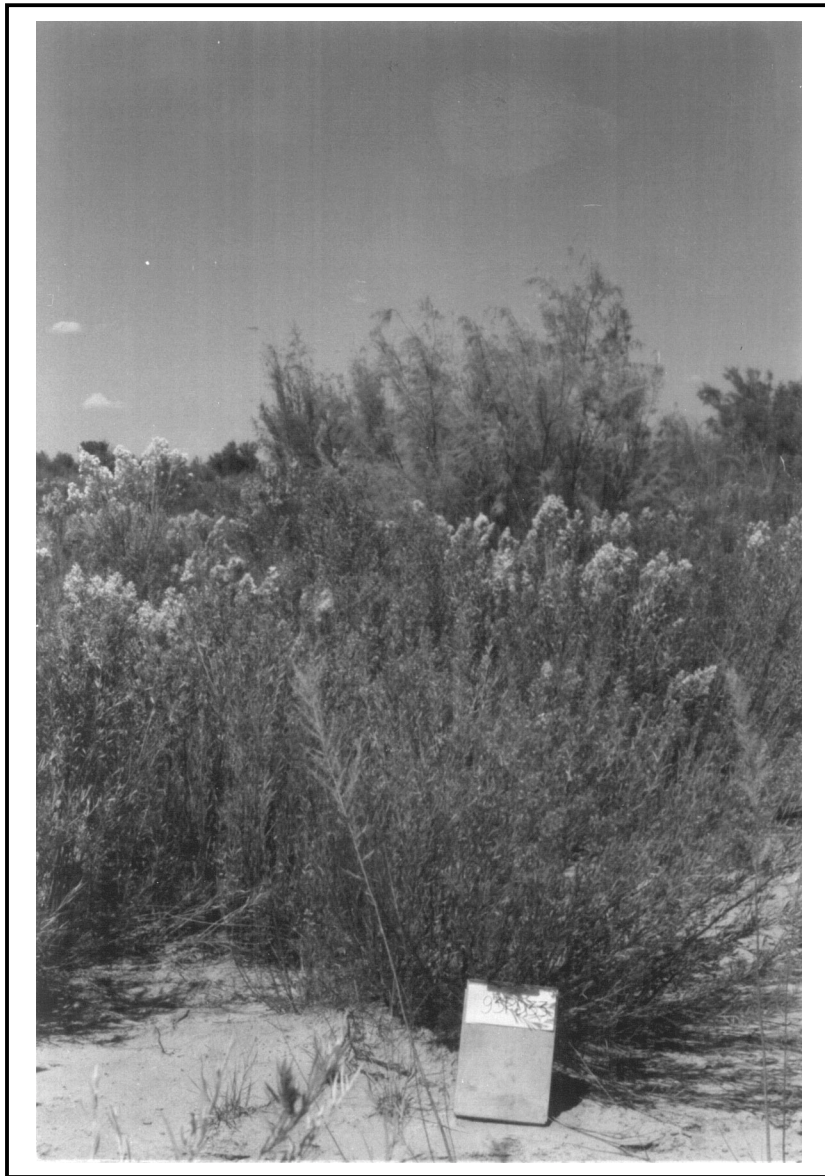


Photo: Mike Bradley

Figure 33. Seepwillow and coyote willow dominate island and side bars at the Cottonwood Draw Site on the Pecos River. Saltcedar is very common as well.

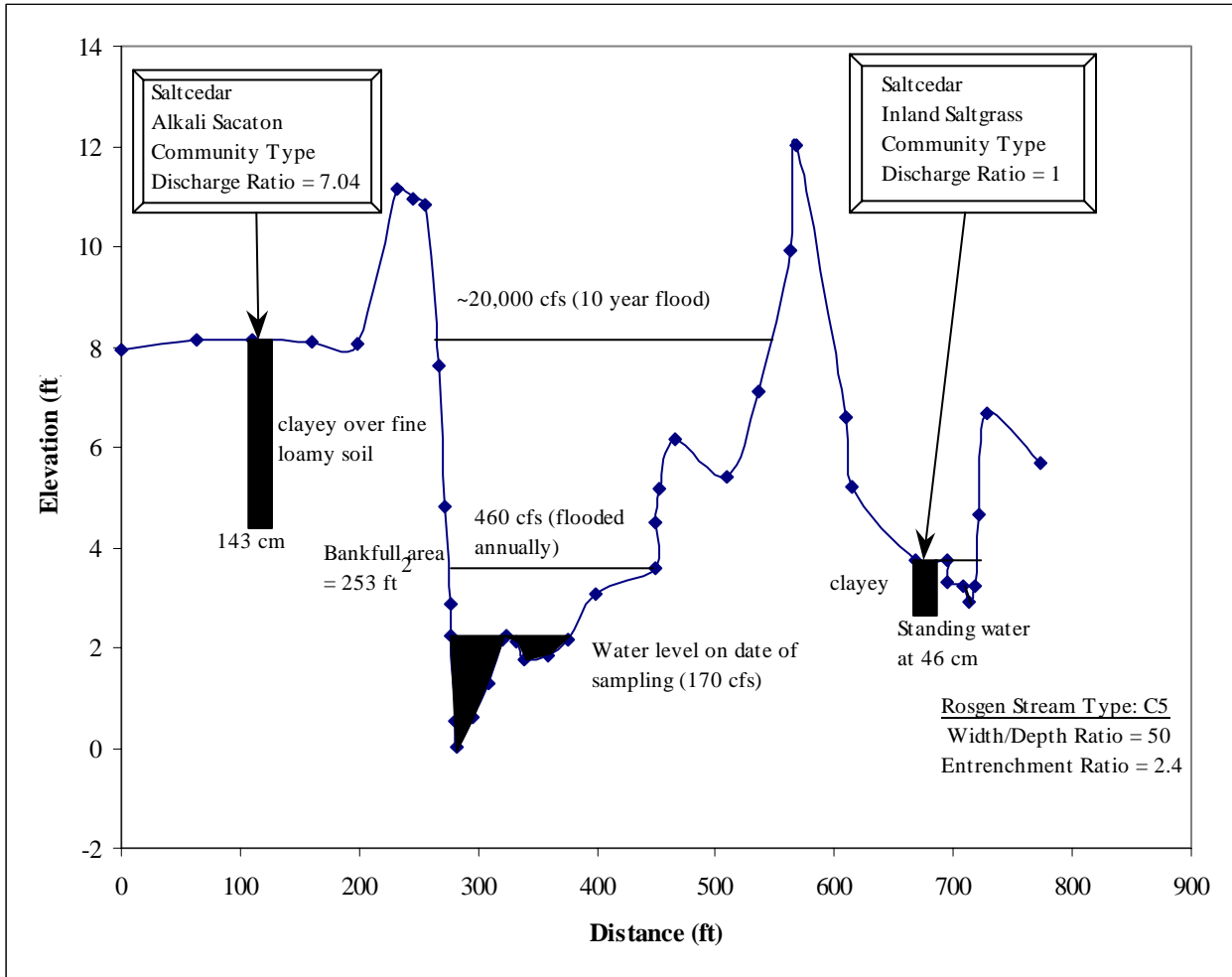


Figure 34. Cross-section of the Pecos River (Pecos 22) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

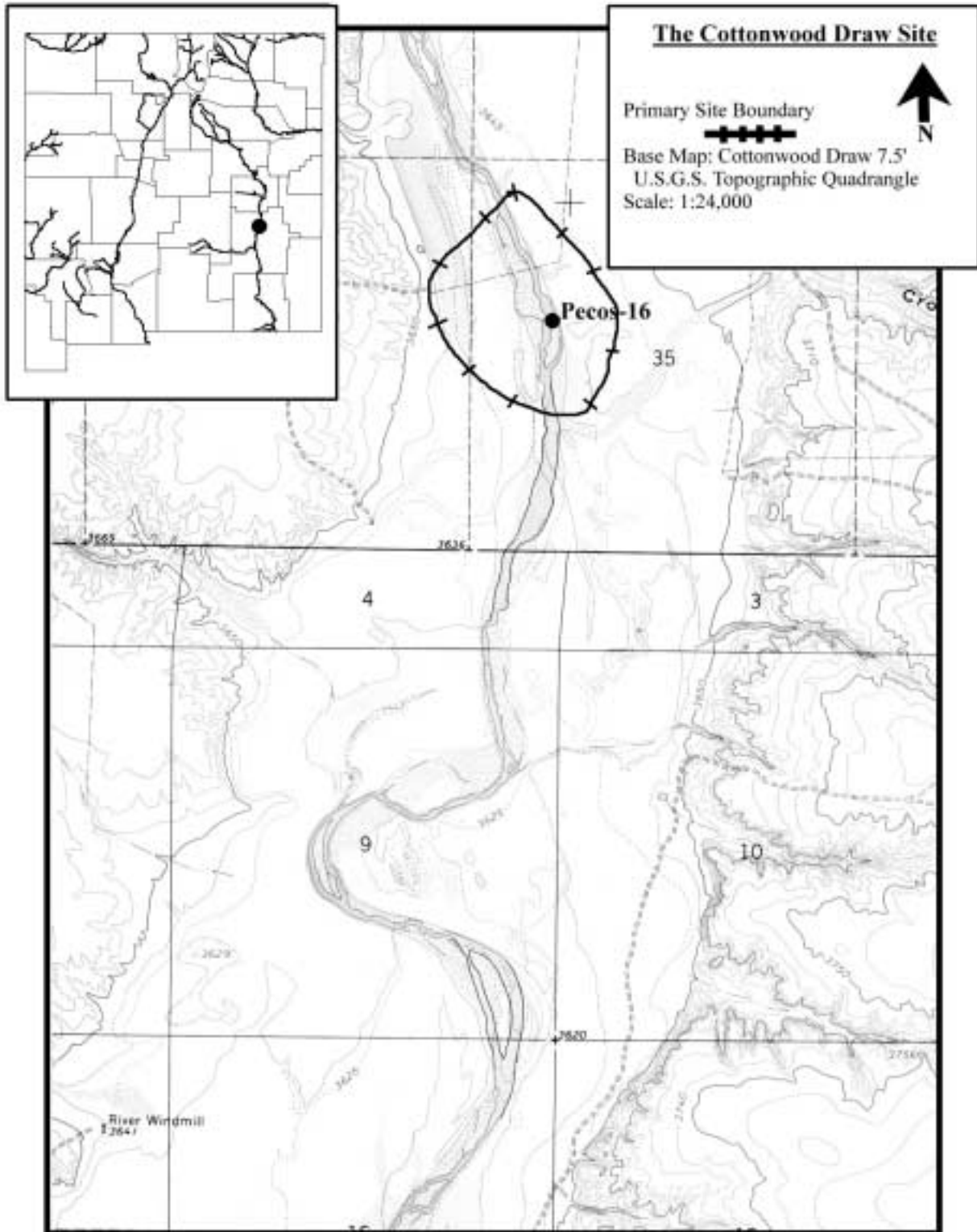


Figure 35. The boundary of the Cottonwood Draw Site. The black dot indicates the location of the stream cross-section.

Ditch Canyon

Watershed: San Juan **River:** Ditch Canyon **Reach:** Ditch Canyon
Site Number: 250 **Basin Number:** 14080104 **County:** SAN JUAN
Town: 32N **Range:** 10W **Section:** 35 **Northing:** 4092320 **Easting:** 246170
Quad. Map Name: MOUNT NEBO **Site Size:** 33 Ha **Stream Length:** 3.6 km
Site Quality: B **Rosgen Stream Type(s):** C5

Site Description: Ditch Canyon is a tributary of the Animas River just south of the Colorado state line. The canyon cuts through steep side slopes dominated by pinyon and juniper woodlands typical of the Colorado Plateau. Except during storm events, the creek bed is dry and typically sandy with some cobbles and exposed bedrock. Riparian forests are situated on terraces dominated by older cottonwoods over a shrub-dominated sub-canopy of big sagebrush or rubber rabbitbrush. At the lower end of the site, a dense stand of coyote willows is spring fed. The effect of ORVs in the channel is probably negligible.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Rio Grande/Plains Cottonwood/Big Sagebrush	B	B	B+	B+
Rio Grande/Plains Cottonwood/Rubber Rabbitbrush	B-	B	B-	B-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveled: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Excellent

Landscape Mosaic: Fair

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But some herbaceous exotics present.
Grazing: no	No observable evidence.
Fuel Wood: no	
Dumping: no	
ORV Use: yes	ORVs drive in the dry riverbed.
Roads: yes	Roads traverse the dry channel for about two miles.
Mowing: no	
Other Impacts: yes	Gas wells are common in the area.

Data Sources: Ground reconnaissance; field sampling.

Cross Section: Ditch Canyon **Jurisdiction:** BLM
Plots: 96PD028 96PD029 **Survey Date:** 7/29/96
Investigators: Durkin, Bradley



Photo: Mike Bradley

Figure 36. Patches of large mature Rio Grande cottonwoods are common at the Ditch Canyon Site.

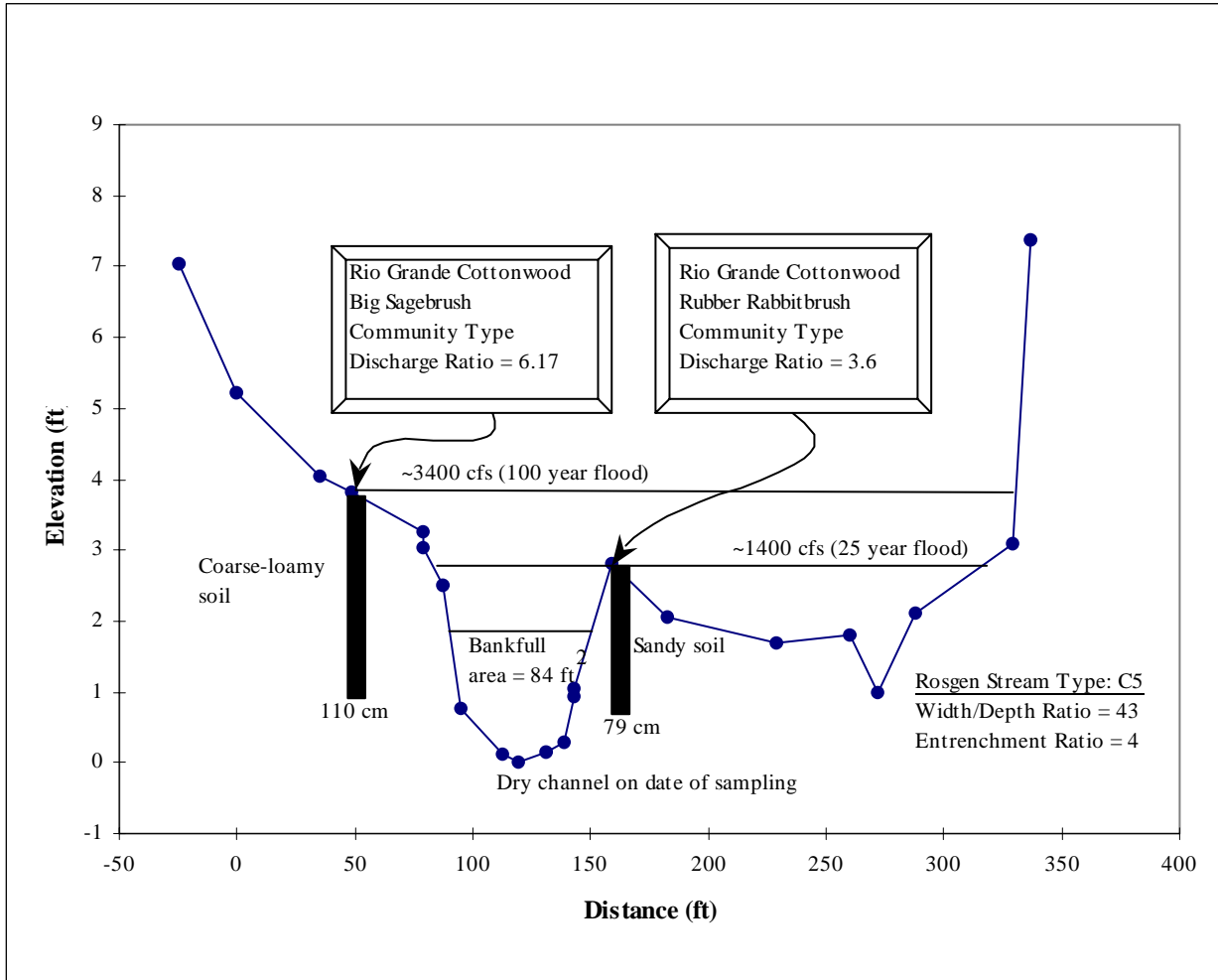


Figure 37. Cross-section of Ditch Canyon (Ditch Canyon-1) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval information are rough estimates and should be considered preliminary.

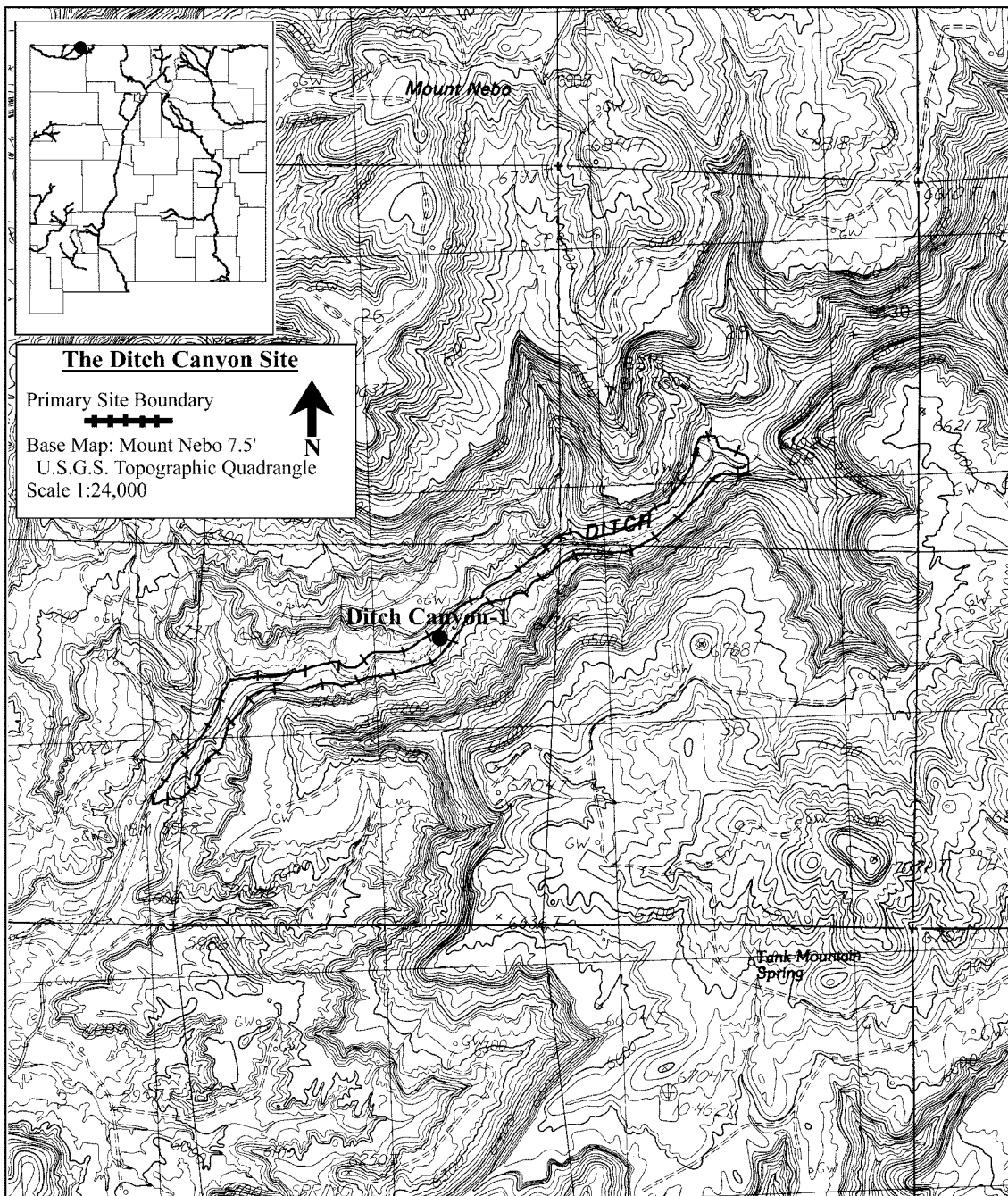


Figure 38. The boundary of the Ditch Canyon Site. The black dot indicates the location of the stream cross-section.

Embudo

Watershed: Rio Grande **River:** Rio Grande **Reach:** Rio Grande Gorge
Site Number: 4 **Basin Number:** 13020101 **County:** RIO ARRIBA
Town: 23N **Range:** 09E **Section:** 24 **Northing:** 4007490 **Easting:** 415500
Quad. Map Name: VELARDE **Site Size:** 70 Ha **Stream Length:** 4.3 km
Site Quality: B+ **Rosgen Stream Type(s):** C3, B3c

Site Description: The Embudo Site is located on the mainstem of the Rio Grande near the town of Embudo in Rio Arriba County. The site represents some of the highest quality and most viable stands of Rio Grande cottonwood and coyote willow remaining on the mainstem of the Rio Grande. With six different community types, it also is one of the most diverse sampled in the state. The site is characterized by "stringer" stands of Rio Grande cottonwoods of mixed ages. Coyote willow stands dominate island and side bars. Lower and wetter parts of the floodplain are dominated by threesquare, smooth horsetail, creeping bentgrass, as well as cottonwood seedlings. Overall, riparian communities are diverse, well developed, and appear to be viable. The main mark against these communities is their size; many are small and fragmented by the highway and other roads, as well as agriculture. However, grazing is primarily absent from this site and other site impacts are minimal. This high quality site is fairly endangered, however, as off-road vehicles, woody exotic species, urbanization, agriculture, and irrigation all pose a threat.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Coyote Willow/Redtop	B	B+	B	B
Threesquare/Smooth Horsetail	B	B-	B-	B-
Rio Grande/Plains Cottonwood/Coyote Willow	A	B+	B-	B+
Rio Grande/Plains Cottonwood/Smooth Horsetail	B+	B+	B-	B+
Rio Grande/Plains Cottonwood/Sparse Undergrowth	B+	B+	B-	B+
Rio Grande/Plains Cottonwood/Nebraska Sedge	A	B+	B-	A-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Good

Landscape Mosaic: Good

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But Russian olive and saltcedar individuals are common.
Grazing: no	No observable evidence.
Fuel Wood: no	
Dumping: yes	Some trash from picnickers, fishermen, and boaters was observed.
ORV Use: yes	ORVs drive in the floodplain.
Roads: yes	Dirt roads traverse the floodplain.
Mowing: no	
Other Impacts: yes	Beavers are removing many young and old trees.

Data Sources: Ground and aerial reconnaissance; field sampling.

Cross Section: Rio Grande 3-5 **Jurisdiction:** Private
Plots: 94PD034 94PD035 94PD036 94PD037 **Survey Date:** 6/28/94
 94PD041 94PD042 94PD043 **Investigators:** Bradley, Durkin, Carr



Photo: Ted Cline

Figure 39. The upper reach of the Embudo Site on the Rio Grande. Narrow "ribbons" of Rio Grande cottonwoods dominate much of the narrow floodplain throughout this site.

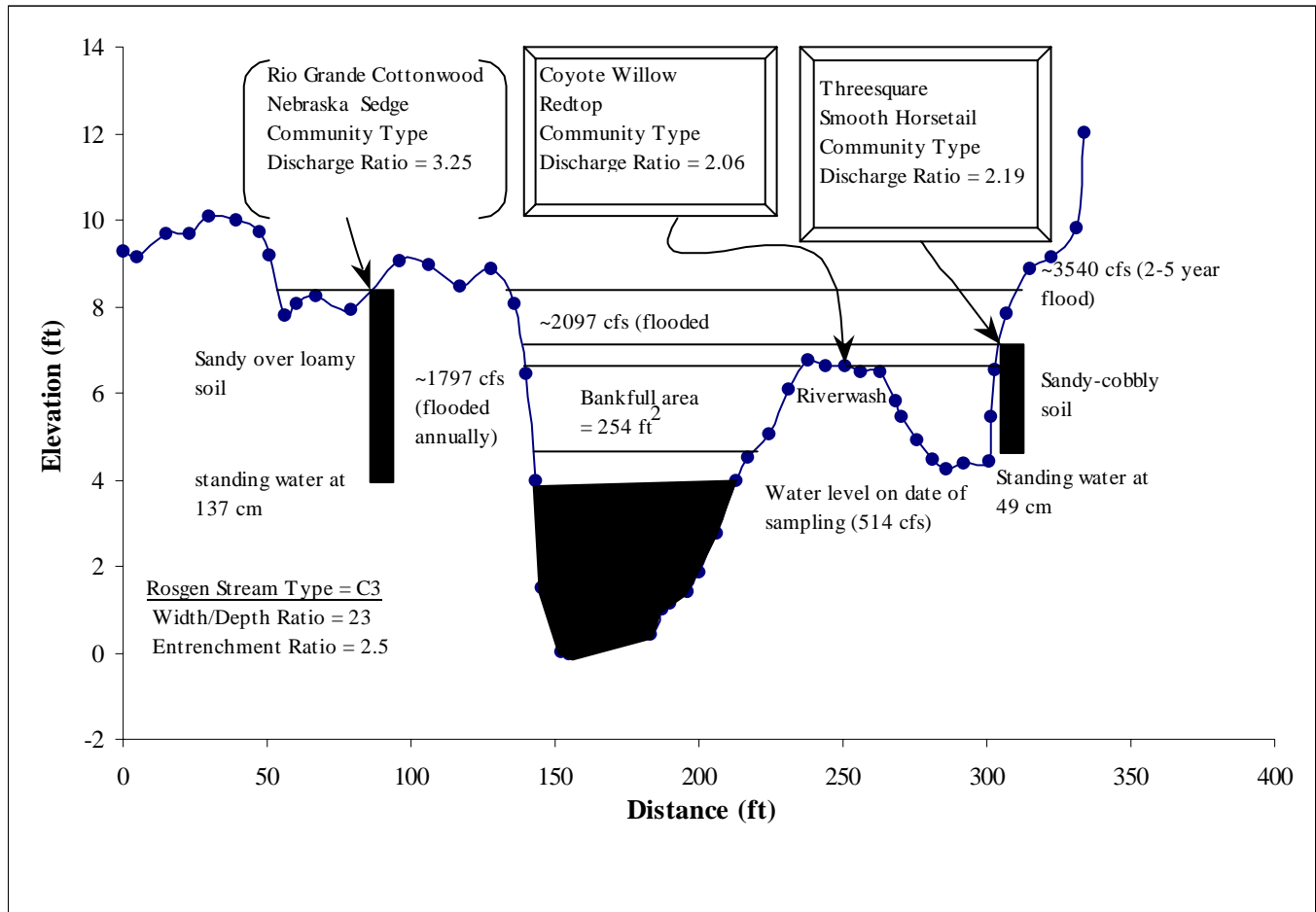


Figure 40. Cross-section of the Rio Grande (Rio Grande-3) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

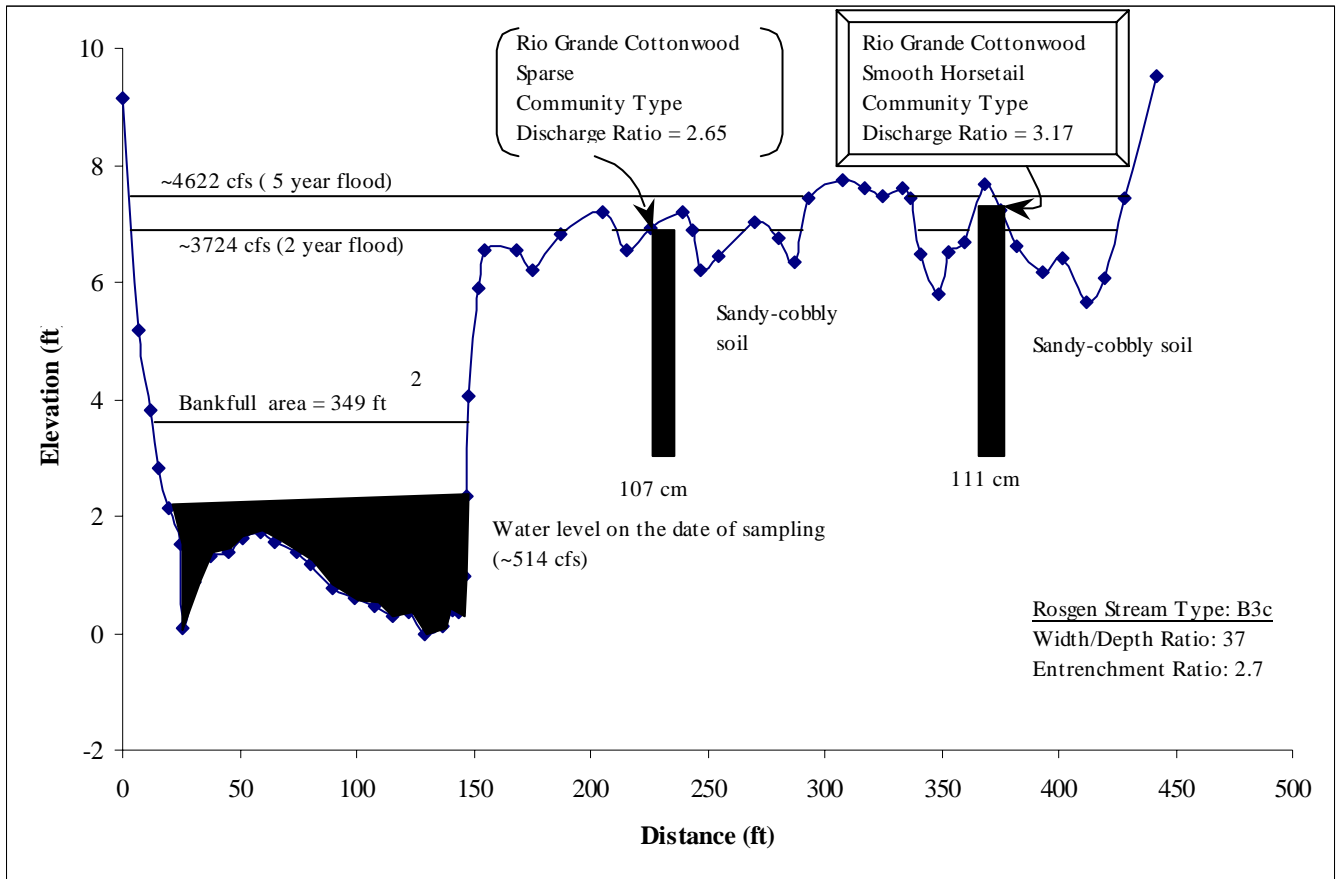


Figure 41. Cross-section of the Rio Grande (Rio Grande-4) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

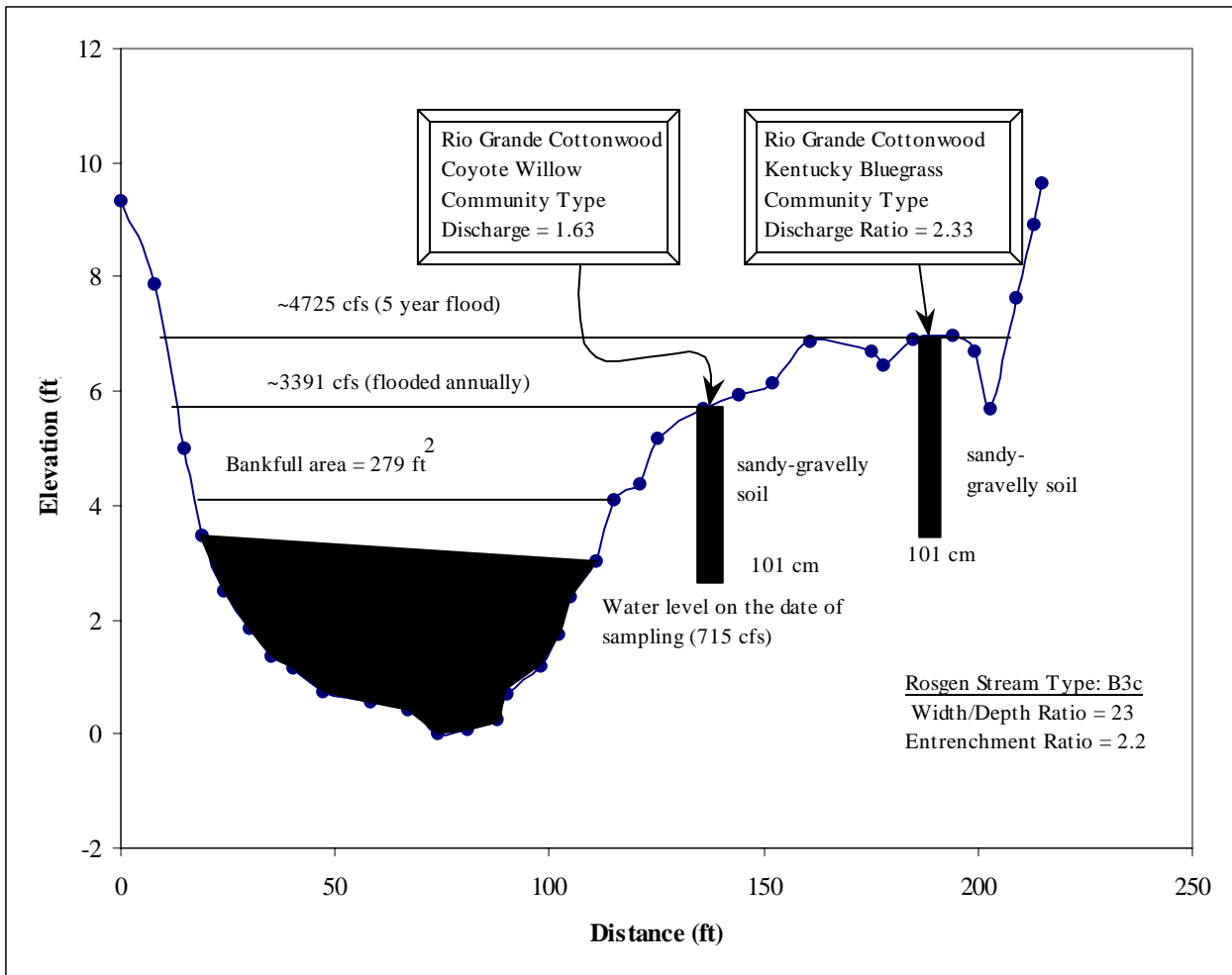


Figure 42. Cross-section of the Rio Grande (Rio Grande-5) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

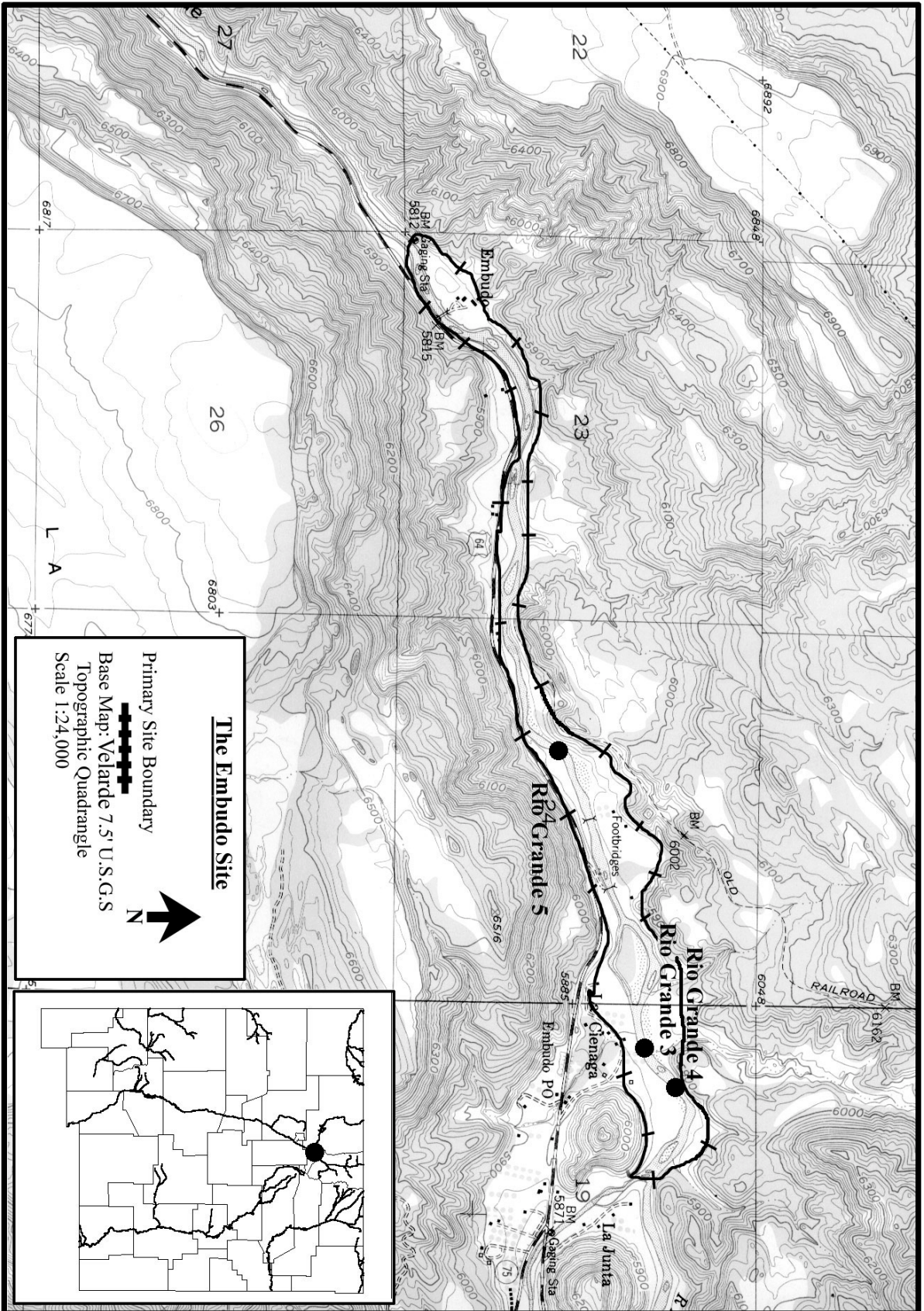


Figure 43. The boundary of the Embudo Site. Black dots indicate the location of the stream cross-sections.

Embudo Canyon

Watershed: Rio Grande **River:** Embudo Creek **Reach:** Embudo Canyon
Site Number: 72 **Basin Number:** 13020101 **County:** RIO ARRIBA
Town: 22N **Range:** 11E **Section:** 6 **Northing:** 4003380 **Easting:** 426660
Quad. Map Name: TRAMPAS **Site Size:** 26 Ha **Stream Length:** 3 km
Site Quality: A- **Rosgen Stream Type(s):** B3c

Site Description: The Embudo Canyon Site is located a few miles upstream of the town of Dixon in Rio Arriba County. The site is characterized by a narrow, steep canyon dominated by large boulders and stones. Some parts of the canyon have little or no deposition floodplain, but in areas where alluvial sediments are deposited, coyote willow and sedges dominate. Other species include Kentucky bluegrass, Baltic rush, spikerush, and smooth horsetail. Overall, wetland communities are diverse, well developed, and viable. Impacts at this site are minimal and limited to trails used by fishermen and hikers.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Coyote Willow/Water Sedge	A	A	B+	A-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Excellent

Landscape Mosaic: Good

Floodplain Impacts:	Comments:
Exotic veg dominant: no	
Grazing: no	No observable evidence.
Fuel Wood: no	
Dumping: no	
ORV Use: no	
Roads: no	
Mowing: no	
Other Impacts: yes	Fishermen trails are common.

Data Sources: Air photo interpretation; ground reconnaissance; field sampling.

Cross Section: Embudo 1	Jurisdiction: BLM
Plots: 94PD029	Survey Date: 6/25/94
	Investigators: Durkin, Bradley, Carr



Photo: Ted Cline

Figure 44. The Embudo Canyon Site. Depositional floodplains are scarce in this steep canyon, but coyote willows and herbaceous communities are common along streambanks and sidebars.

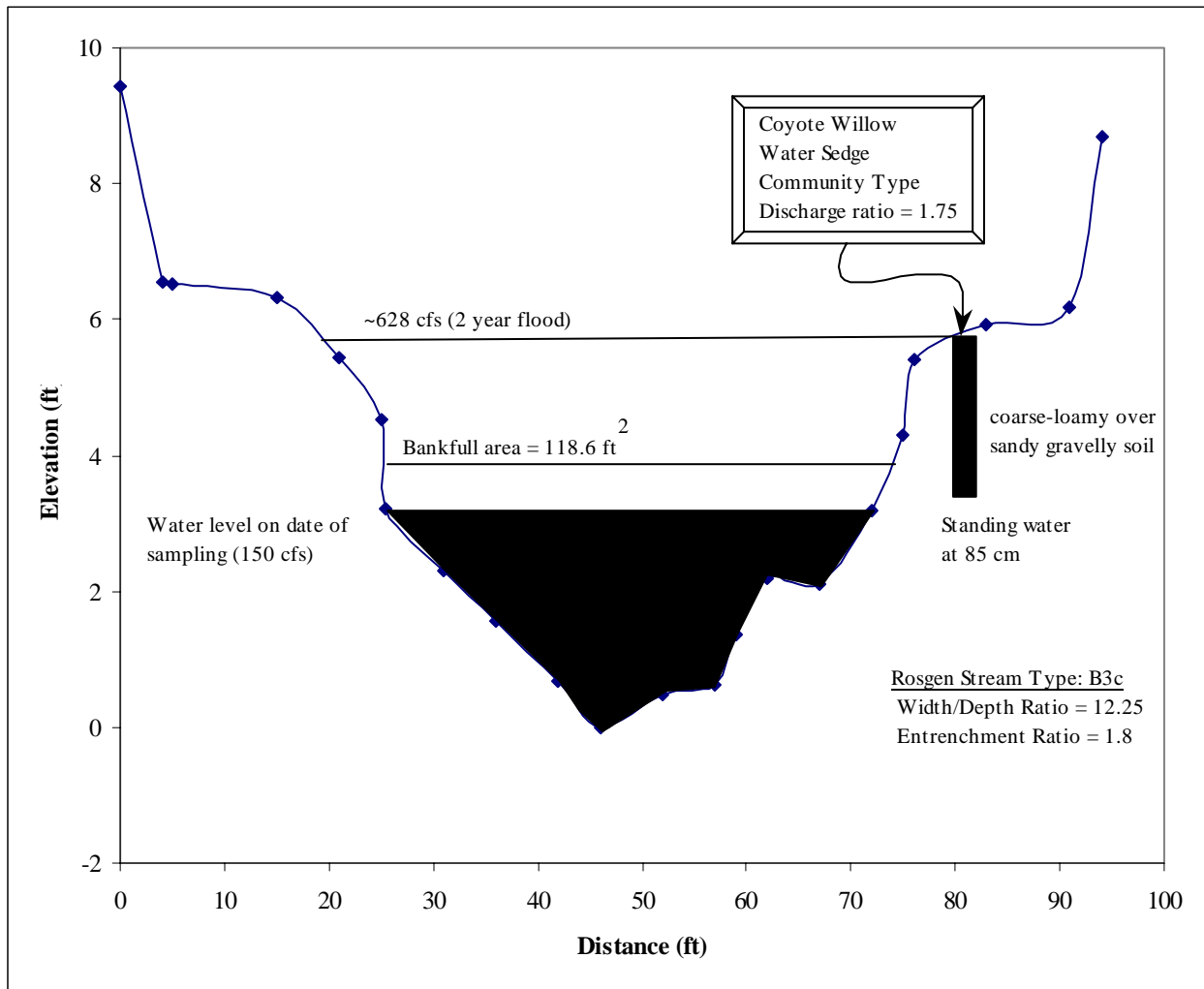


Figure 45. Cross-section of Embudo Creek (Embudo-1) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

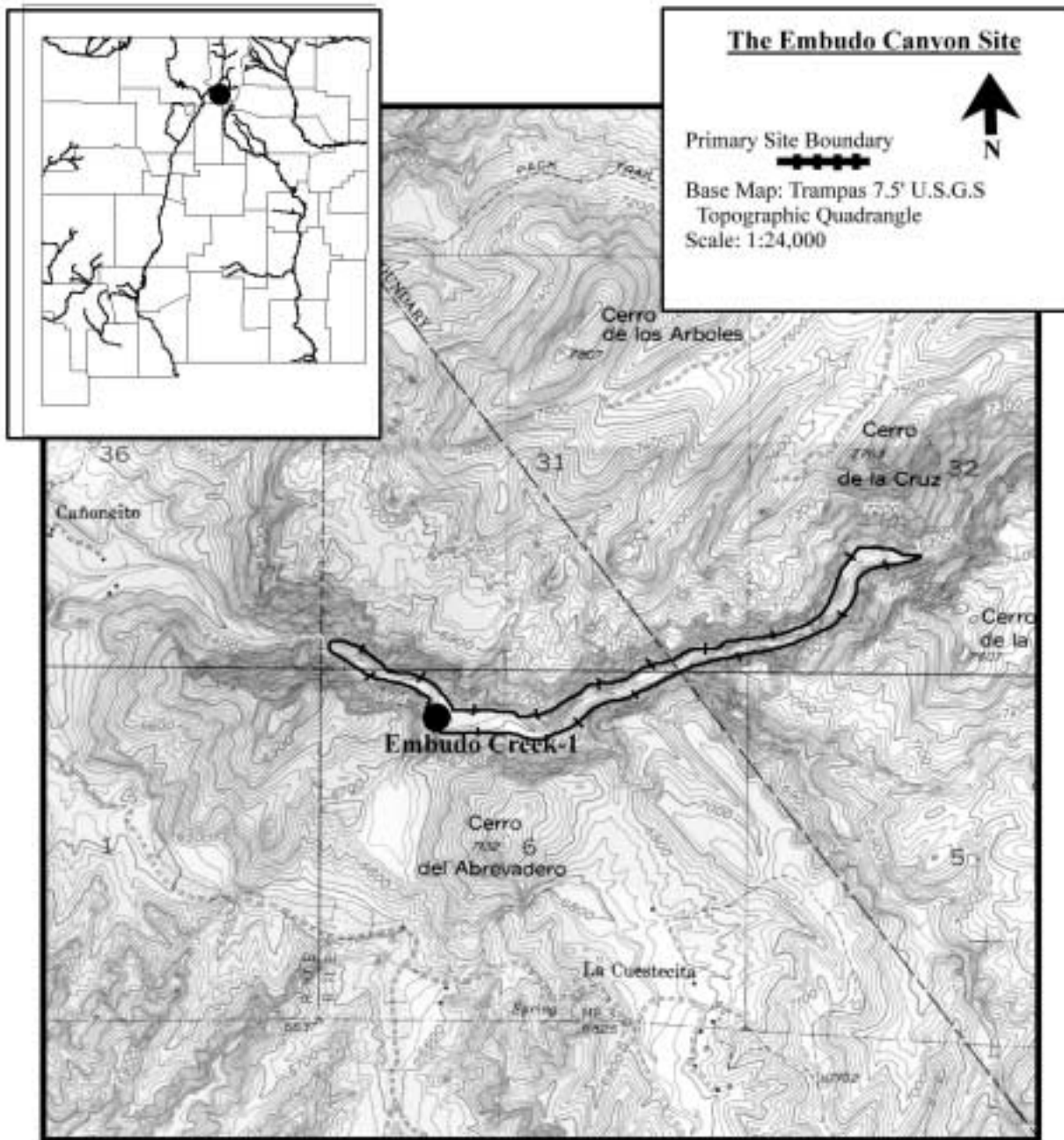


Figure 46. The boundary of the Embudo Canyon Site. The black dot indicates the location of the stream cross-section.

Fall Spring

Watershed: Gila Watershed **River:** East Fork Gila **Reach:** Fall Spring
Site Number: 171 **Basin Number:** 15040001 **County:** CATRON
Town: 11S **Range:** 12W **Section:** 31 **Northing:** 3687984.7 **Easting:** 208551.7
Quad. Map Name: BURNT CORRAL CANYON **Site Size:** 4.7 Ha **Stream Length:** .3 km
Site Quality: B- **Rosgen Stream Type(s):** N/A

Site Description: Fall Spring is a densely vegetated marsh bordering the East Fork of the Gila River. Hydrologically, it is independent from the river and is fed from an upland spring. It is composed primarily of threesquare, common spikerush, cattails, and softstem bulrush. Deeper waters of the marsh are open and approximately two feet deep. Other common graminoids present border the drier fringes and include knotgrass, Baltic rush, and meadow fescue. Currently, the marsh is heavily grazed and trampled. Its condition would improve greatly if the cattle were removed. Encroachment of saltcedar is a threat to this site as well.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Threesquare-Common Spikerush	B-	B-	A	B+
Softstem Bulrush Monotypic Stand	B-	B-	A	B+

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Poor **Overall Hydrologic Regime:** Excellent

Landscape Mosaic: Poor

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But saltcedar is common upstream in willow communities, as are herbaceous exotics.
Grazing: yes	Heavy, both in the marsh and in the surrounding riparian area.
Fuel Wood: no	
Dumping: no	
ORV Use: no	
Roads: no	
Mowing: no	
Other Impacts: no	

Data Sources: Personal communication; ground reconnaissance; field sampling.

Cross Section: East Fork 1 **Jurisdiction:** Gila National Forest
Plots: 95PD049 95PD048 **Survey Date:** 7/28/95
Investigators: Bradley, Durkin

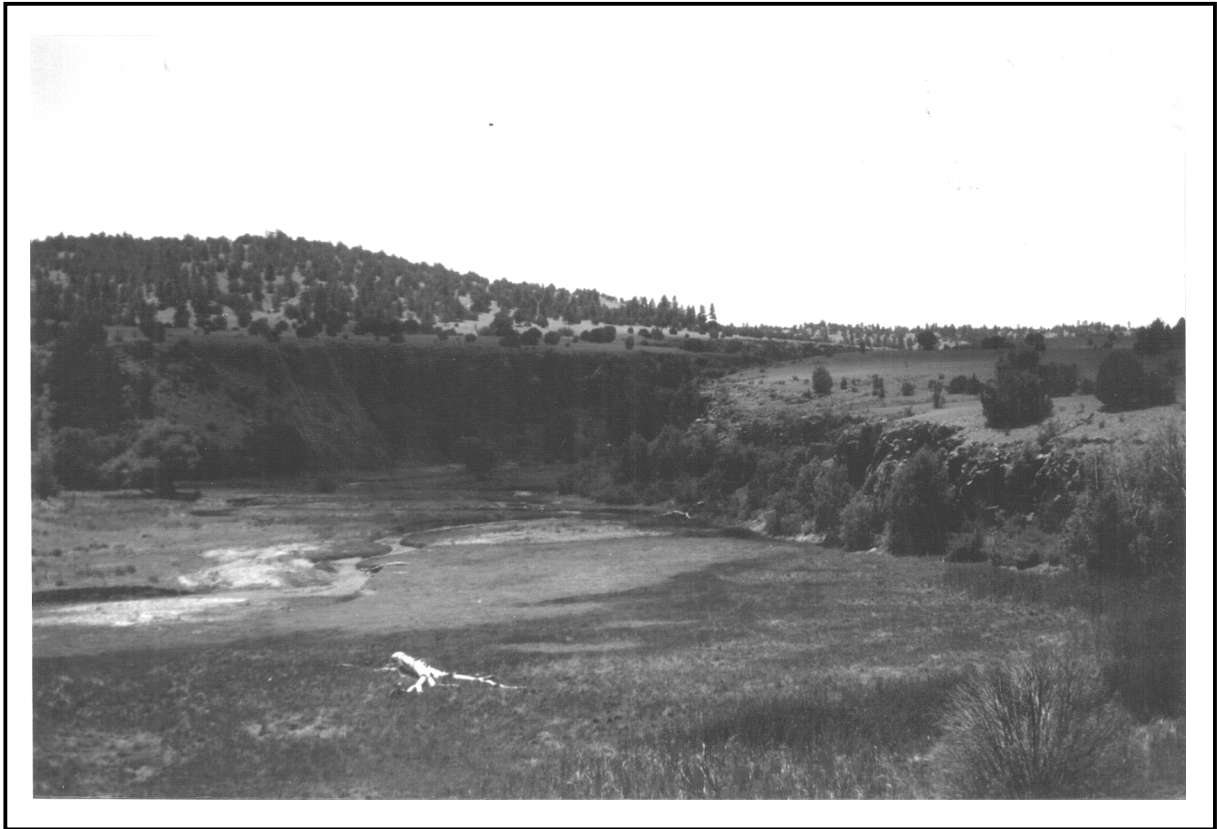


Photo: Mike Bradley

Figure 47. The Fall Spring Site on the East Fork of the Gila River. The vegetation of the marsh consists primarily of bulrushes, spikerushes, and cattails. Note the lack of shrubby vegetation along the streambanks.

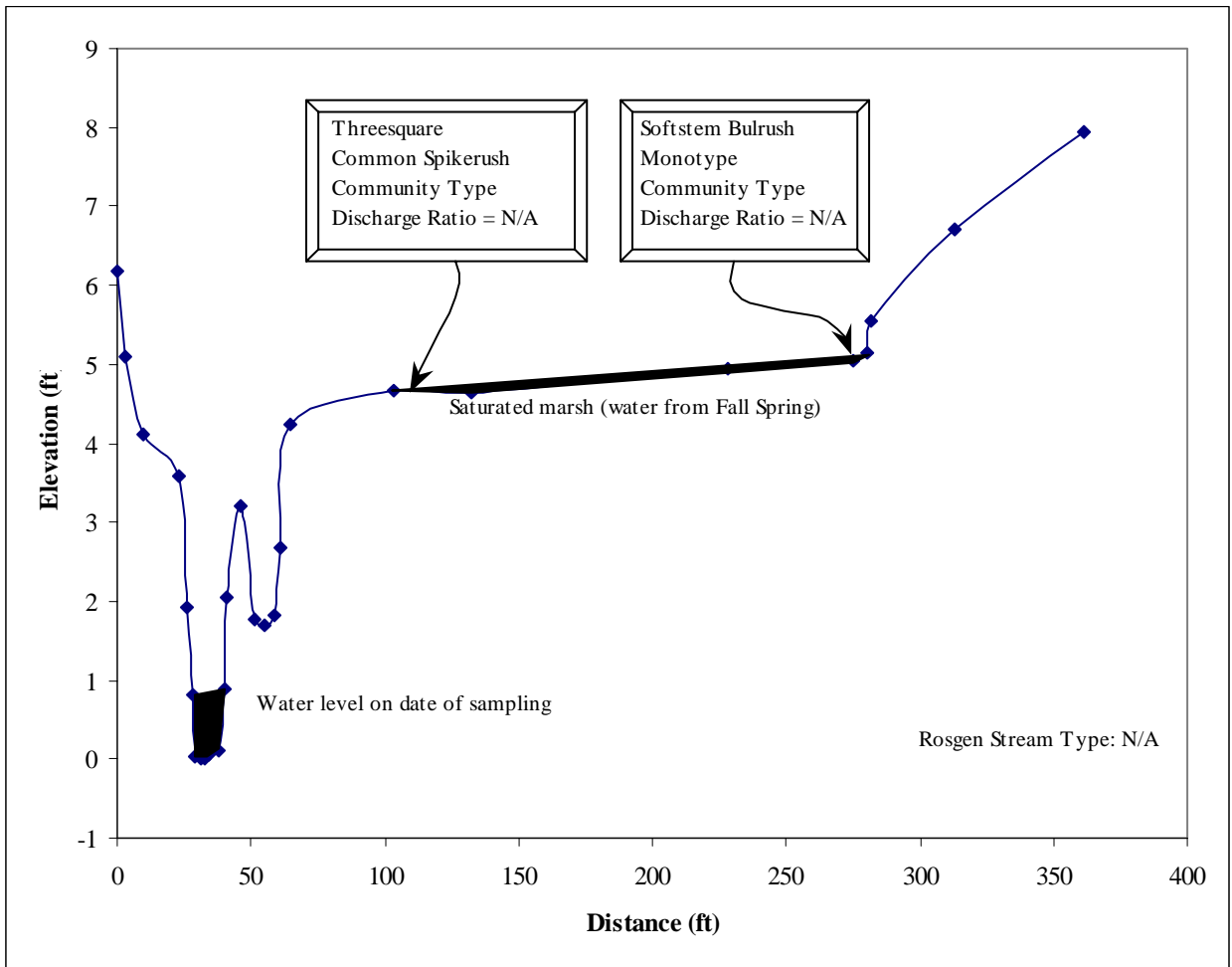


Figure 48. Cross-section of the East Fork of the Gila River (East Fork Gila-1) showing the location of the community types (incidental types are in brackets), predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

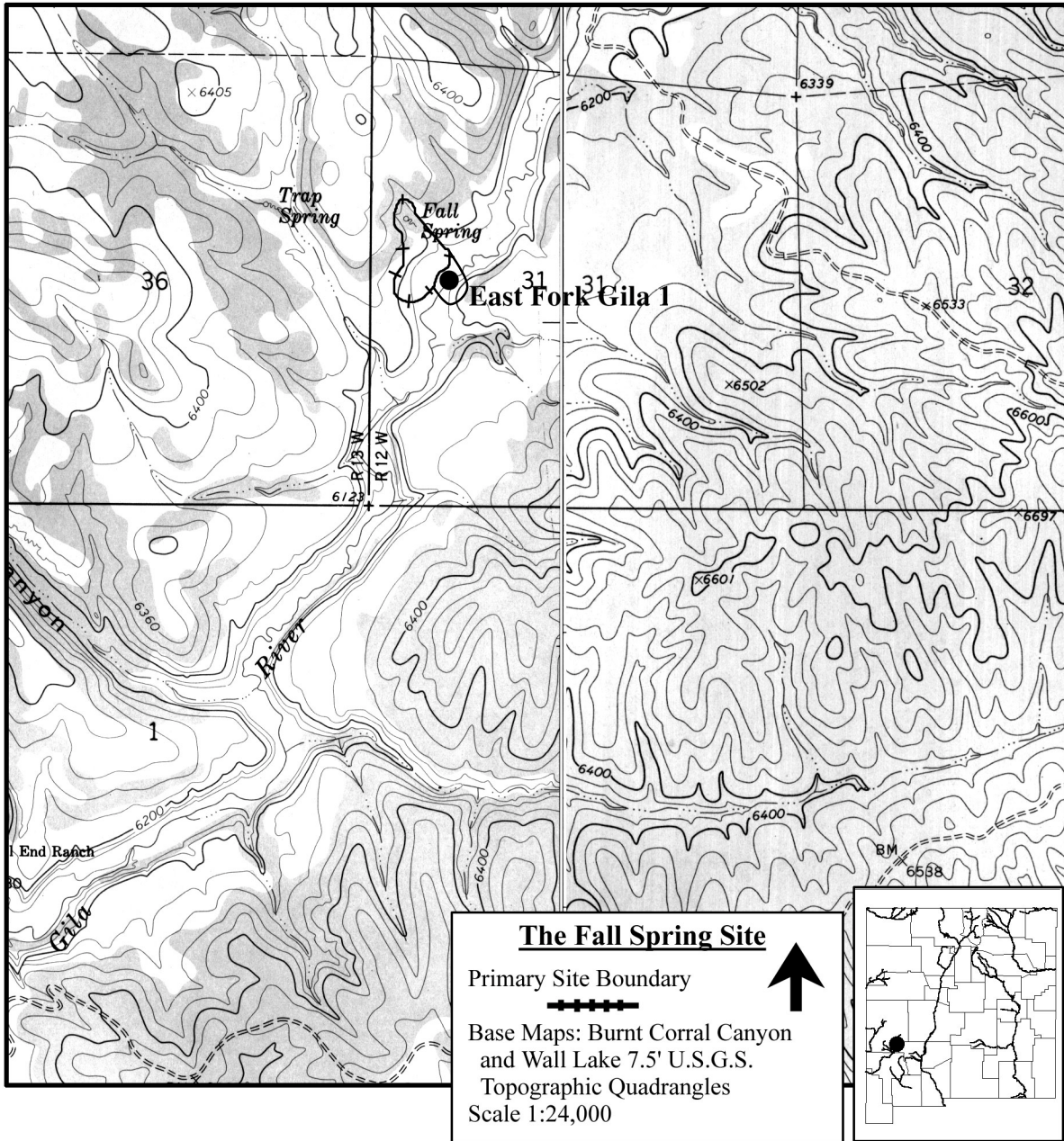


Figure 49. The boundary of the Fall Spring Site. The black dot indicates the location of the stream cross-section.

Dillon Mountain

Watershed: San Francisco Watershed **River:** San Francisco **Reach:** Dillon Mountain
Site Number: 125 **Basin Number:** 15040004 **County:** CATRON
Town: 05S **Range:** 19W **Section:** 34 **Northing:** 3749992 **Easting:** 147942
Quad. Map Name: DILLON MOUNTAIN **Site Size:** 15.4 Ha **Stream Length:** 3.7 km
Site Quality: A- **Rosen Stream Type(s):** B4c

Site Description: The Dillon Mountain Site is located on the San Francisco River downstream of the town of Luna in Catron County. A lush wetland consisting of threesquare, smooth horsetail, and other emergents dominates this site. The marsh is extensive, extending over a two-mile reach. Scattered pockets of willows are common as well. On drier terraces narrowleaf cottonwoods and junipers are common. Impacts are negligible and communities are high in quality.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Threesquare/Smooth Horsetail	B+	A	A	A-

Hydrologic Impacts:

Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Excellent **Overall Hydrologic Regime:** Excellent

Landscape Mosaic: Good

Floodplain Impacts:

Exotic veg dominant: no

Grazing: no **Comments:** No observable evidence.

Fuel Wood: no

Dumping: no

ORV Use: no

Roads: yes **Comments:** A dirt road fords the channel, affecting stream turbidity.

Mowing: no

Other Impacts: yes **Comments:** Hikers and recreational bathers use the area.

Data Sources: Ground reconnaissance; field sampling

Cross Section: San Francisco 11

Jurisdiction: Apache National Forest

Plots: 95PD039

Survey Date: 7/15/95

Investigators: Bradley, Durkin



Photo: Mike Bradley

Figure 50. The Dillon Mountain Site on the San Francisco River. Streambanks are lined with threesquare and smooth horsetail throughout much of this site.

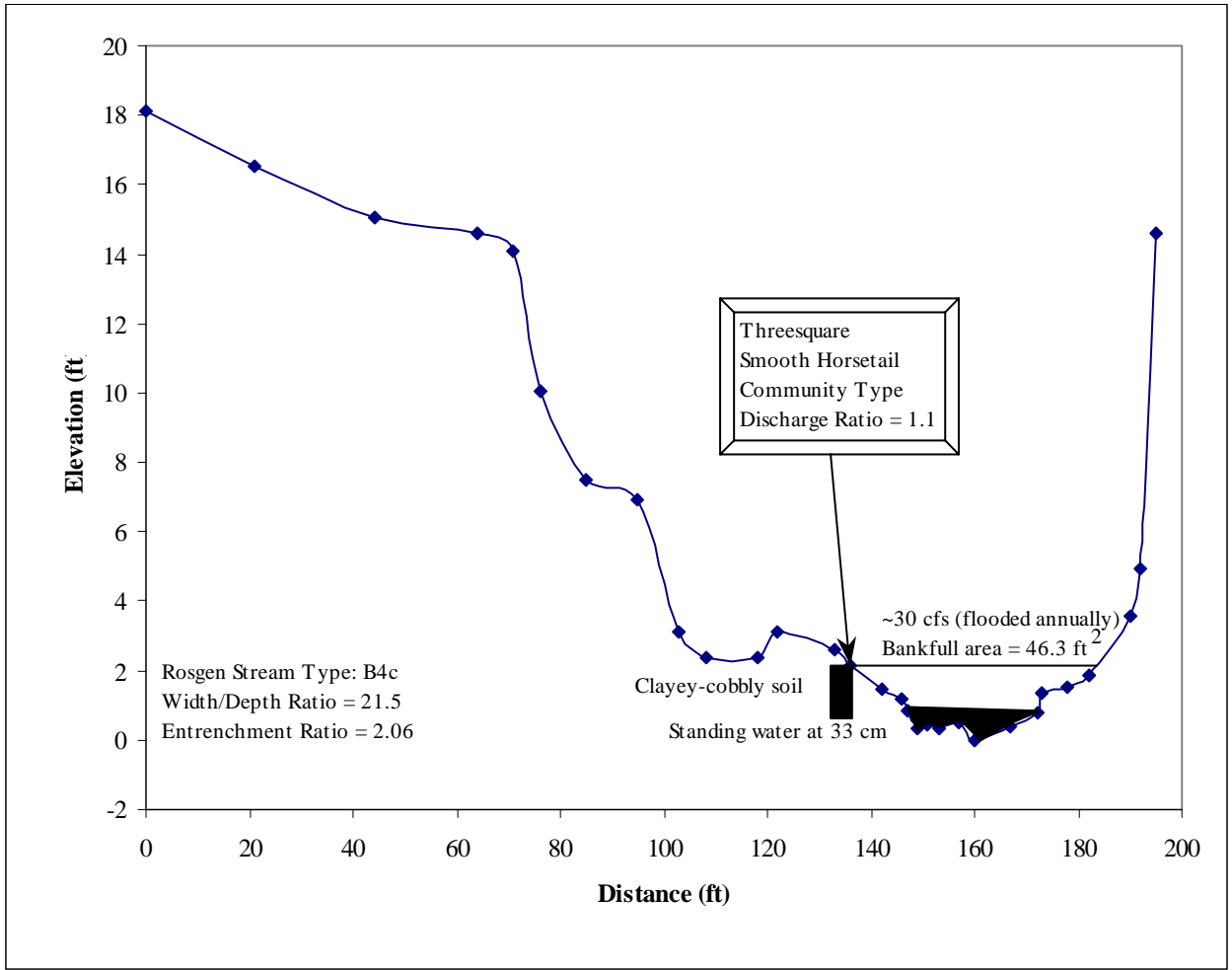


Figure 51. Cross-section of the San Francisco River (San Francisco-11) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

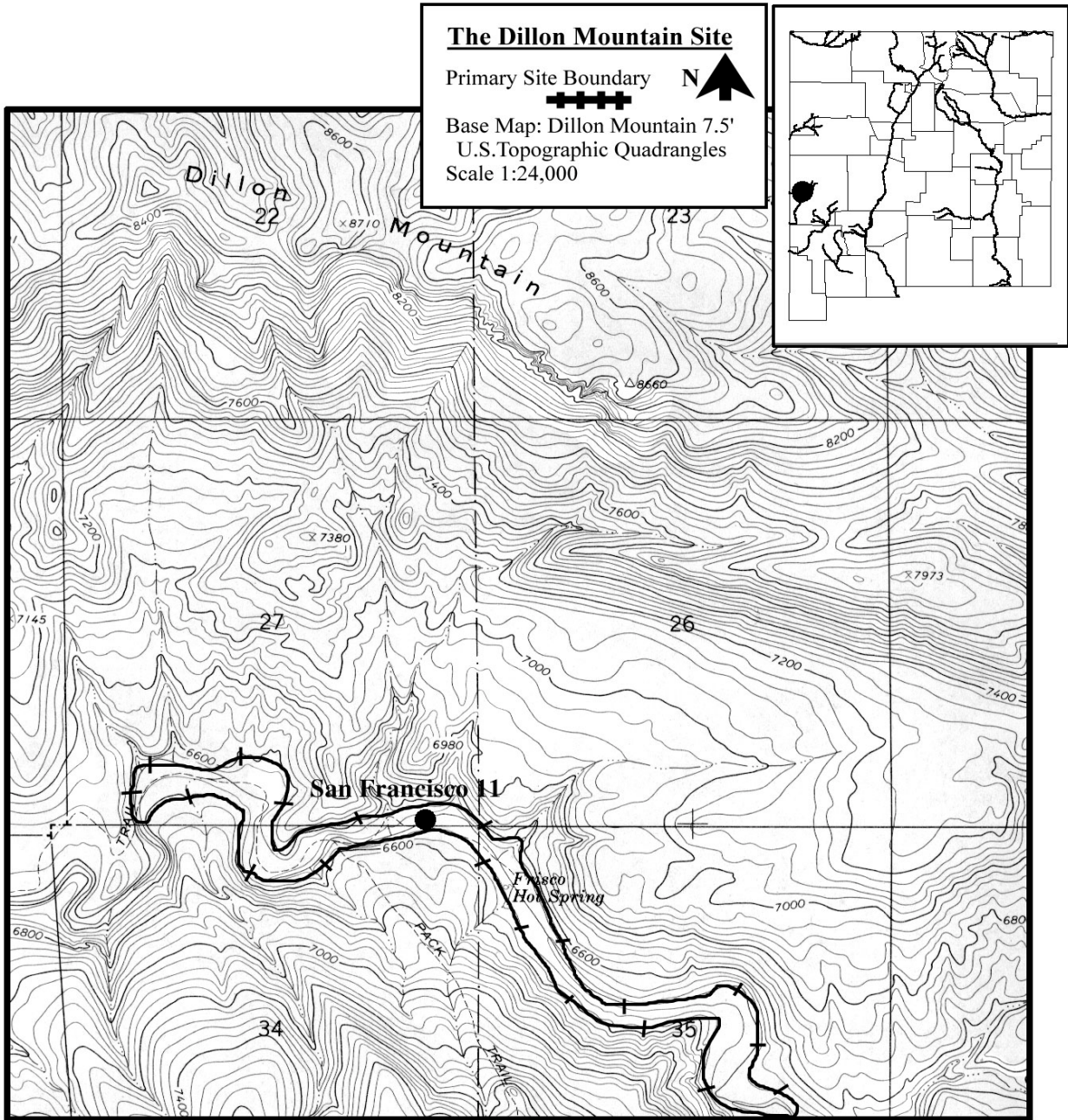


Figure 52. The boundary of the Frisco Hot Spring Site. The black dot indicates the location the stream cross-section.

Gila Lower Valley

Watershed: Gila Watershed **River:** Gila **Reach:** Cliff/Gila Valley
Site Number: 183 **Basin Number:** 15040002 **County:** GRANT
Town: 17S **Range:** 17W **Section:** 16 **Northing:** 3637796 **Easting:** 162187
Quad. Map Name: MANGAS SPRINGS **Site Size:** 345 Ha **Stream Length:** 7.5 km
Site Quality: B **Rosgen Stream Type(s):** C4

Site Description: The Gila Lower Valley Site is located on the mainstem of the Gila downstream of the towns of Cliff and Gila. The site is dominated by good quality stands of mature Fremont's cottonwood and Goodding's willow. Mature Arizona sycamores are also widely scattered. Overflow channels and side bars are dominated by small young stands of Fremont's cottonwood and Goodding's willow with seepwillow interspersed. Arizona walnuts and netleaf hackberrys are common on talus slopes on the fringe of old terraces. Base flows are lowered by a water diversion to Bill Evans Lake (appropriated for the copper mine). Encroachment by herbaceous exotics is a threat to this site.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Arizona Walnut-Netleaf Hackberry, California Brickellbush Phase	B+	A	A	A
Fremont's Cottonwood-Goodding's Willow/Seepwillow	B	B+	B	B

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveled: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Good

Landscape Mosaic: Fair

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But a pasture in the floodplain is dominated by herbaceous exotics.
Grazing: yes	The pasture is grazed moderately.
Fuel Wood: unknown	
Dumping: no	No evidence seen.
ORV Use: no	
Roads: yes	A road is in the floodplain.
Mowing: unknown	
Other Impacts: yes	Water is diverted for the copper mine.

Data Sources: USFS videography; ground reconnaissance; field sampling.

Cross Section: Gila 5 **Jurisdiction:** Gila National Forest

Plots: 95PD065 95PD066 **Survey Date:** 8/19/95
Investigators: Bradley, Durkin



Photo: Ted Cline

Figure 53. The Gila River at the Lower Valley Site just upstream of the Middle Box. Mature Fremont's cottonwoods and Goodding's willow dominate much of this site.

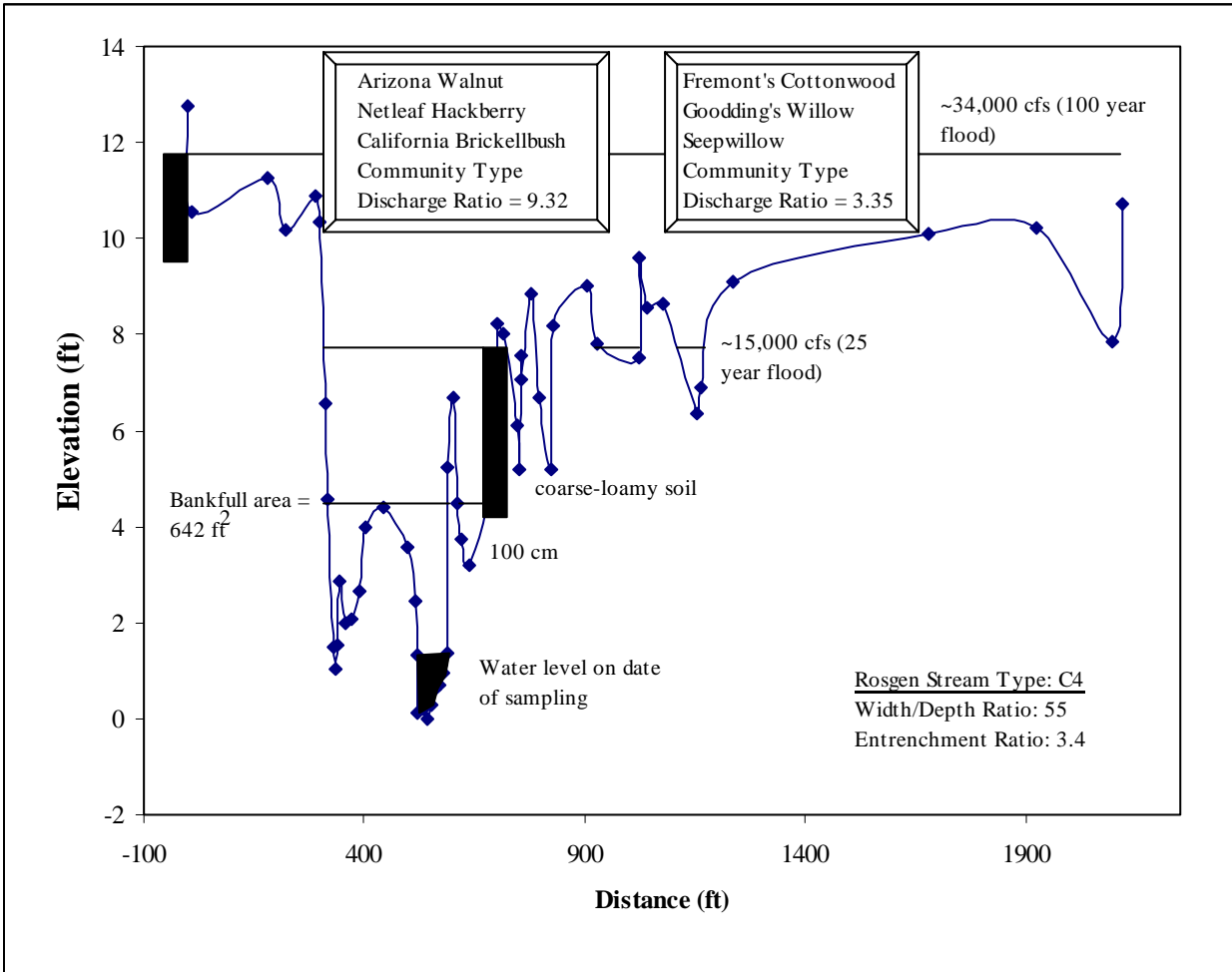


Figure 54. Cross-section of the Gila River (Gila-5) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

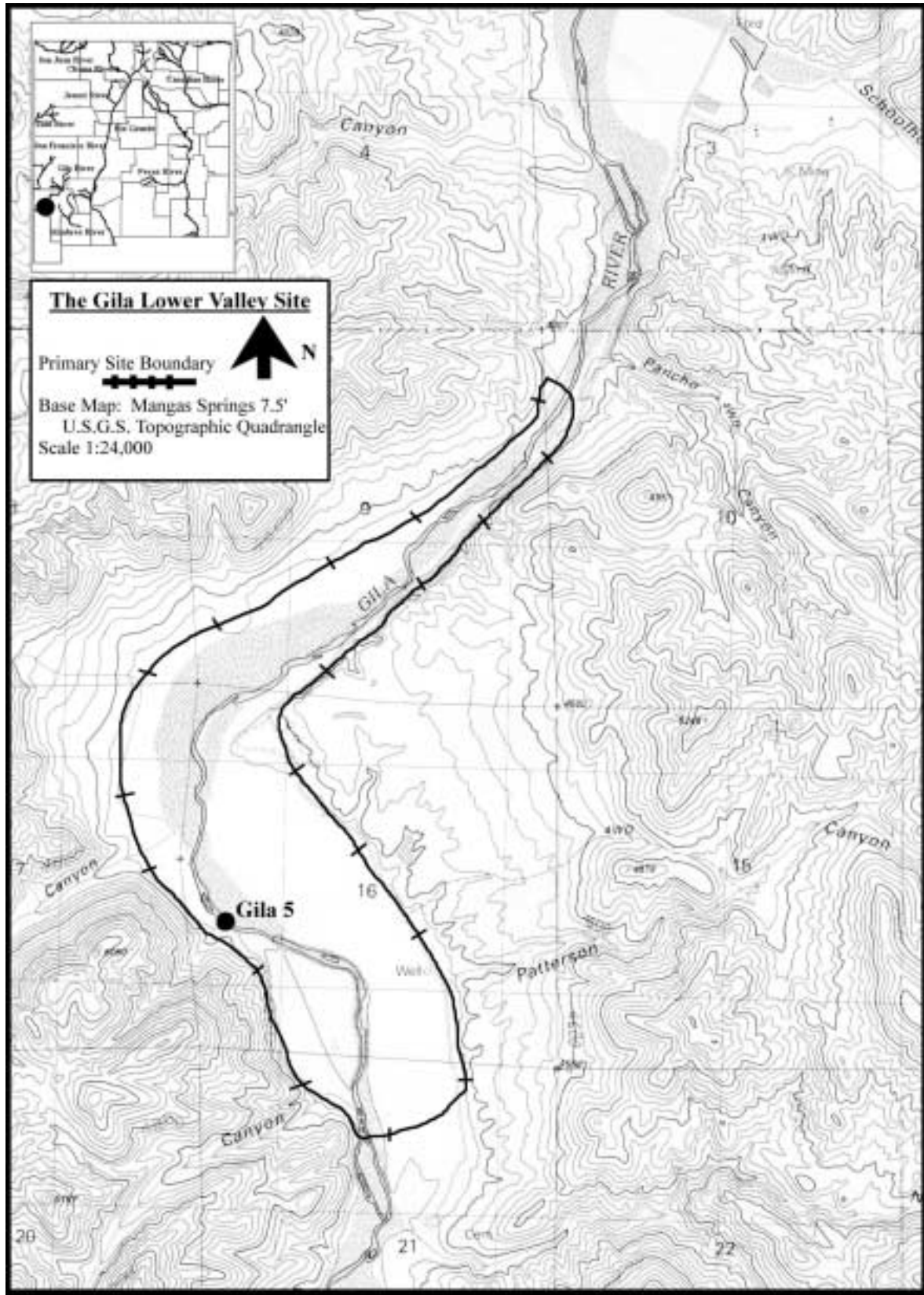


Figure 55. The boundary of the Gila Lower Valley Site. The black dot indicates the location of the stream cross-section.

Gila Upper Valley

Watershed: Gila Watershed **River:** Gila **Reach:** Cliff/Gila Valley
Site Number: 178 **Basin Number:** 15040002 **County:** GRANT
Town: 15S **Range:** 16W **Section:** 06 **Northing:** 3650649 **Easting:** 162789
Quad. Map Name: CANTEEN CANYON **Site Size:** 244 Ha **Stream Length:** 5.3 km
Site Quality: B **Rosgen Stream Type(s):** C3, C4

Site Description: The Gila Upper Valley Site is located on the mainstem of the Gila River and encompasses the upper portions of the Cliff/Gila valley. The site begins at the confluence of Mogollon Creek and continues downstream for about a mile and a half. This is a wide floodplain with many overflow channels. Lateral movement of the main channel is common. Old isolated terraces are dominated by high quality stands of mature Arizona sycamore and Fremont's cottonwood forests that also dominate much of the landscape. Understories tend to be dominated by herbaceous exotics including cheatgrass and Japanese brome. Low cobble bars are dominated by many high quality, small stands of Fremont's cottonwood and Goodding's willow with Arizona sycamore and seepwillow interspersed. Base flows are affected by an irrigation pond, which diverts approximately half of the river's flow. A cement-lined ditch delivers water for irrigation downstream. Recent floods have scoured island and side bars and downcut some streambanks.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Fremont's Cottonwood-Arizona Sycamore	B-	B+	A	A
Fremont's Cottonwood/Seepwillow	B-	B+	B	B
Fremont's Cottonwood-Arizona Sycamore/Seepwillow	B-	B+	B	B
Fremont's Cottonwood-Goodding's Willow/Seepwillow	B-	B+	A	A

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** Partial **Jetty Jacked:** No
Leveed: Partial **Streambank Condition:** Good **Overall Hydrologic Regime:** Good
Landscape Mosaic: Fair

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But herbaceous exotics are common, and black locusts and saltcedar are scattered.
Grazing: no	No observable evidence.
Fuel Wood: yes	Some collecting done for campfires.
Dumping: no	No observable evidence.
ORV Use: yes	ORVs drive on scoured bars.
Roads: yes	Roads in floodplain dissect riparian forests.
Mowing: no	
Other Impacts: yes	Part of a secondary channel is dredged for an irrigation pond.

Data Sources: USFS videography; ground reconnaissance; field sampling.

Cross Section: Gila 2, 7 **Jurisdiction:** Private, Gila National Forest

Plots: 95PD060 95PD008 95PD009 **Survey Date:** 6/23/95
 95PD071 95PD070 **Investigators:** Bradley, Durkin



Photo: Ted Cline

Figure 56. The Gila Upper Valley Site on the mainstem of the Gila River. Fremont's cottonwood and Arizona sycamores dominate riparian forests here.

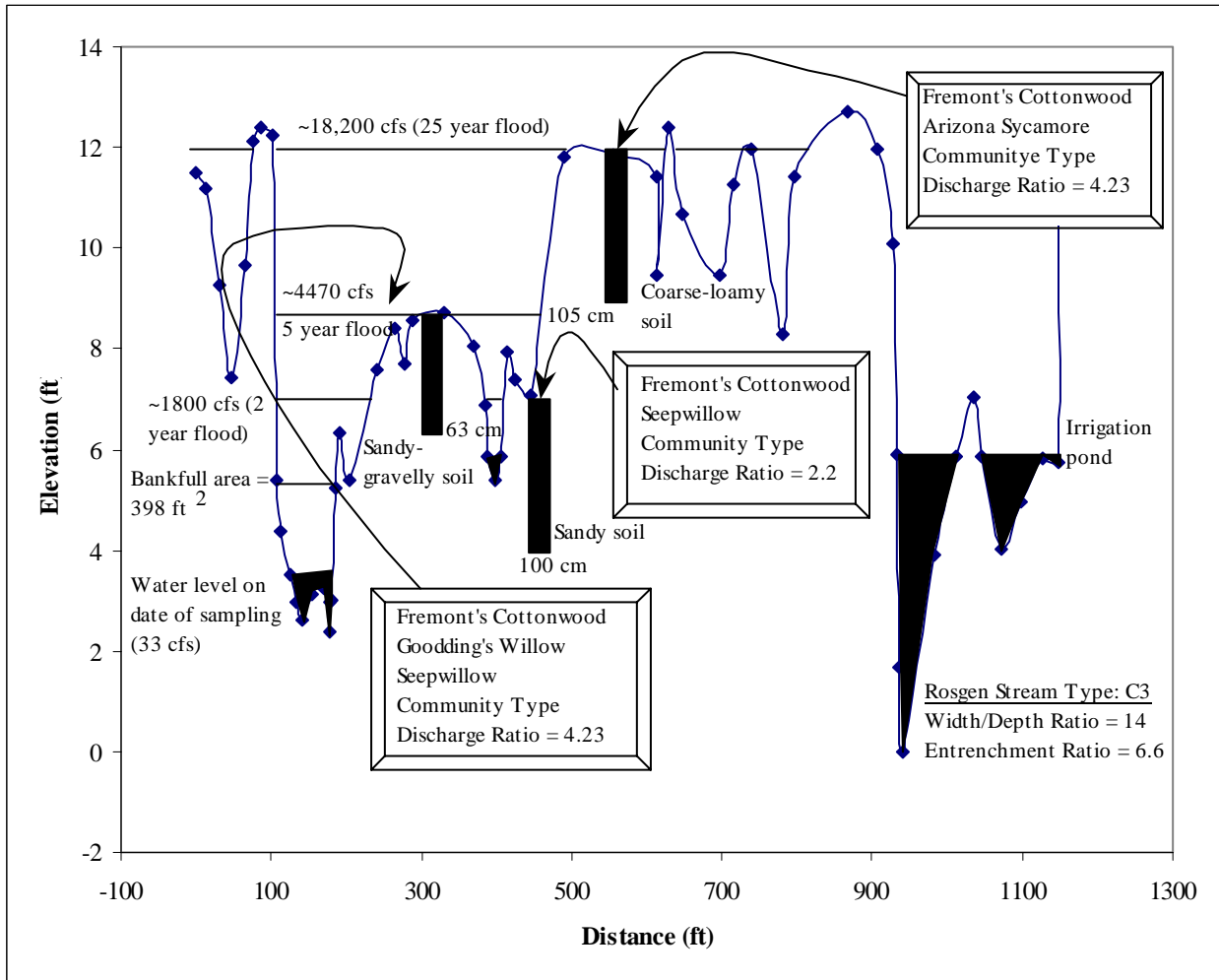


Figure 57. Cross-section of the Gila River (Gila-2) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

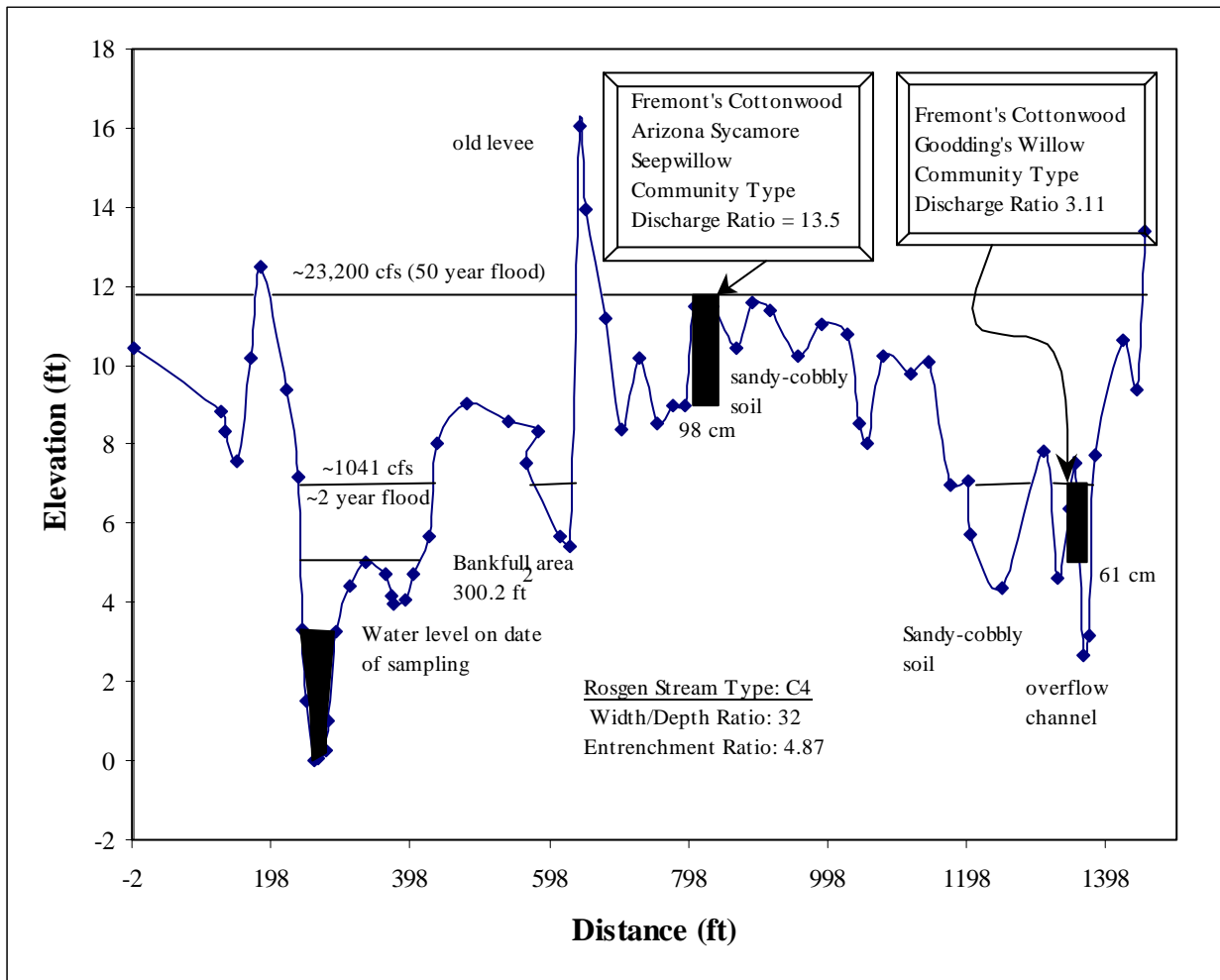


Figure 58. Cross-section of the Gila River (Gila-7) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

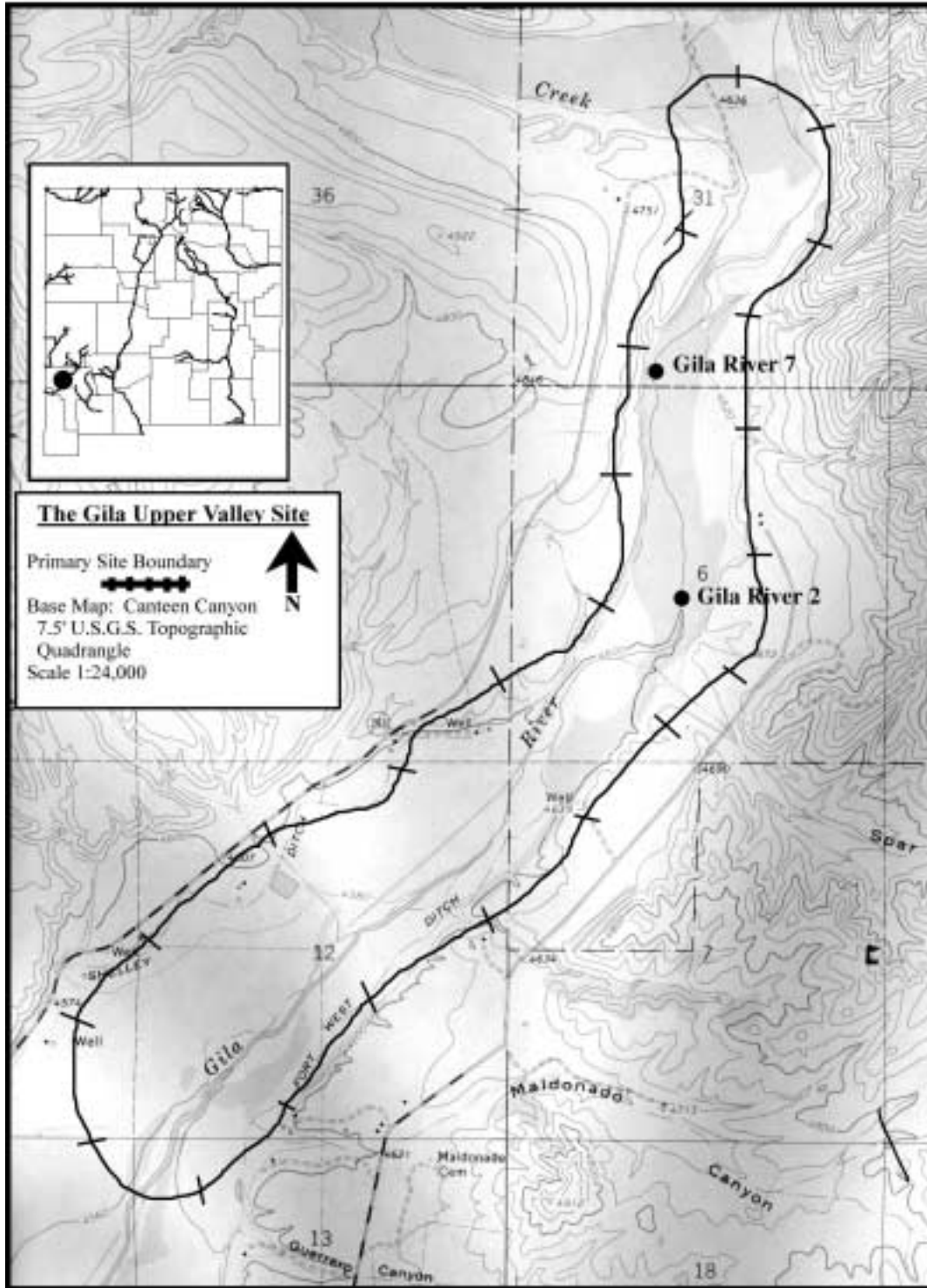


Figure 59. The boundary of the Gila Upper Valley Site. Black dots indicate the location of the stream cross-sections.

Glacier Lakes

Watershed: Rio Grande **River:** N/A **Reach:** Glacier Lakes
Site Number: 307 **Basin Number:** 13020101 **County:** TAOS
Town: **Range:** **Section:** **Northing:** 4094100 **Easting:** 475000
Quad. Map Name: BIG COSTILLA PEAK **Site Size:** 7 Ha **Stream Length:** N/A
Site Quality: A- **Rosgen Stream Type(s):** N/A

Site Description: The Glacier Lakes are sub-alpine lakes on the Colorado state line. The site contains two open water lakes and one semi-saturated fen. Diamondleaf willows and water sedges dominate the drier fringes of the fen and the banks of the drainage. Lake margins are dominated by water sedge, pointed sedge, and a variety of grasses and forbs. The lakes were artificially enhanced to provide for better trout habitat. The fen is characterized by a floating mat of peat moss dominated by mud sedge and fewflower spikerush. Overall the site is diverse, lush, relatively undisturbed, and possibly unique to the state.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Diamondleaf Willow/Water Sedge	B+	B+	A	B+
Mud Sedge-Fewflower Spikerush	B+	A	A	A-
Water Sedge-Pointed Sedge	B+	A	A	A-

Hydrologic Impacts:
Flow Regulation: Yes **RipRapped:** No **Dredged:** Partial **Jetty Jacked:** No
Leveed: No **Streambank Condition:** **Overall Hydrologic Regime:** Fair

Landscape Mosaic: Good

Floodplain Impacts:	Comments:
Exotic veg dominant: no	
Grazing: yes	Elk forage the area heavily.
Fuel Wood: no	
Dumping: yes	Fishermen leave line and lures along the lake bank.
ORV Use: no	
Roads: yes	A road leads up to the lakes.
Mowing: no	
Other Impacts: no	

Data Sources: Ground reconnaissance, field sampling

Cross Section: Glacier Lakes 1 **Jurisdiction:** Private
Plots: 97MB022 97MB023 97MB025 **Survey Date:** 9/ 7/97
Investigators: Bradley, Durkin



Photo: Ted Cline

Figure 60. The Glacier Lakes Site. The fringe of these high elevation lakes are dominated by water sedges and pointed sedge. The fen (cleared area in the middle) is dominated by diamond leaf willows and mud sedges.

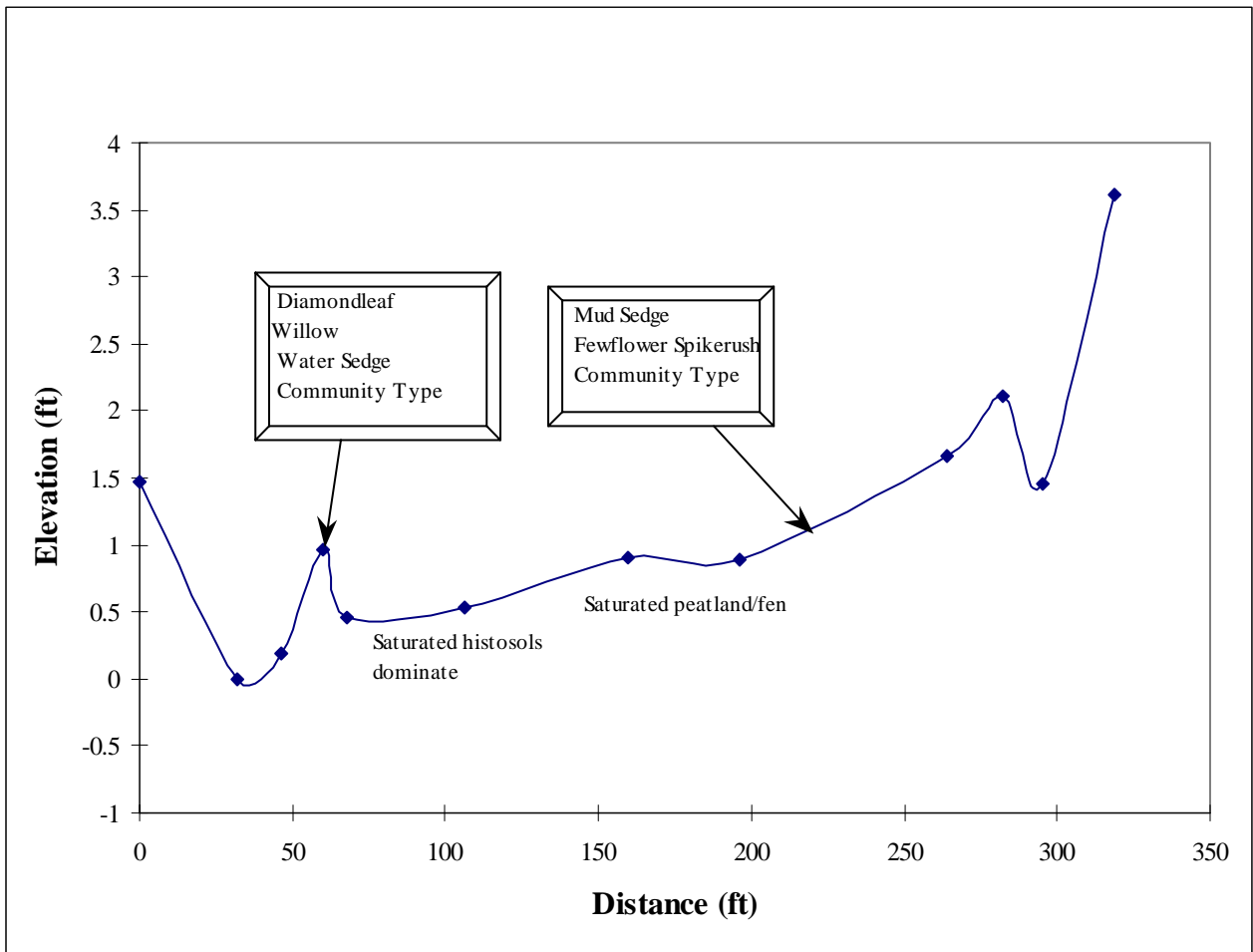


Figure 61. Cross-section of one of the Glacier Lakes (Glacier Lakes-1) showing the location of the community types.

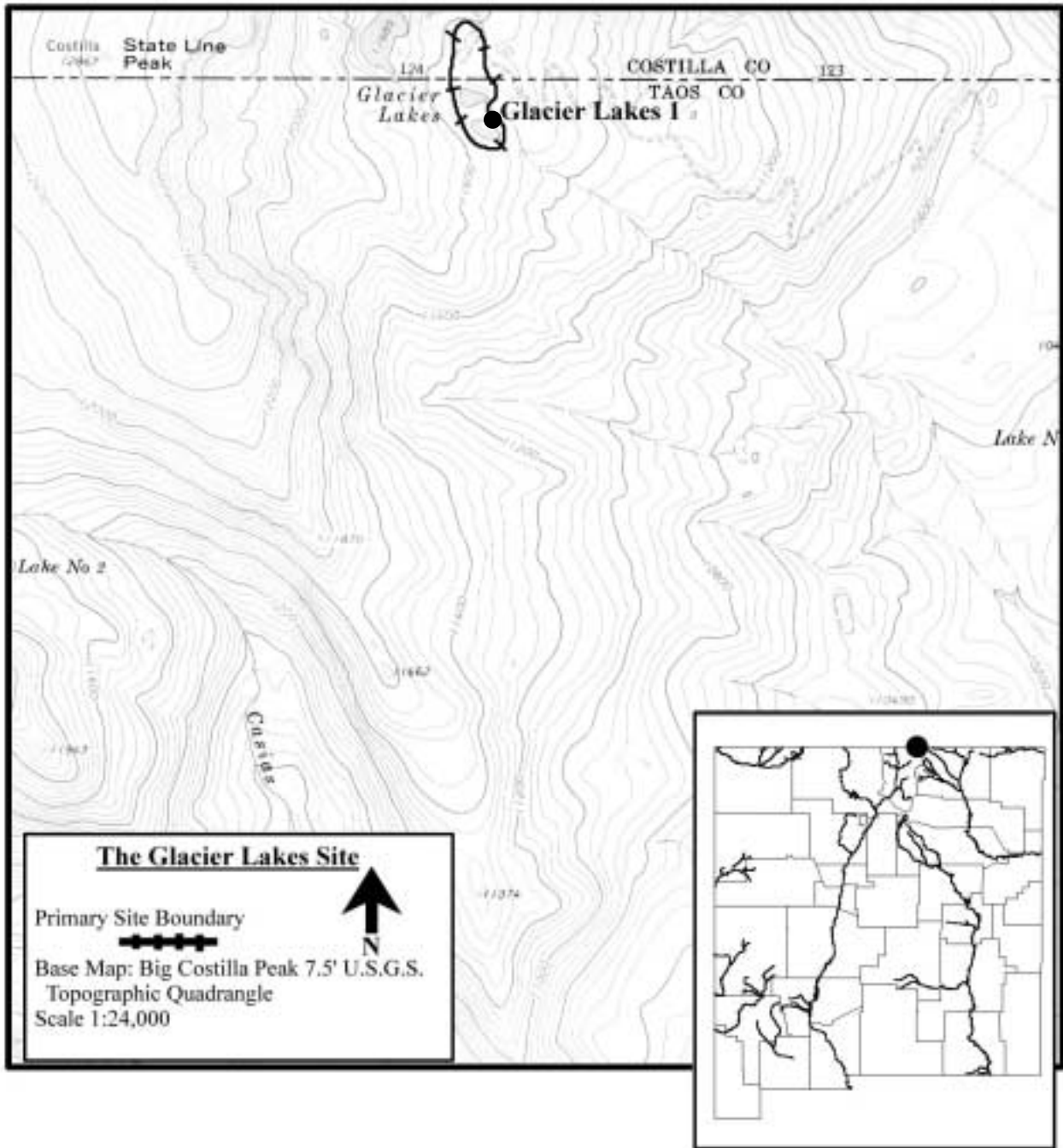


Figure 62. The boundary of the Glacier Lakes Site. The black dot indicates location of the stream cross-section.

Lower Palomas

Watershed: Rio Grande **River:** Palomas **Reach:** Lower Palomas
Site Number: 102 **Basin Number:** 13030101 **County:** SIERRA
Town: 13S **Range:** 06W **Section:** 4 **Northing:** 3677500 **Eastings:** 269890
Quad. Map Name: WILLIAMSBURG NW **Site Size:** 120 Ha **Stream Length:** 7.8 km
Site Quality: A- **Rosgen Stream Type(s):** C3

Site Description: The Lower Palomas Site is located just west of Caballo Reservoir, on the Rio Grande. With five different community types, this site is one the most diverse sites sampled in the state. It is characterized by Rio Grande cottonwood "ribbon" stands along the banks of the Creek. The understory is co-dominated by coyote willow and Goodding's willow. Near the water's edge, more mesic communities dominated by threesquare and common spikerush are common. Other common bank species include Arizona alder, seepwillow, and velvet ash. Generally, wetland communities are diverse, well-developed and viable. The main threats to this site include encroachment from saltcedar, sweet clover, and grazing.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Arizona Alder/Seepwillow	B	B+	B	B
Seepwillow/Prairie Wedgescale	B	B+	B	B
Rio Grande/Plains Cottonwood/Coyote Willow	A	A	B+	A-
Threesquare-Common Spikerush	B+	A	B-	B+
Rio Grande/Plains Cottonwood-Goodding's Willow	A	A	B+	A-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Excellent

Landscape Mosaic: Good

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But saltcedar individuals were noted.
Grazing: yes	Horses and bison graze the area.
Fuel Wood: no	
Dumping: no	
ORV Use: no	
Roads: yes	Dirt roads on the edges of the site boundary have minimal impact on wetland communities.
Mowing: no	
Other Impacts: yes	Beavers have downed many mature cottonwoods in the site.

Data Sources: Ground reconnaissance, field sampling.

Cross Section: Palomas 1,2 **Jurisdiction:** Private
Plots: 94PD015 94PD014 94PD013 **Survey Date:** 6/ 8/94
 94PD016 94PD017 **Investigators:** Bradley, Durkin, Carr



Photo: Mike Bradley

Figure 63. Rio Grande cottonwood and Goodding's willow dominate much of the Lower Palomas Site on Palomas Creek. Seepwillow is common along sidebars as well.

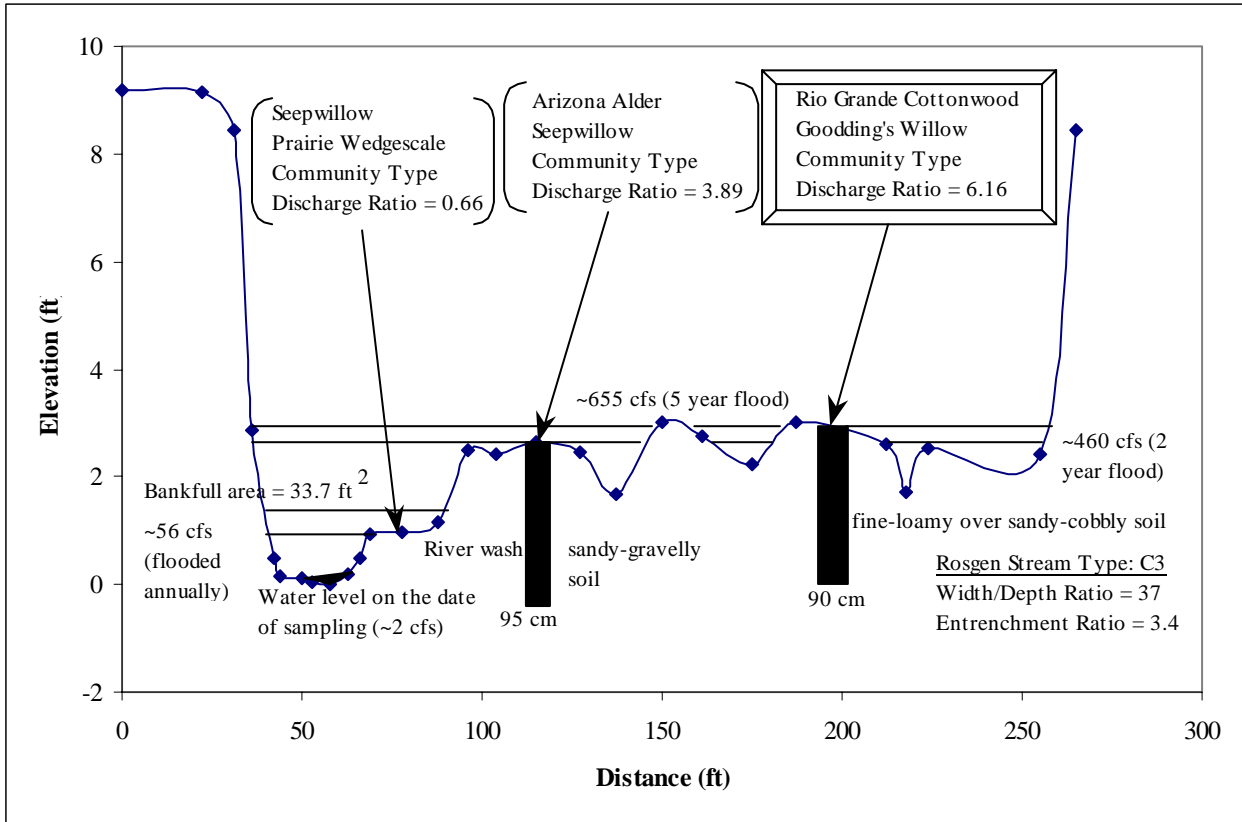


Figure 64. Cross-section of Palomas Creek (Palomas-1) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

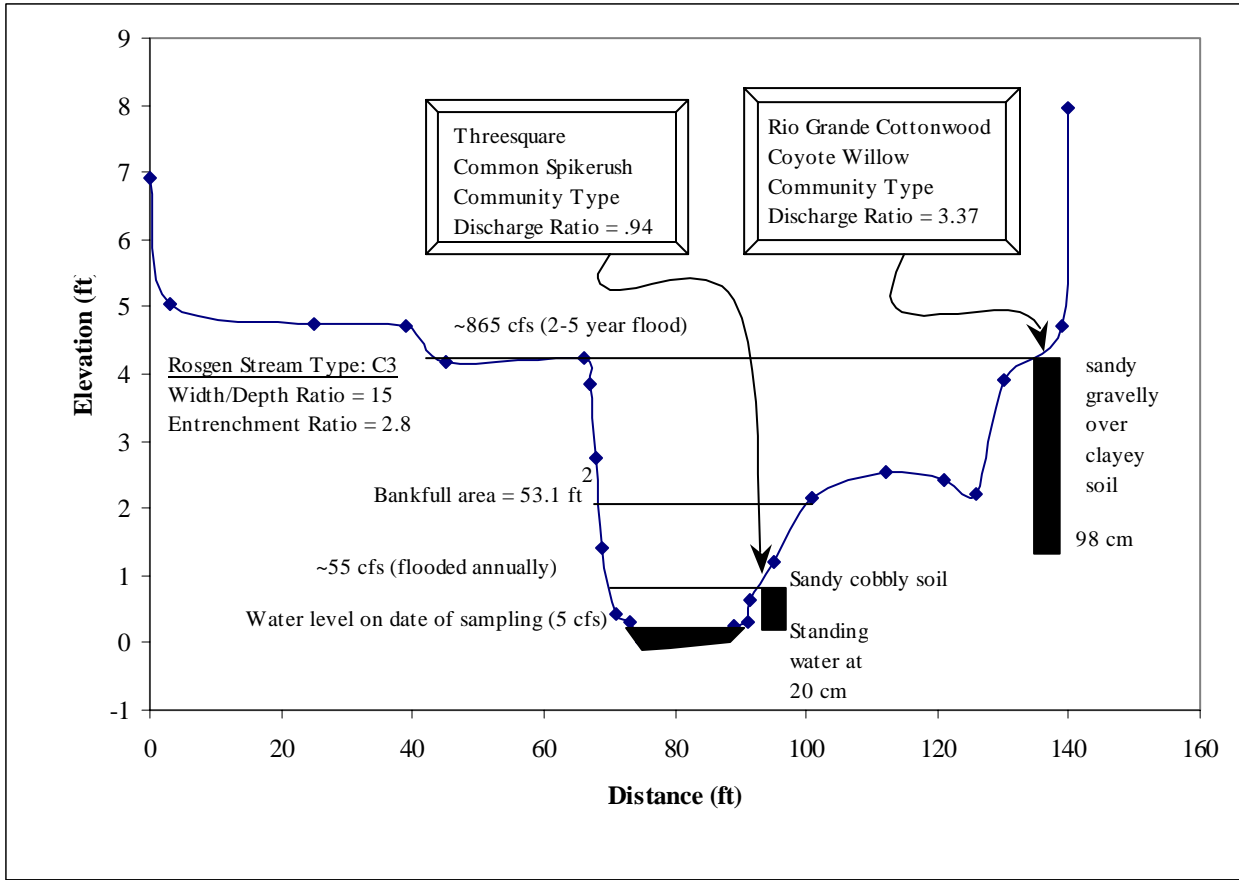
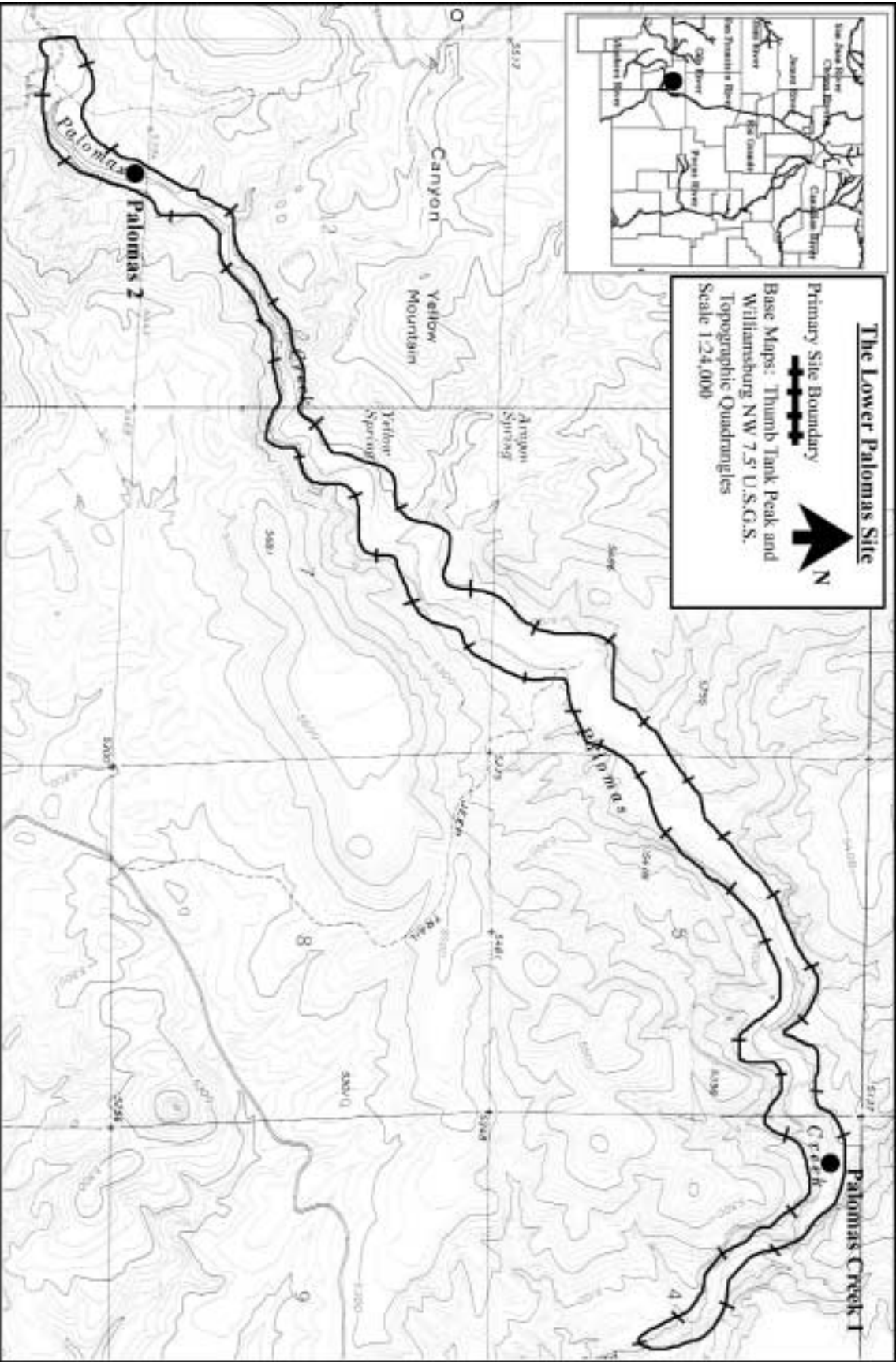


Figure 65. Cross-section of Palomas Creek (Palomas-2) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

Figure 66. The boundary of the Lower Palomas Site. Black dots indicate location of the stream cross-section.



Macho Canyon

Watershed: Pecos **River:** Pecos **Reach:** Upper Pecos
Site Number: 264 **Basin Number:** 13060001 **County:** SAN MIGUEL
Town: 17N **Range:** 12E **Section:** 29 **Northing:** 3947400 **Easting:** 437730
Quad. Map Name: ROSILLA PEAK **Site Size:** 21 Ha **Stream Length:** 1.2 km
Site Quality: B **Rosgen Stream Type(s):** B3c

Site Description: The Macho Canyon Site is located on the mainstem of the Pecos River just upstream of the town of Pecos. This is a small site characterized by riparian forests and emergent marshes in good condition. A well-developed sedge marsh dominated by water sedge and beaked sedge is fed by a seep but is probably hydrologically connected to the river. The terrace adjacent to the river is dominated by a mature narrowleaf cottonwood forest. High flow events probably still flood the terrace as indicated by the overflow channels that dissect it. Understory dominants include Wood's rose and exotic grasses, particularly Kentucky bluegrass and meadow fescue. Overall, wetland communities are undisturbed, diverse, and well-developed. The hydrologic regime of the site is affected by upstream mine activity, the highway, and irrigation diversions.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Narrowleaf Cottonwood/Kentucky Bluegrass	A	B	B	B
Water Sedge-Beaked Sedge	A	B	B	B

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Excellent **Overall Hydrologic Regime:** Good

Landscape Mosaic: Good

Floodplain Impacts: **Comments:**
Exotic veg dominant: no But herbaceous exotics are common.

Grazing: no

Fuel Wood: no

Dumping: no

ORV Use: no

Roads: yes The highway is on the upland slope but probably still affects stream hydrology.

Mowing: yes

Other Impacts: no

Data Sources: Aerial photography; ground reconnaissance; field sampling.

Cross Section: Pecos 7 **Jurisdiction:** Private

Plots: 93PD008 93PD009 **Survey Date:** 7/21/93
Investigators: Bradley, Durkin

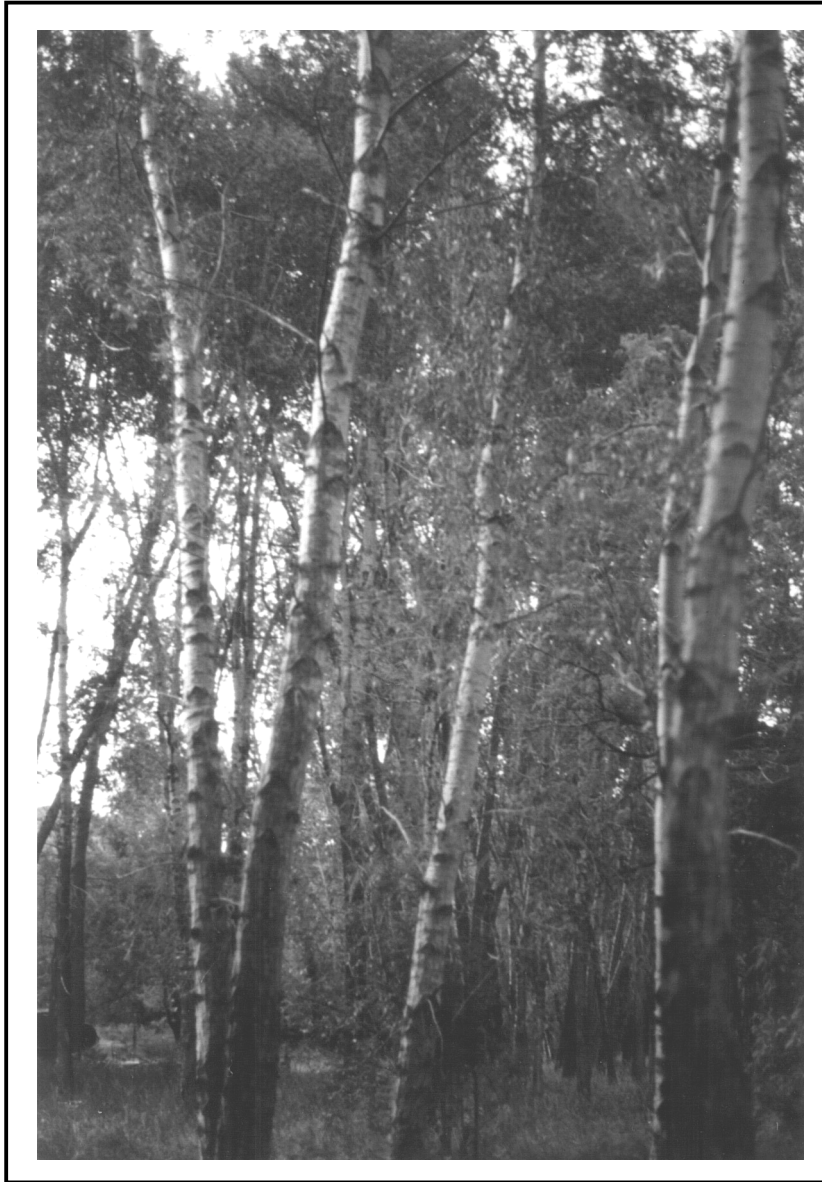


Photo: Mike Bradley

Figure 67 A dense stand of narrowleaf cottonwood dominates much of the Macho Canyon Site on the Pecos River.

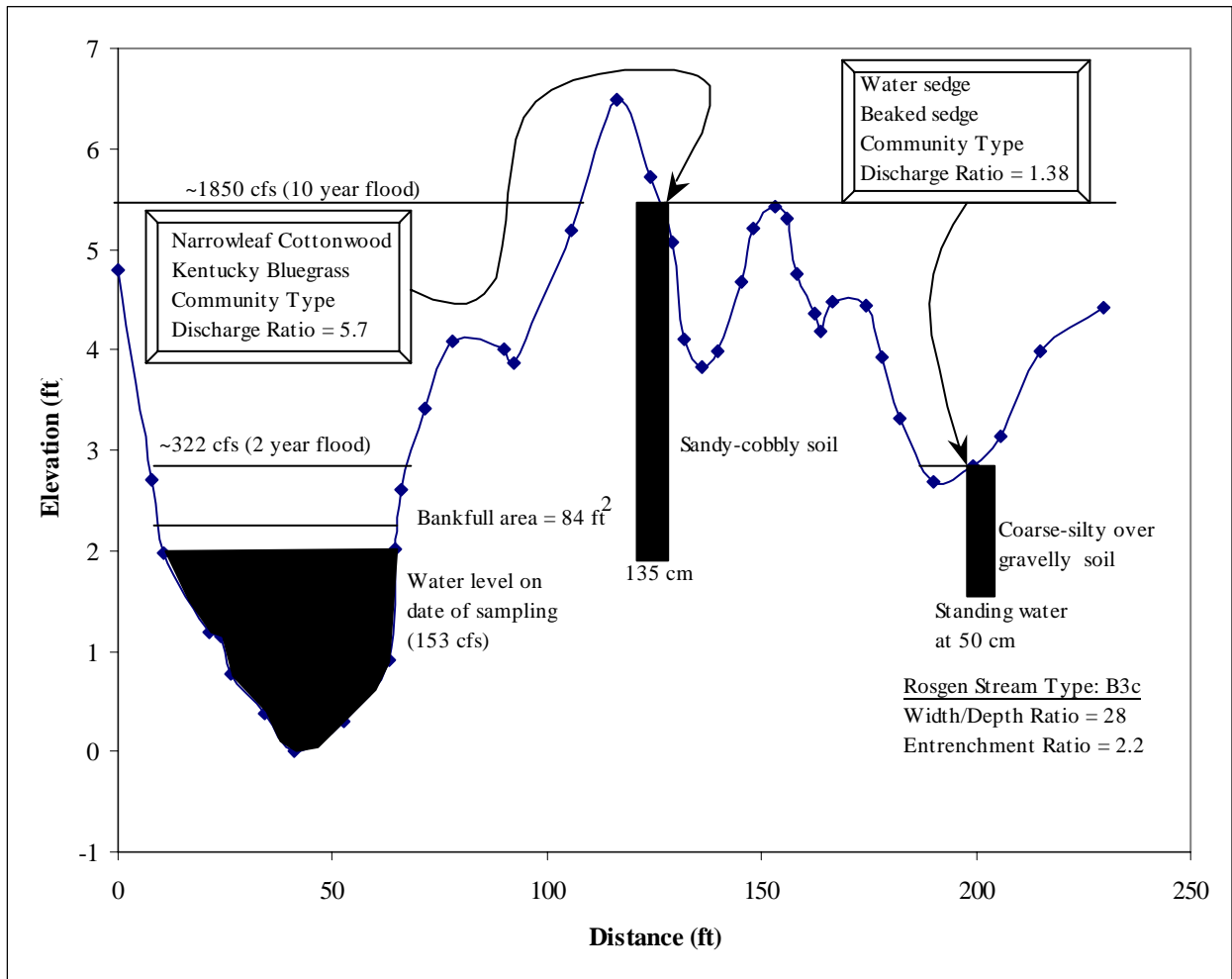


Figure 68. Cross-section of the Pecos River (Pecos-7) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

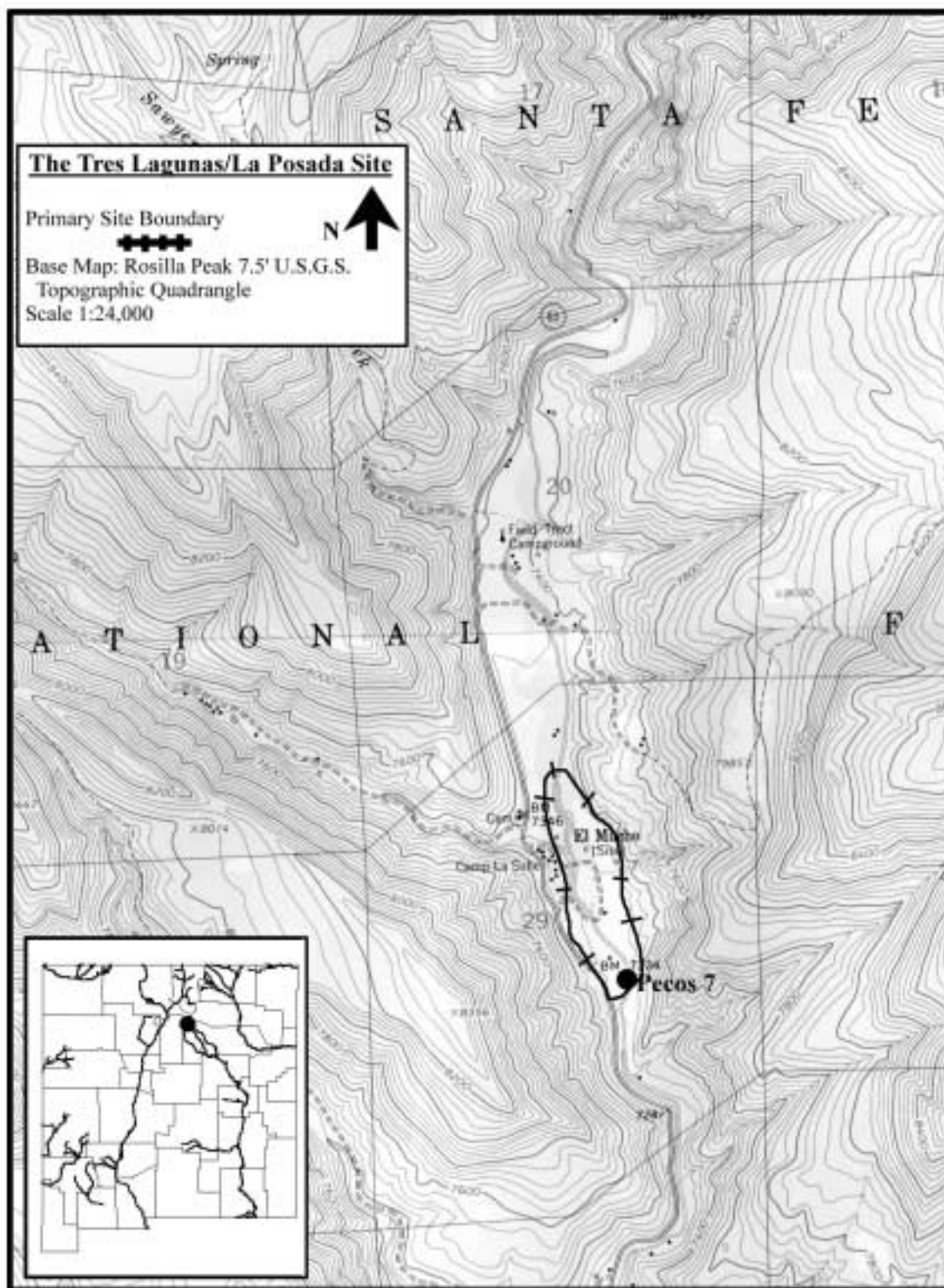


Figure 69. The boundary of the Macho Canyon Site. The black dot indicates location of the stream cross-section.

Manuel Arroyo

Watershed: San Juan **River:** La Plata **Reach:** La Plata
Site Number: 242 **Basin Number:** 14080105 **County:** SAN JUAN
Town: 32N **Range:** 13W **Section:** 22 **Northing:** 4096107 **Eastings:** 215993
Quad. Map Name: LA PLATA **Site Size:** 16.4 Ha **Stream Length:** 1.55 km
Site Quality: B- **Rosgen Stream Type(s):** C3

Site Description: The Manuel Arroyo Site is located on the La Plata River just downstream of the Colorado state line. Terraces of this site are dominated primarily by Rio Grande cottonwood. Understory shrubs are represented by skunkbush sumac, rabbitbrush, and sagebrush. Saltcedar and Russian olive are present as well. Streambanks and bars are well vegetated by various willows, young cottonwoods, and grasses including redtop and alkali muhli. The hydrology of the site is affected by a levee and irrigation diversions. These communities are in good to fair condition even though site impacts seem extensive. Russian olive encroachment and stream dewatering from irrigation appear to be the main threats to this site.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Coyote Willow/Threesquare	B	B	B	B
Rio Grande/Plains Cottonwood/Big Sagebrush	B-	B	B-	B-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: Partial **Streambank Condition:** Good **Overall Hydrologic Regime:** Good

Landscape Mosaic: Fair

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But Russian olive and saltcedar are scattered. Herbaceous exotics are common.
Grazing: yes	Horses graze the area, but no evidence of cattle was noticed.
Fuel Wood: no	
Dumping: no	
ORV Use: no	
Roads: yes	A dirt road is on the fringe of the floodplain around the old pasture.
Mowing: no	
Other Impacts: yes	Some evidence of beavers noted.

Data Sources: Aerial reconnaissance; NWI Maps; field sampling.

Cross Section: La Plata 1 **Jurisdiction:** Private

Plots: 96PD014 96PD015 **Survey Date:** 7/12/96
Investigators: Durkin, Bradley

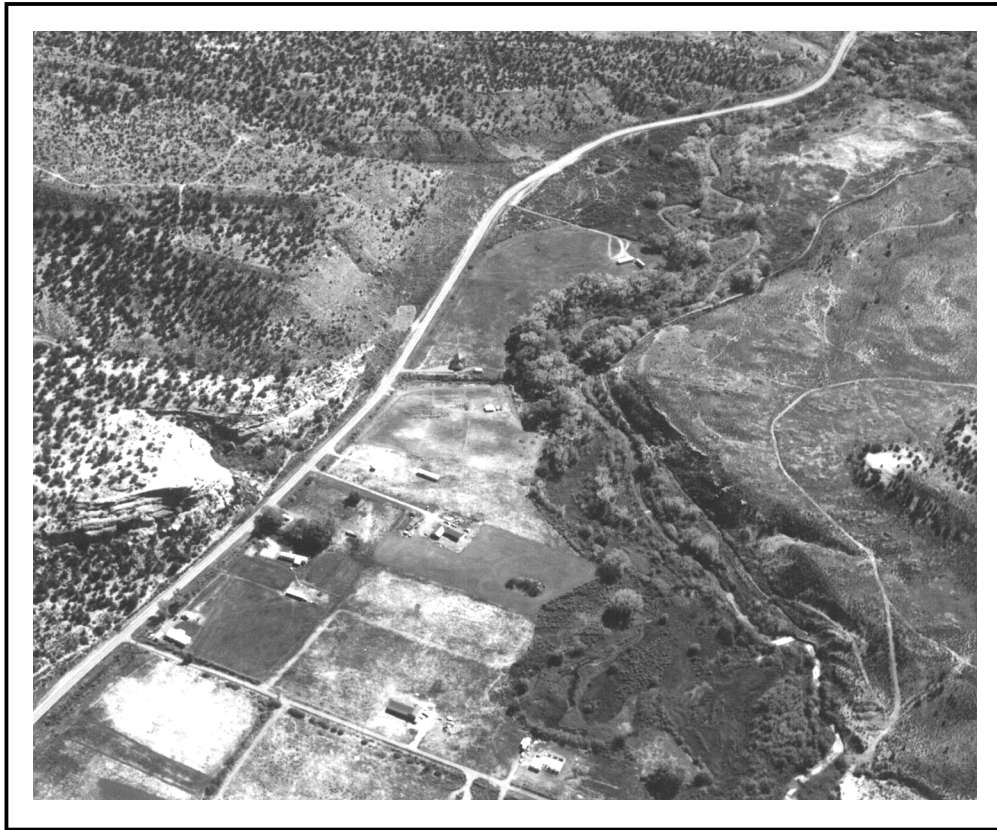


Photo: Ted Cline

Figure 70. The Manuel Arroyo Site (grove of Rio Grande cottonwoods near the top of the photo) on the La Plata River near the Colorado state line. Russian olive encroachment and agriculture threaten and fragment this site.

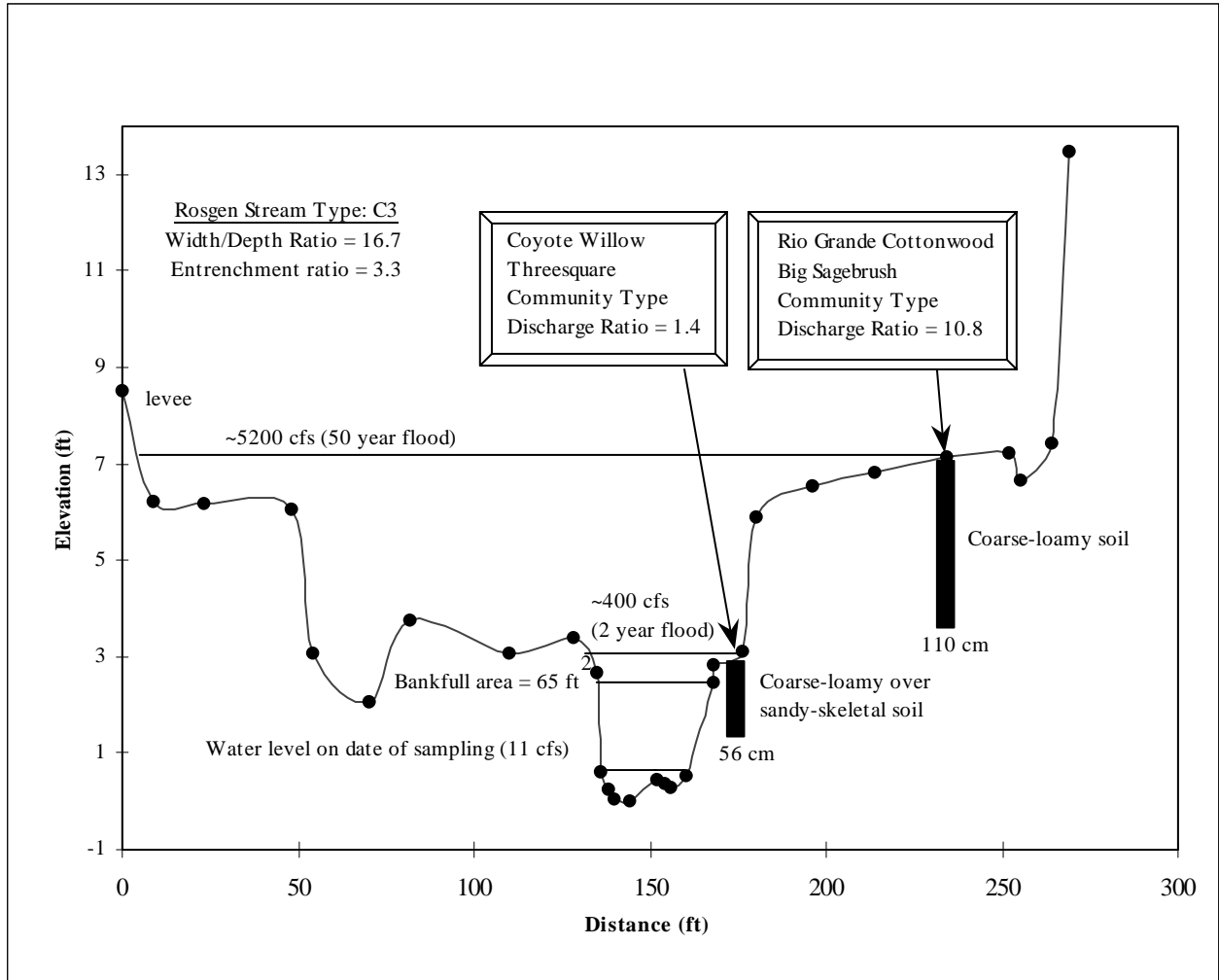


Figure 71. Cross-section of the La Plata (La Plata-1) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

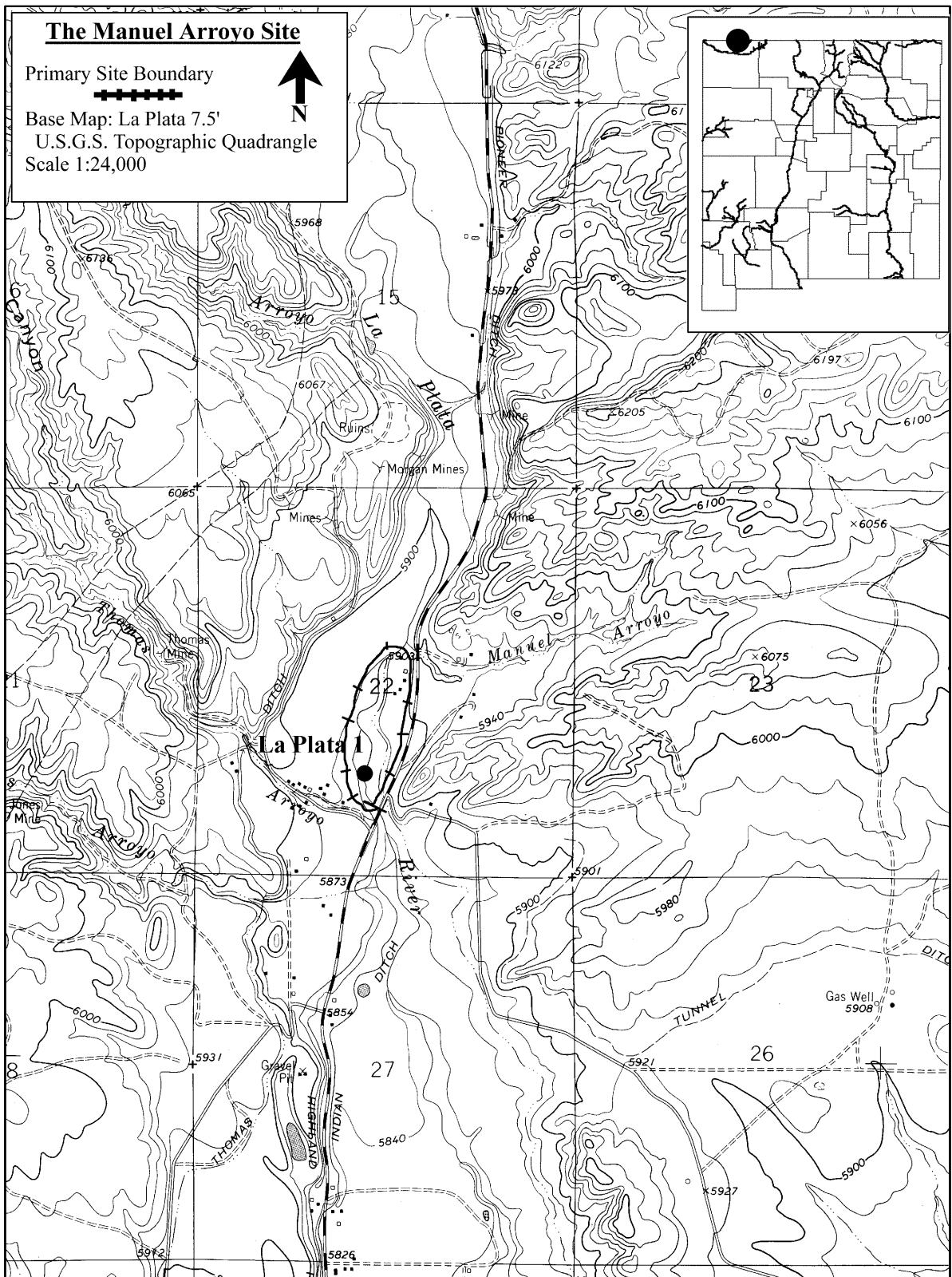


Figure 72. The boundary of the Manuel Arroyo Site. Black dots indicate the location of the stream cross-section.

Middle Chama

Watershed: Rio Grande **River:** Rio Chama **Reach:** Middle Chama
Site Number: 81 **Basin Number:** 13020102 **County:** RIO ARRIBA
Town: 24N **Range:** 03E **Section:** 10 **Northing:** 4026170 **Easting:** 349410
Quad. Map Name: LAGUNA PEAK **Site Size:** 40.7 Ha **Stream Length:** 15 km
Site Quality: B- **Rosgen Stream Type(s):** B3c, C3

Site Description: The Middle Chama Site is located on the mainstem of the Rio Chama as the river exits the canyon downstream of El Vado Reservoir. The site is characterized by well-vegetated banks, side-bars and island bars. Vegetation is dominated by coyote willow, smooth horsetail, Nebraska sedge, water sedge, and threesquare. The hydrology is well-controlled by El Vado Reservoir and flows are determined by the needs of recreational boaters. As such, base flows tend to be higher than normal, but overbank flooding does not occur. It appears that herbaceous and shrubby wetland communities can co-exist with the needs of boaters under this flow management scheme. Without overbank flooding however, establishment and growth of cottonwoods is limited.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Coyote Willow/Smooth Horsetail	A	B+	B+	B+
Rio Grande/Plains Cottonwood/Smooth Horsetail	B	C	B	B-
Nebraska Sedge/Smooth Horsetail	A	B+	B+	B+

Hydrologic Impacts:
Flow Regulation: Yes **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Fair

Landscape Mosaic: Good

Floodplain Impacts: **Comments:**
Exotic veg dominant: no
Grazing: no No observable evidence.
Fuel Wood: unknown
Dumping: no
ORV Use: no
Roads: yes A dirt road on the upper terrace fragments some riparian forests
Mowing: no
Other Impacts: yes This is a popular destination for camping and boating.

Data Sources: Air photo interpretation, field sampling.

Cross Section: Chama 2,3 **Jurisdiction:** Santa Fe National Forest
Plots: 94PD088 94PD089 94PD090 **Survey Date:** 8/11/94
Investigators: Durkin, Bradley, Carr



Photo: Ted Cline

Figure 73. The Middle Chama Site. The island bar in the middle of the picture is dominated by coyote willow, smooth horsetail, and Nebraska sedge.

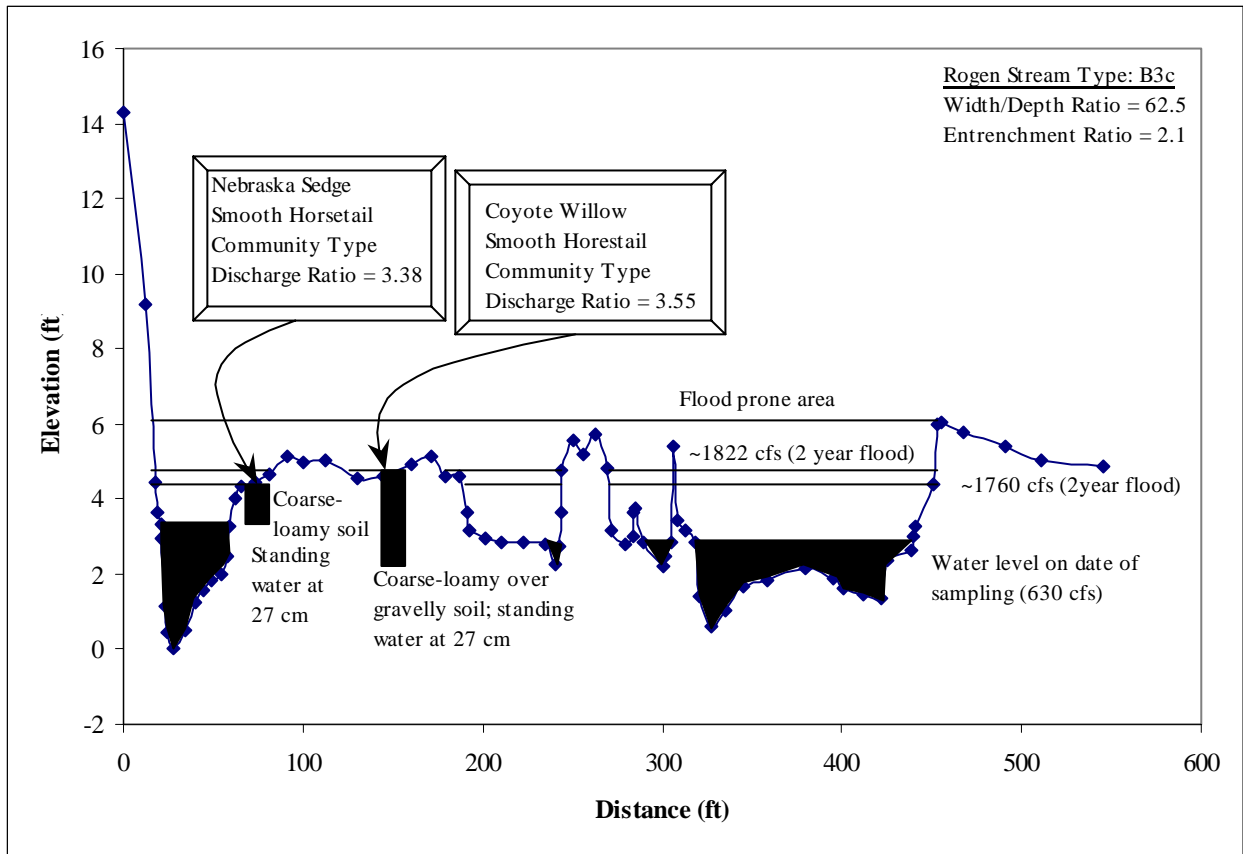


Figure 74. Cross-section of the Rio Chama (Chama-3) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

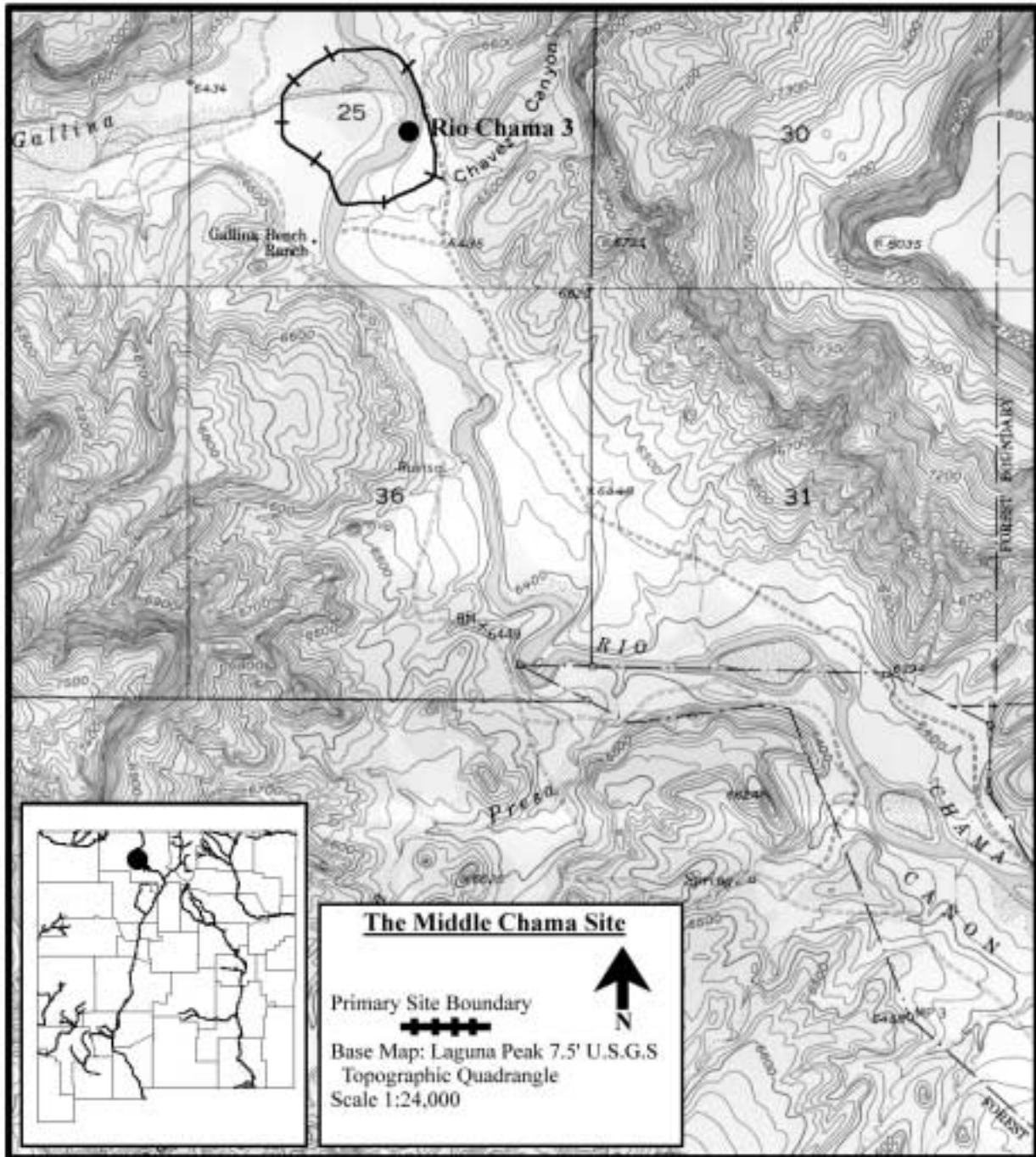


Figure 75. The boundary of the Middle Chama Site. The black dot indicates location of the stream cross-section.

Middle Ponil

Watershed: Canadian **River:** Middle Ponil **Reach:** Middle Ponil
Site Number: 302 **Basin Number:** 11080002 **County:** COLFAX
Town: 29N **Range:** 16E **Section:** 14 **Northing:** 4066620 **Easting:** 482900
Quad. Map Name: BALDY MOUNTAIN **Site Size:** 9.29 Ha **Stream Length:** 1.25 km
Site Quality: A- **Rosgen Stream Type(s):** B3, E3b

Site Description: The Middle Ponil Site is located in the Cimarron Range southwest of Raton. The Middle Ponil at this site is a narrow mountain stream with a high stream gradient (1-4%). Mixed conifers and aspens are common in the surrounding uplands. This forested wetland site is dominated by Arizona alders with bluestem willows in the shrub layer. Narrowleaf cottonwoods are scattered, but they can be found on isolated terraces and along side bars. Other common shrubs include redosier dogwood, Wood's rose, and shrubby cinquefoil. Understories are dominated by Canada bluegrass, creeping bentgrass, and western wheatgrass. Overall, wetland communities are diverse, well developed, and appear viable. Impacts to this site are minimal and the vegetation is in good to excellent condition.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Thinleaf Alder-Bluestem Willow	B+	A	B	B+
Narrowleaf Cottonwood/Thinleaf Alder-Redosier Dogwood	B+	A	B	B+

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Good

Landscape Mosaic: Good

Floodplain Impacts: **Comments:**

Exotic veg dominant: no	
Grazing: yes	No evidence of cattle was seen, but the Forest Service permits grazing in the immediate area.
Fuel Wood: yes	Parts of the Valle Vidal are used for fuel wood.
Dumping: no	
ORV Use: yes	ORVs are used by hunters.
Roads: yes	An old dirt road is on the fringe of the upland slope.
Mowing: no	
Other Impacts: no	

Data Sources: Ground reconnaissance; field sampling.

Cross Section: Middle Ponil 1, 2 **Jurisdiction:** Carson Nation Forest

Plots: 97MB015 97MB019 **Survey Date:** 8/29/97
Investigators: Bradley, Archer

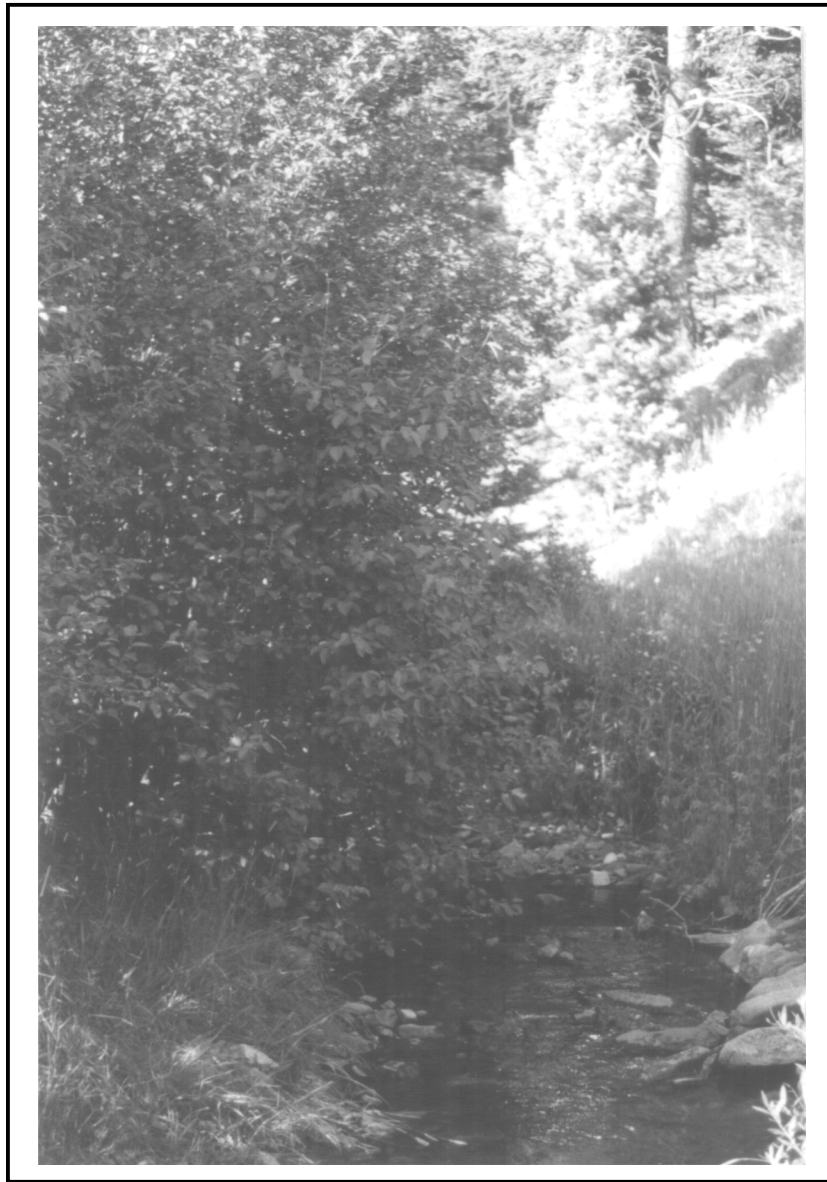


Photo: Mike Bradley

Figure 76. Thinleaf alders and bluestem willows dominate much of the Middle Ponil Site in the Carson National Forest.

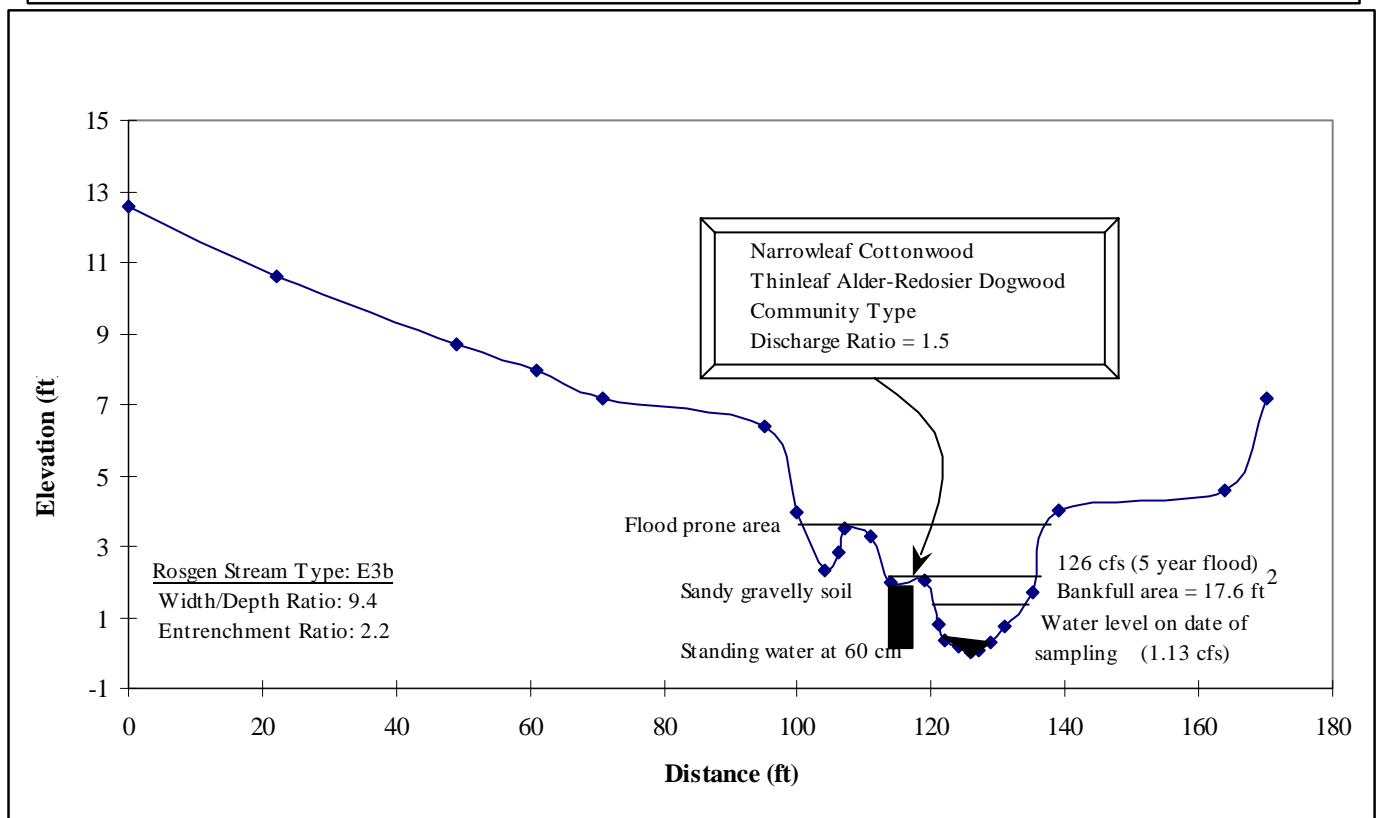
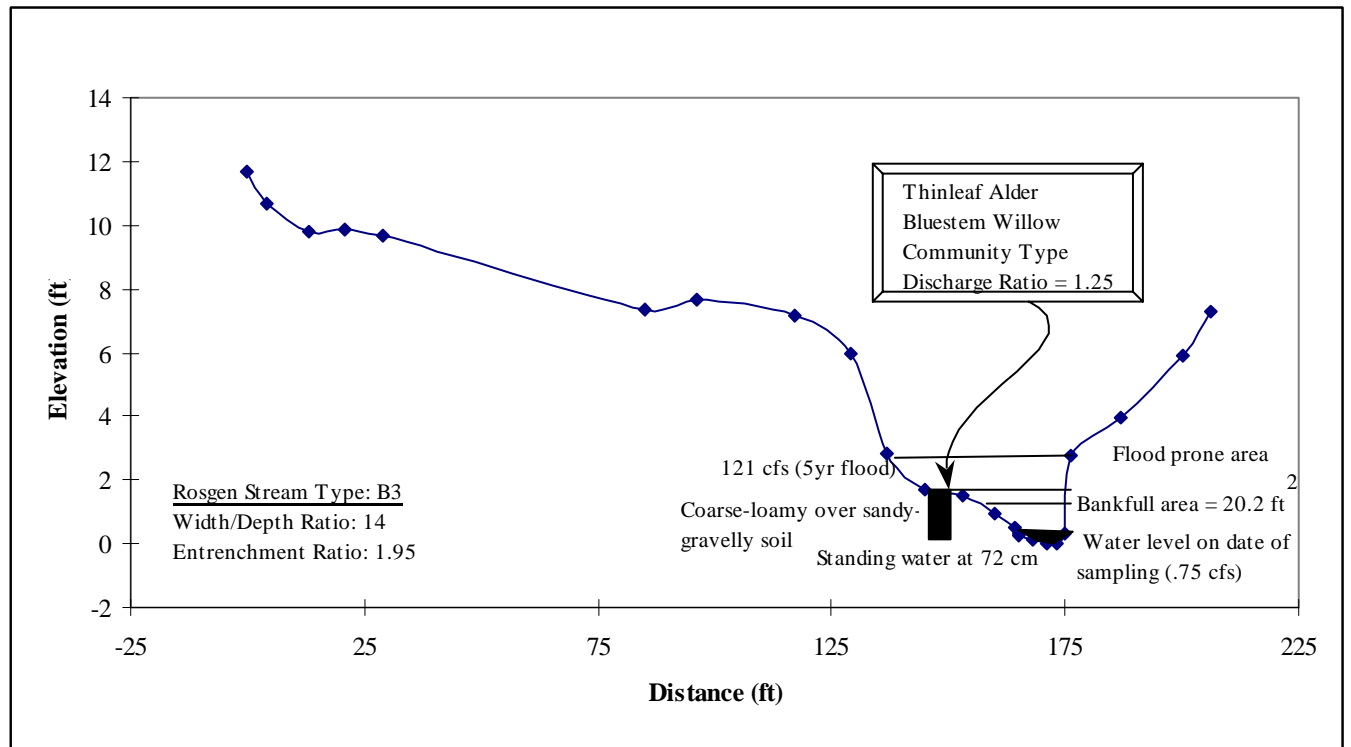


Figure 77. Cross-sections of Middle Ponil Creek (Middle Ponil-1,2) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

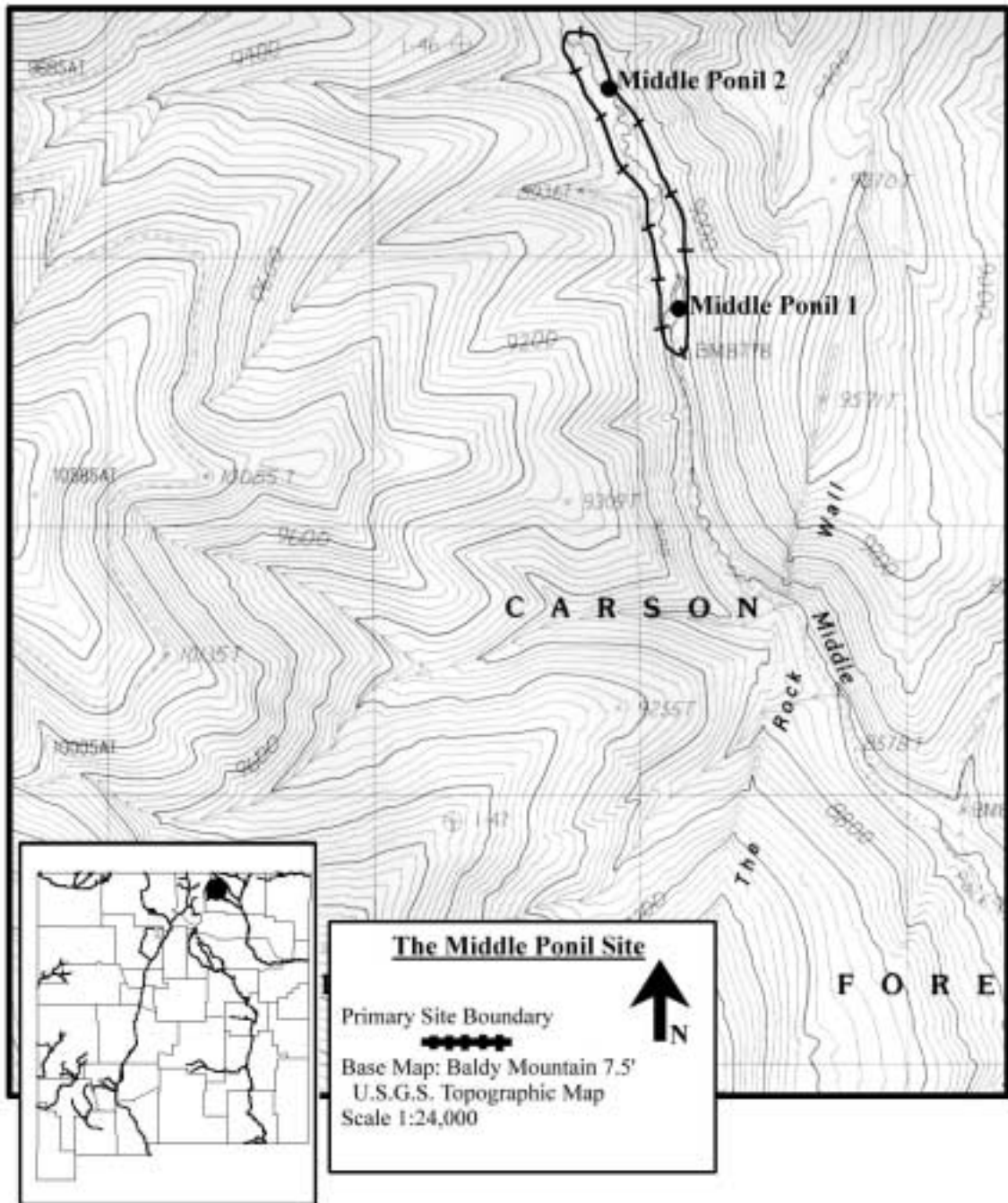


Figure 78. The boundary of the Middle Ponil Site. Black dots indicate location of stream the cross-section.

Mills Canyon Campground

Watershed: Canadian **River:** Canadian **Reach:** Mill Canyon
Site Number: 298 **Basin Number:** 11080003 **County:** HARDING
Town: 21N **Range:** 24E **Section:** 15 **Northing:** 3989620 **Easting:** 556100
Quad. Map Name: CANON COLORADO **Site Size:** 32.5 Ha **Stream Length:** 1.1 km
Site Quality: C **Rosgen Stream Type(s):** F3

Site Description: The Mill Canyon Campground Site is located on the Canadian River southeast of Springer. This site is characterized by dense saltcedar thickets that line streambanks. These are generally monotypic stands but coyote willow and a variety of graminoids are scattered. Coyote willow stands can also be found on scoured low-lying side bars. Other common species of these side bars include bottlebrush squirreltail, sweet clover, and saltcedar. Generally, there is little native riparian vegetation at this site, but the unregulated hydrologic regime could make restoration possible.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Saltcedar/Sparse Undergrowth	D	N/A	N/A	D
Coyote Willow/Scour	B-	B	B-	B-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveled: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Good

Landscape Mosaic: Fair

Floodplain Impacts:	Comments:
Exotic veg dominant: yes	Saltcedar dominates streambanks in much of this site.
Grazing: yes	The riparian areas are grazed seasonally.
Fuel Wood: no	
Dumping: yes	Trash left from campsites and fishermen is common.
ORV Use: no	
Roads: yes	A dirt road traverses the edge of the terrace.
Mowing: no	
Other Impacts: no	

Data Sources: Aerial and ground reconnaissance; field sampling.

Cross Section: Canadian 2 **Jurisdiction:** Kiowa Grasslands National Forest

Plots: 97MB007 97MB008 **Survey Date:** 8/ 3/97
Investigators: Bradley, Archer



Photo: Ted Cline

Figure 79. Most of the shrubby vegetation along streambanks at the Mill Canyon Campground Site is saltcedar. Coyote willow is common as well, especially on well scoured point bars and interspersed within the saltcedar stands.

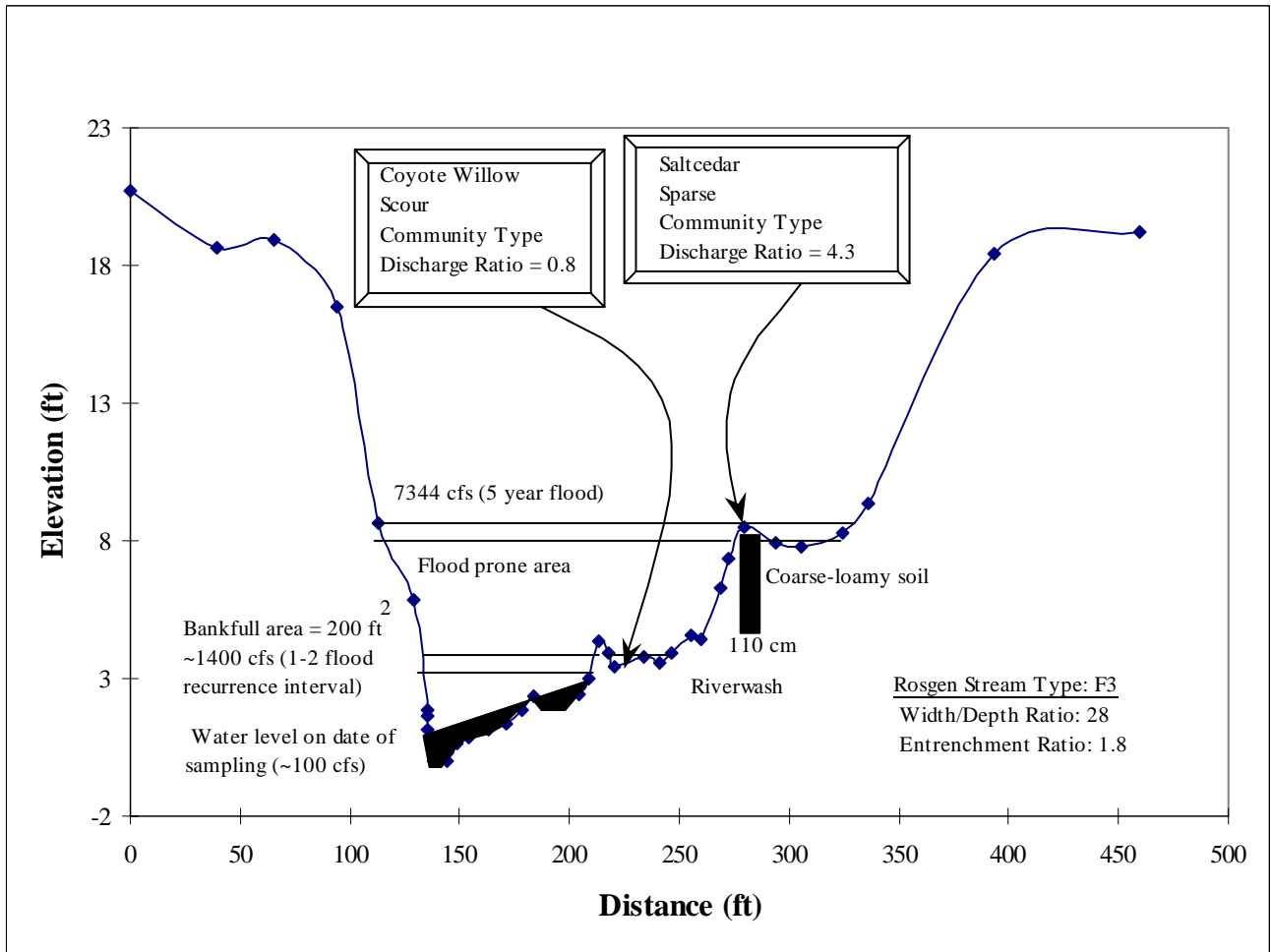


Figure 80. Cross-section of the Canadian River (Canadian-2) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

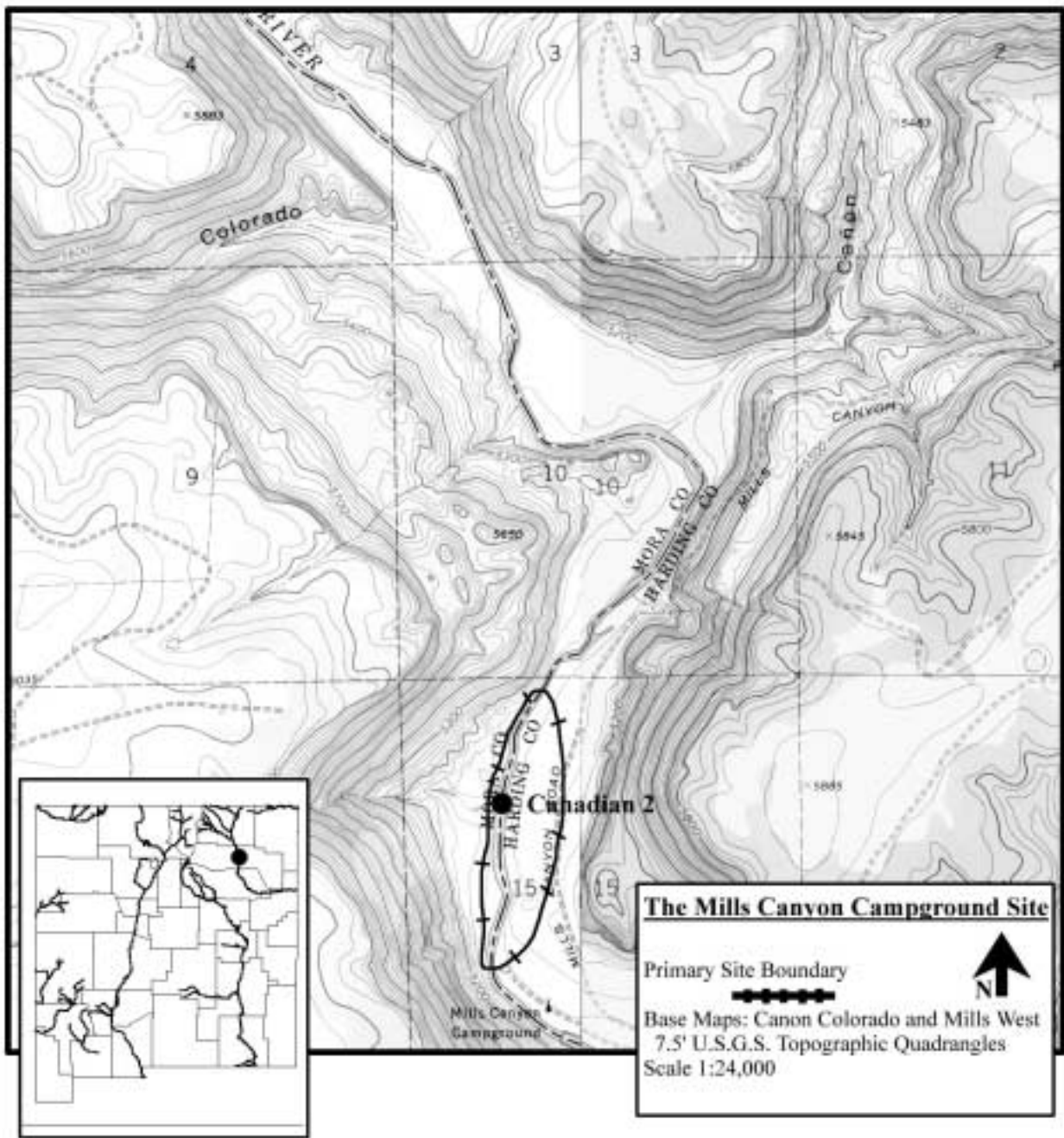


Figure 81. The boundary of the Mills Canyon Site. The black dot indicates the location of the stream cross-section.

Rio Hondo

Watershed: Pecos **River:** Rio Hondo **Reach:** Rio Hondo
Site Number: 312 **Basin Number:** 13060008 **County:** LINCOLN
Town: 11S **Range:** 18E **Section:** 23 **Northing:** 3689400 **Easting:** 487200
Quad. Map Name: TINNIE **Site Size:** 71 Ha **Stream Length:** 1.5 km
Site Quality: C+ **Rosgen Stream Type(s):** B3c

Site Description: The Rio Hondo is a tributary of the Pecos River located near the towns of Tinnie and Picacho in Lincoln County. The site is characterized by patches of mature Rio Grande cottonwood stands interspersed by open areas of agriculture and orchards. Mature cottonwood stands occur on river terraces along with saltcedar, Goodding's willow, and boxelders. Understories are well grazed, but meadow fescue is relatively common. Herbaceous and shrubby riparian communities are uncommon. The hydrologic regime remains unregulated, but irrigation ditches probably affect base flows. Threats to this site include further fragmentation from orchards, pastures, urbanization, and encroachment from exotic species.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Rio Grande/Plains Cottonwood/Saltcedar	C	B-	B-	B-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Fair **Overall Hydrologic Regime:** Good

Landscape Mosaic: Good

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But saltcedar co-dominates.
Grazing: yes	Cows are affecting the understory plant composition.
Fuel Wood: unknown	
Dumping: unknown	
ORV Use: unknown	
Roads: yes	A road fords the river, affecting stream turbidity and fragmenting riparian forests.
Mowing: no	
Other Impacts: yes	Orchards and homes fragment forests.

Data Sources: Ground reconnaissance; field sampling.

Cross Section: Rio Hondo 1 **Jurisdiction:** Private
Plots: 93PD054 93PD055 **Survey Date:** 9/13/93
Investigators: Bradley, Durkin

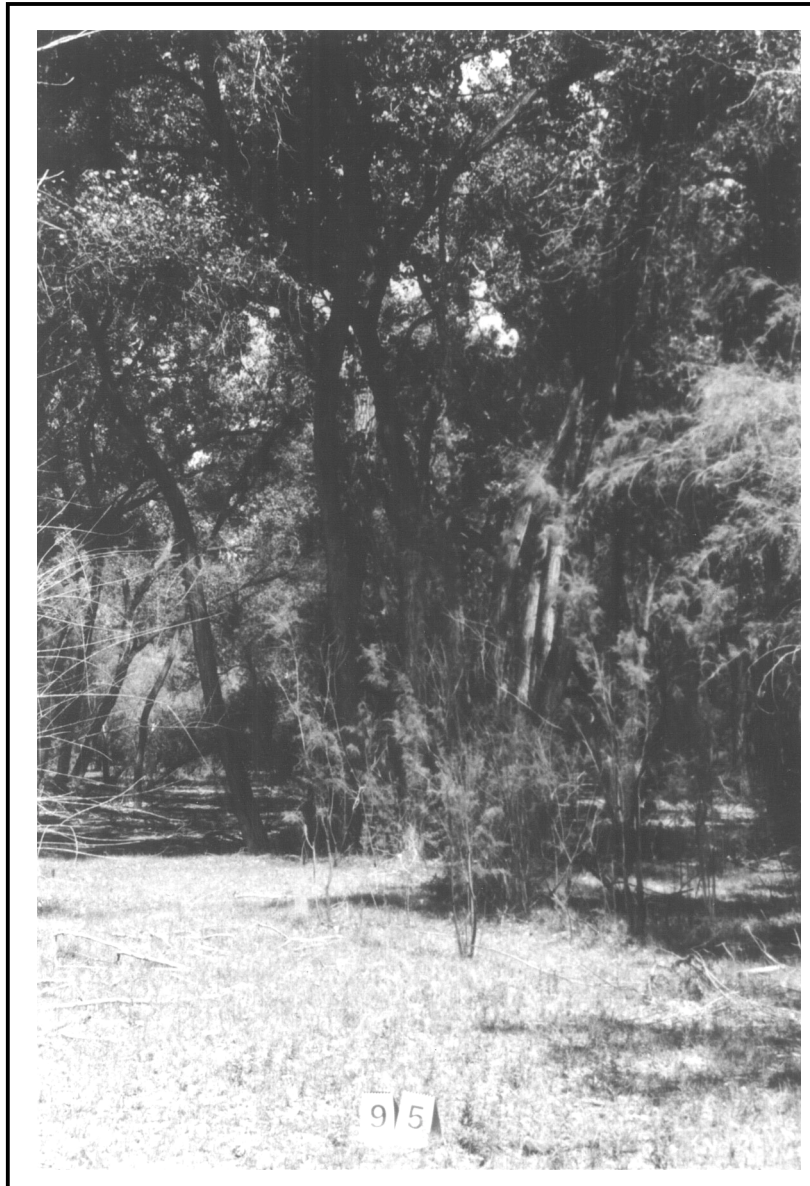


Photo: Mike Bradley

Figure 82. The Rio Hondo Site is dominated by closed canopy Rio Grande cottonwood forests with a scattered saltcedar understory very similar to the one pictured on the mainstem of the Rio Grande.

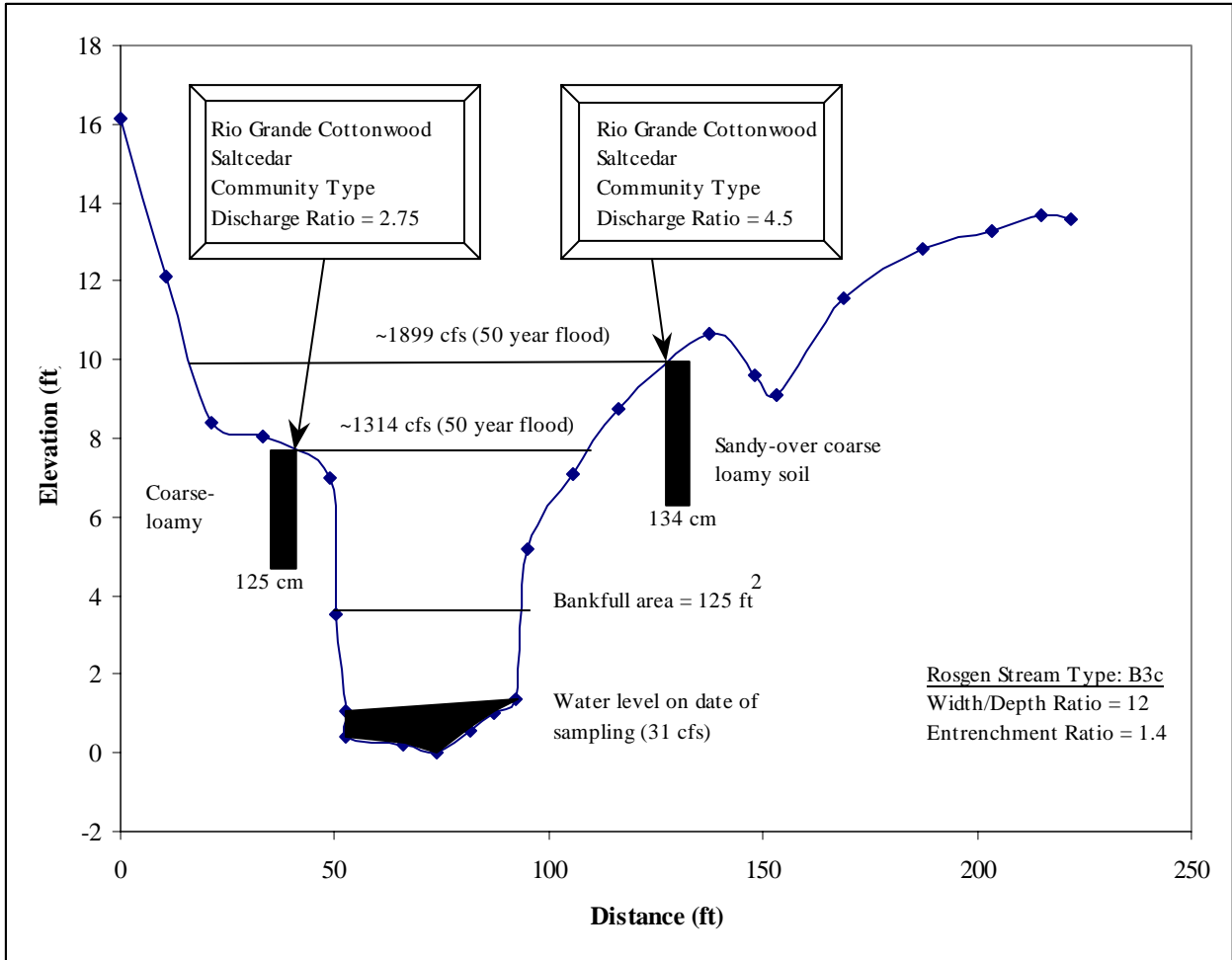


Figure 83. Cross-section of the Rio Hondo (Hondo-1) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

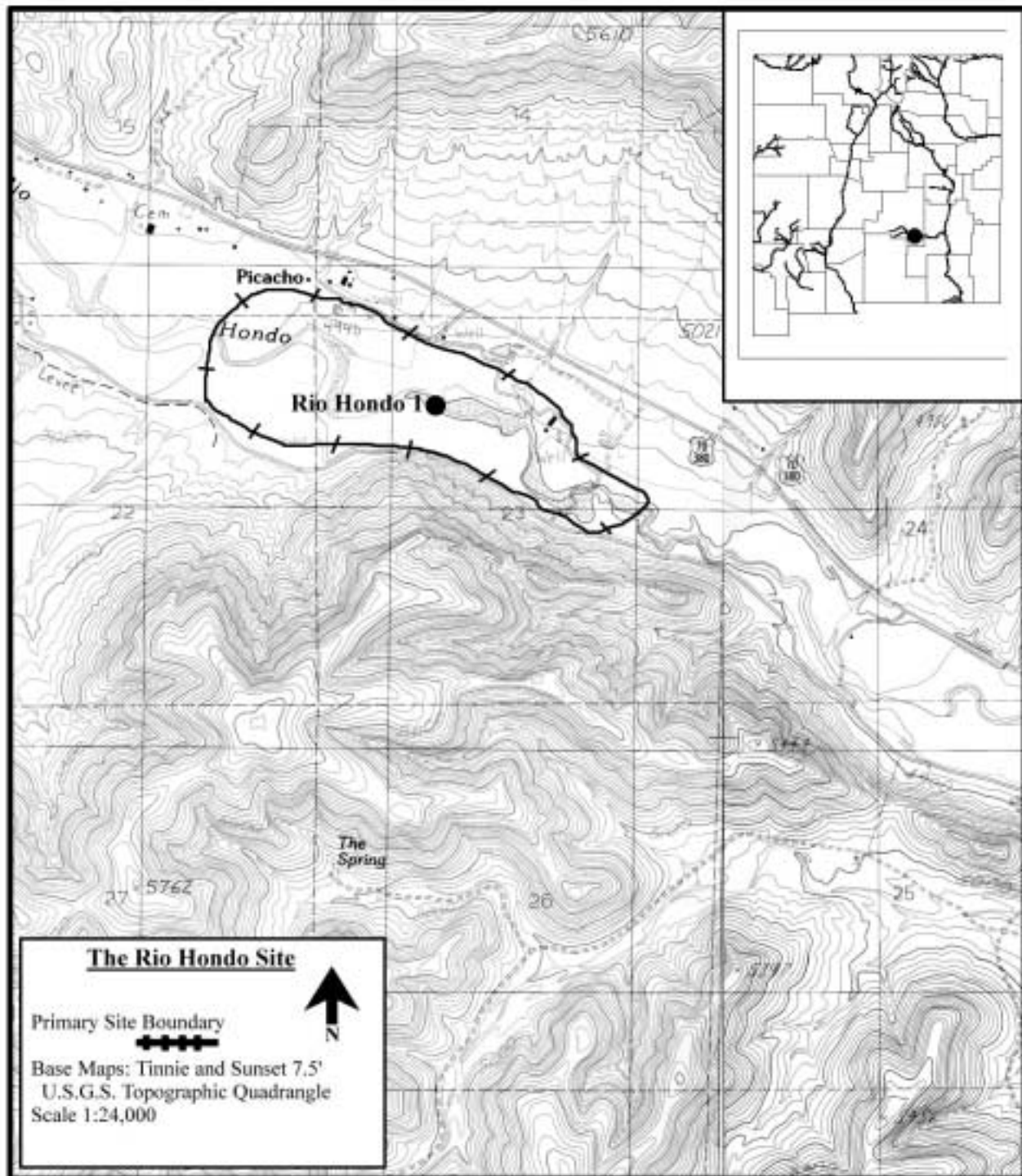


Figure 84. The boundary of the Rio Hondo Site. The black dot indicates location of the stream cross-section.

Rio Paguete

Watershed: Rio Grande **River:** Rio Paguete **Reach:** Rio Paguete
Site Number: 93 **Basin Number:** 13020207 **County:** CIBOLA
Town: 11N **Range:** 05W **Section:** 30 **Northing:** 3893440 **Easting:** 278350
Quad. Map Name: SEBOYETA **Site Size:** 28.3 Ha **Stream Length:** 3.7 km
Site Quality: A- **Rosgen Stream Type(s):** A2

Site Description: The Rio Paguete is a tributary to the Rio San Jose in the Rio Grande watershed. It is well-confined within a steep canyon with steep side-slopes dominated by mostly pinyon pine, juniper, and oaks. The site is characterized by a long narrow stand of narrowleaf cottonwood and Arizona alder. Riparian communities are diverse and well structured, with only a few herbaceous exotics present. At the upper reach of the site, a cattail marsh occurs. On the date of sampling, grazing impacts appeared minimal, but upon revisitation evidence of cattle was observed. The main threats to the site are cattle grazing and erosion caused by hiking trails.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Narrowleaf Cottonwood-Arizona Alder	B+	A	A	A-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Excellent

Landscape Mosaic: Excellent

Floodplain Impacts:	Comments:
Exotic veg dominant: no Grazing: yes Fuel Wood: no Dumping: no ORV Use: no Roads: no Mowing: no Other Impacts: no	The riparian areas have been grazed, but there was no visible evidence on the date of sampling.

Data Sources: Ground reconnaissance; field sampling.

Cross Section: Rio Paguete 1	Jurisdiction: Laguna Pueblo and private
Plots: 94PD020	Survey Date: 6/15/94
	Investigators: Bradley, Carr, Durkin



Photo: Ted Cline

Figure 85. The Rio Pagate is a well-confined canyon in which narrowleaf cottonwoods and Arizona alder dominate the narrow floodplain.

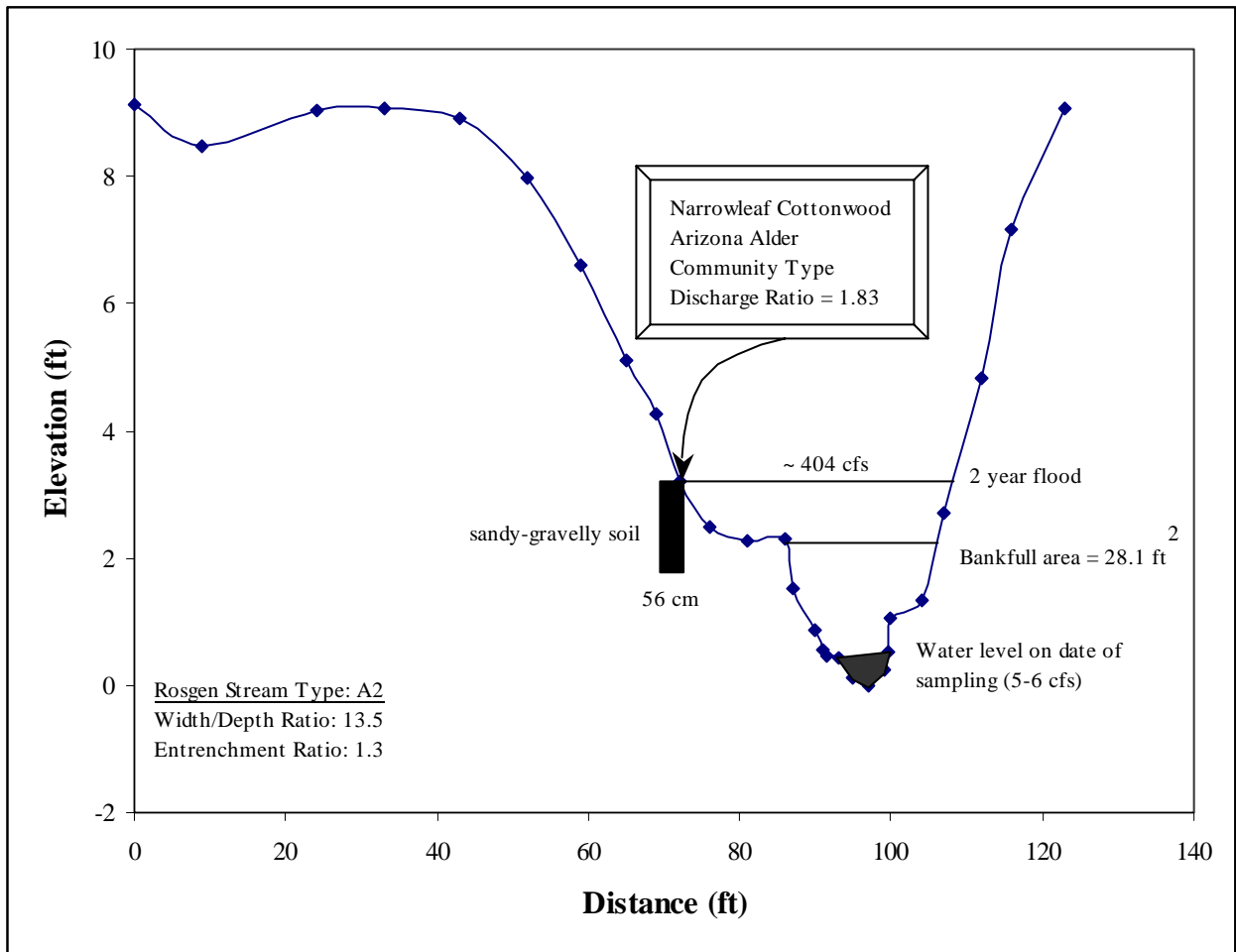


Figure 86. Cross-section of Paguate Creek (Paguate-1) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

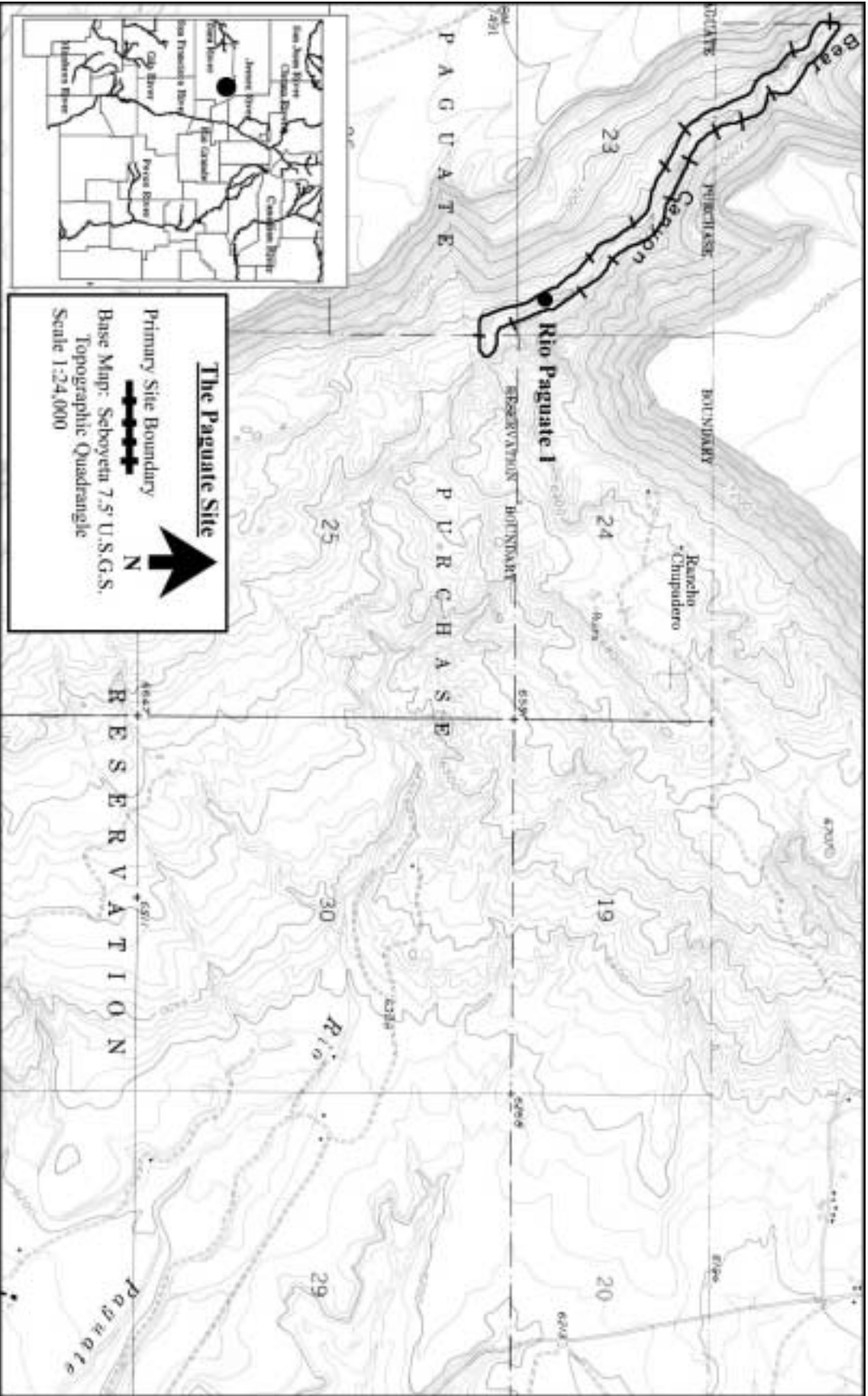


Figure 87. The boundary of the Rio Paguate Site. The black dot indicates location of the stream cross-section.

Rio Truchas

Watershed: Rio Grande **River:** Rio Truchas **Reach:** Rio Truchas
Site Number: 85 **Basin Number:** 13020101 **County:** RIO ARRIBA
Town: 22N **Range:** 09E **Section:** 24 **Northing:** 3998380 **Easting:** 416020
Quad. Map Name: VELARDE **Site Size:** 4.6 Ha **Stream Length:** 3 km
Site Quality: B- **Rosgen Stream Type(s):** C3b

Site Description: The Rio Truchas is a tributary of the upper Rio Grande in Rio Arriba County. It is an intermittent stream that supports a diverse range of wetland communities. Mature stands of narrowleaf and Rio Grande cottonwoods are common along river terraces. Bluestem and coyote willows are common along side bars and streambanks. Early successional herbaceous communities are found as well. Redtop and Baltic rush dominate a marsh that appears to be spring fed. The marsh is protected from scouring floods by natural berms that occur upstream. Overall, wetland communities are diverse, well-developed, and appear viable. The main threats to this site are encroachment from exotics and cattle, and fragmentation by roads.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Narrowleaf Cottonwood/Coyote Willow	B-	B-	B	B-
Coyote Willow/Baltic Rush	B-	B+	C+	B
Rio Grande/Plains Cottonwood-Russian Olive	C	B	B	B-
Coyote Willow/Scour	C	B	B-	B-
Redtop-Baltic Rush	B	B	B	B
Bluestem Willow-Coyote Willow/Sparse	B	B	B	B

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Good

Landscape Mosaic: Good

Floodplain Impacts:

Exotic veg dominant: no Grazing: yes Fuel Wood: unknown Dumping: unknown ORV Use: yes Roads: yes Mowing: no Other Impacts: no	Comments: But Russian olive and saltcedar are common. The area is grazed occasionally. ORVs occasionally drive in the floodplain. A dirt road fords the channel and is in the floodplain.
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Data Sources: Ground reconnaissance; field sampling.

Cross Section: BLM3, BLM17

Jurisdiction: BLM

Plots: 92RW025 92EM019 92EM020
 92RW020 92RW027 92RW026

Survey Date: 8/21/92
Investigators: Wallace, Muldavin



Photo: Esteban Muldavin

Figure 88. This redtop and Baltic rush bog is one of the diverse community types that occur on the Rio Truchas.

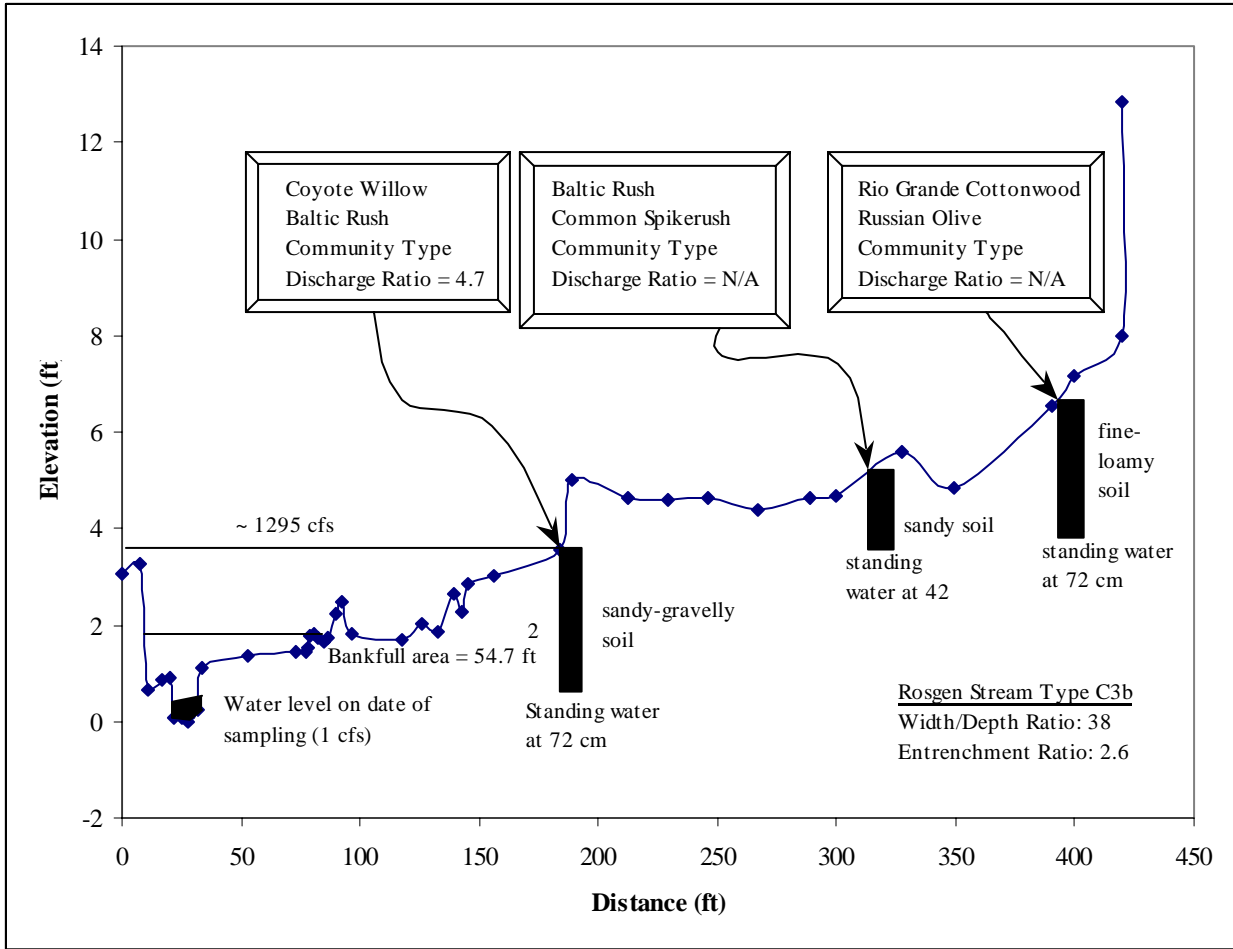


Figure 89. Cross-section of the Rio Truchas (BLM-3) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

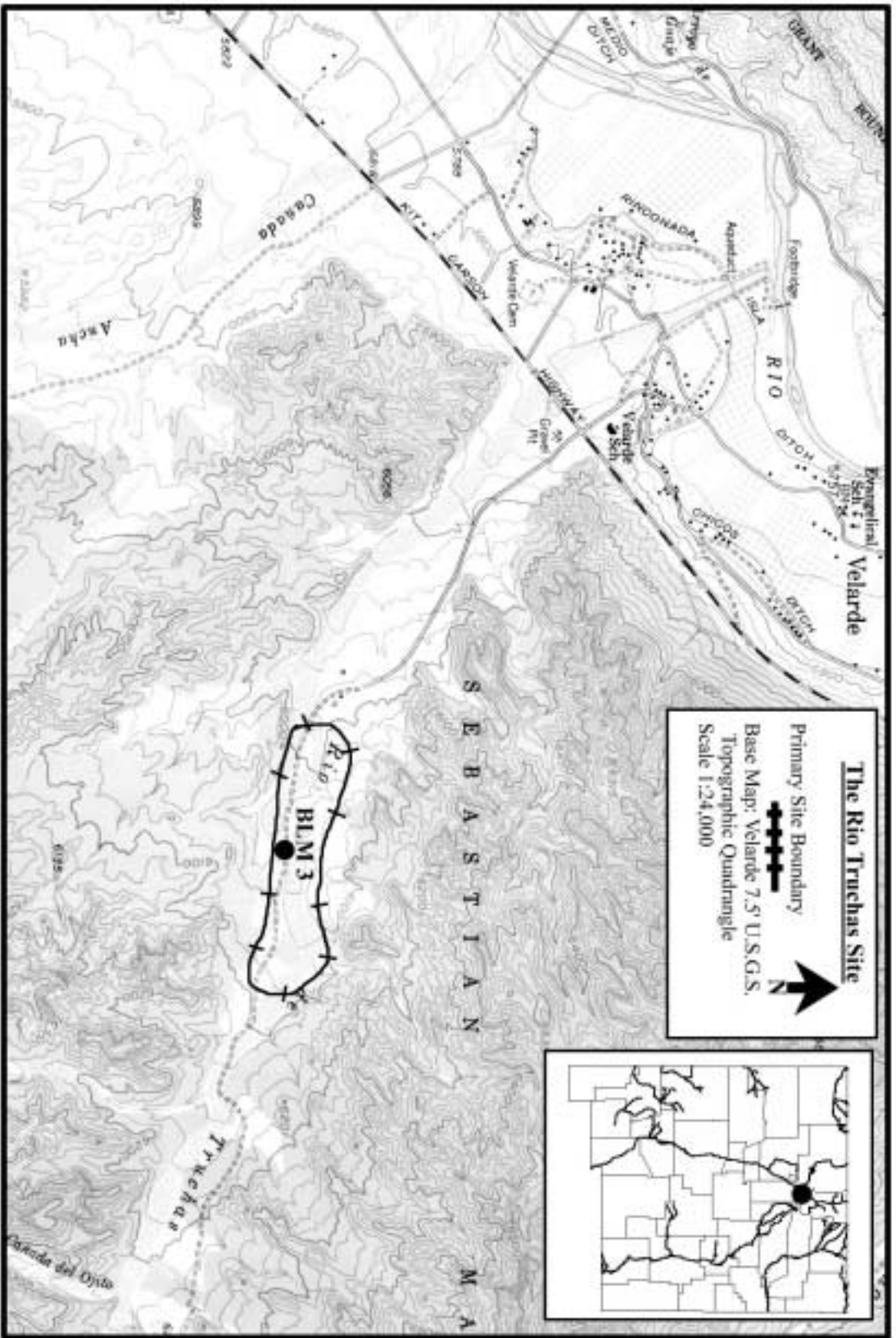


Figure 90. The boundary of the Rio Truchas Site. The black dot indicates the location of the stream cross-section.

Sena

Watershed: Pecos **River:** Pecos **Reach:** Glorieta Mesa
Site Number: 268 **Basin Number:** 13060001 **County:** SAN MIGUEL
Town: 12N **Range:** 14E **Section:** 01 **Northing:** 3906050 **Easting:** 463800
Quad. Map Name: SENA **Site Size:** 73 Ha **Stream Length:** 2 km
Site Quality: C+ **Rosgen Stream Type(s):** B3c

Site Description: The Sena Site is located on the mainstem of the Pecos River in San Miguel County. Forested wetlands are dominated by Rio Grande cottonwood with mixed understories of Russian olive, Wood's rose, and peachleaf willow. Island bars and side bars are dominated by coyote willow and a variety of grasses and forbs including Canada wildrye, creeping bentgrass, sweetclover, and Canada goldenrod. Young cottonwoods can be found on these bars as well. Impacts to this site are fairly extensive and affect community condition. Threats to this site include Russian olive encroachment and further fragmentation from agriculture.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Coyote Willow/Redtop	B	A	B-	B-
Rio Grande/Plains Cottonwood-Russian Olive	C	C	B	C

Hydrologic Impacts:

Flow Regulation: No **RipRapped:** Partial **Dredged:** No **Jetty Jacked:** No
Leveled: Partial **Streambank Condition:** Good **Overall Hydrologic Regime:** Good

Landscape Mosaic: Good

Floodplain Impacts:

Comments:

Exotic veg dominant: no	But Russian olive is a common understory component.
Grazing: yes	Cattle and horses graze the west side of the river.
Fuel Wood: unknown	
Dumping: yes	Household and yard waste are dumped at the site. Old junked cars are also used to prevent streambank erosion.
ORV Use: no	
Roads: yes	A dirt road is in the floodplain and fragments riparian forests.
Mowing: no	
Other Impacts: yes	Beaver activity has downed both young and old cottonwoods.

Data Sources: Aerial photography; ground reconnaissance; field sampling.

Cross Section: Pecos 11 **Jurisdiction:** Private

Plots: 93PD015 93PD016 **Survey Date:** 7/28/93
Investigators: Bradley, Durkin

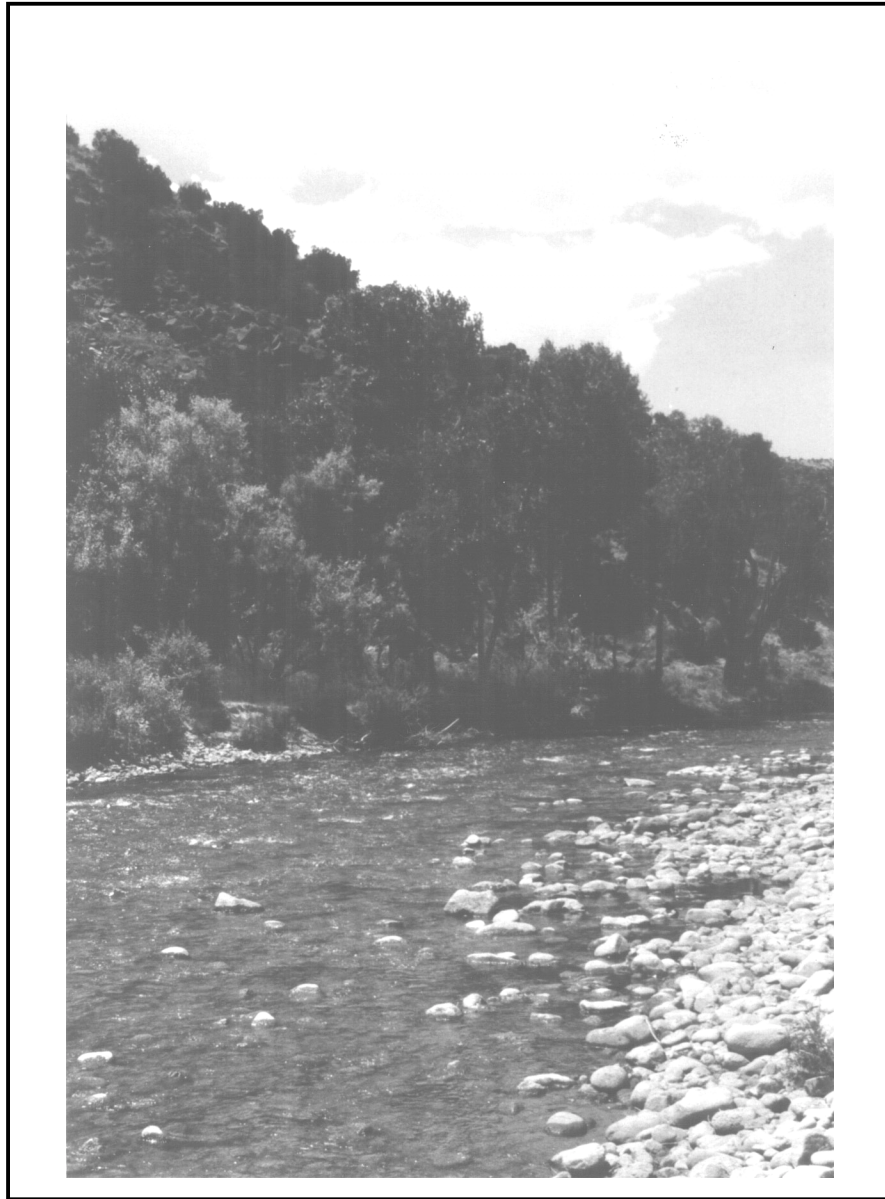


Photo: Mike Bradley

Figure 91. The Sena Site on the Pecos River is dominated by Rio Grande cottonwoods and Russian olive similar to the stand pictured on the Embudo River.

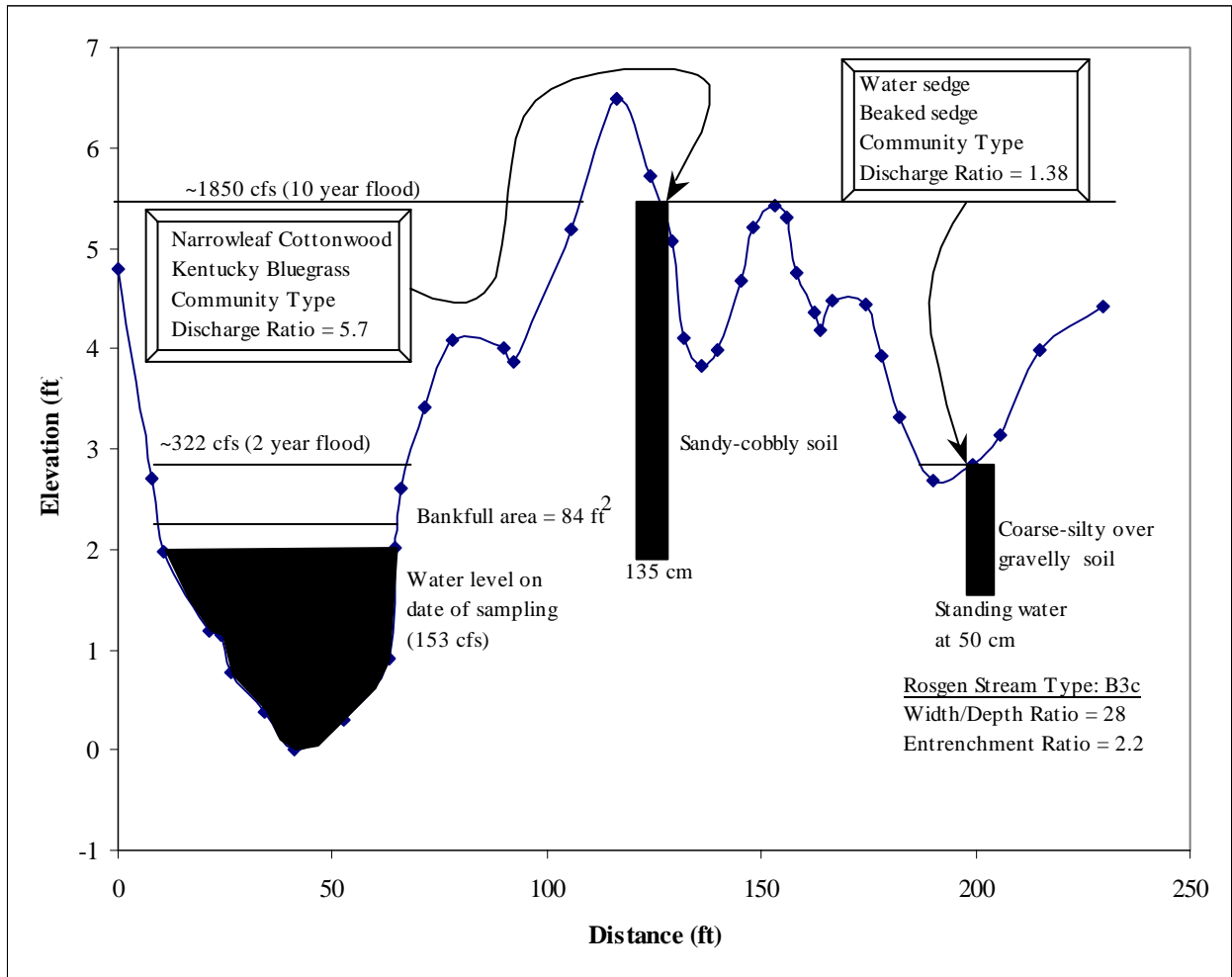


Figure 92. Cross-section of the Pecos River (Pecos-7) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

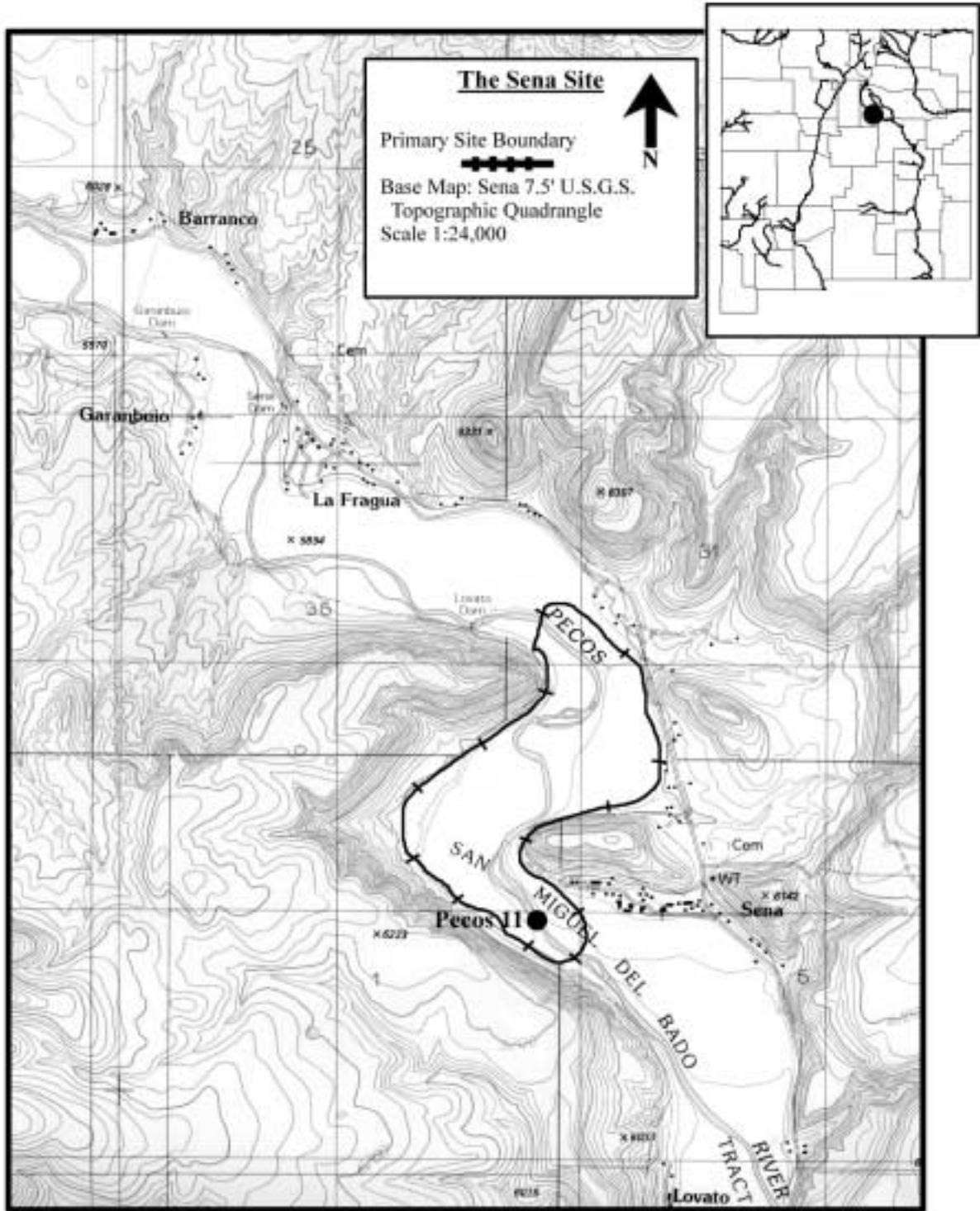


Figure 93. The boundary of the Sena Site. The black dot indicates location of the stream cross-section.

Sundial Mountain

Watershed: San Francisco Watershed **River:** San Francisco **Reach:** Wilson Mountain
Site Number: 155 **Basin Number:** 15040004 **County:** CATRON
Town: 20S **Range:** 20W **Section:** 34 **Northing:** 3683709 **Easting:** 138104
Quad. Map Name: WILSON MOUNTAIN **Site Size:** 61 Ha **Stream Length:** 5.5 km
Site Quality: A- **Rosgen Stream Type(s):** B4c, F4

Site Description: The Sundial Mountain Site is located on the mainstem of the San Francisco River downstream of the town of Glenwood. The site is characterized by diverse riparian communities that are in good to excellent condition. In areas where the channel pools, it is lined with threesquare and common spikerush. Banks are well stabilized by a variety of young trees and shrubs including seepwillow, coyote willow, Arizona alder, Fremont's cottonwood, and Goodding's willow. Terrace formation is infrequent in the canyon, but as they occur they are dominated by mature stands of Arizona sycamores and Fremont's cottonwood. Nettleleaf hackberry and California brickellbush are common along the fringe of old river terraces and against the upland slope. ORVs present the main threat to this site. Most of the site is remote, however, and impacts are minimal.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Fremont's Cottonwood/Seepwillow	B-	A	B	B+
Fremont's Cottonwood-Goodding's Willow/Coyote Willow	B+	A	B+	A-
Arizona Sycamore-Arizona Alder/Seepwillow	B+	A	B+	A-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Excellent **Overall Hydrologic Regime:** Excellent
Landscape Mosaic: Good

Floodplain Impacts: **Comments:**
Exotic veg dominant: no But herbaceous exotics and saltcedar are widely scattered.
Grazing: no No observable evidence. Some light grazing by horses is probable, however.
Fuel Wood: no
Dumping: no
ORV Use: no ORVs drive on scoured island and side bars and ford the river, affecting stream turbidity.
Roads: no
Mowing: no
Other Impacts: yes Light hiking impacts from recreational use of a hot spring.

Data Sources: Ground reconnaissance; field sampling.

Cross Section: San Francisco 2, 3 **Jurisdiction:** Gila National Forest
Plots: 95PD013 95PD014 95PD015 **Survey Date:** 6/24/95
 95PD012 95PD017 95PD011 **Investigators:** Bradley, Durkin, Hartmann

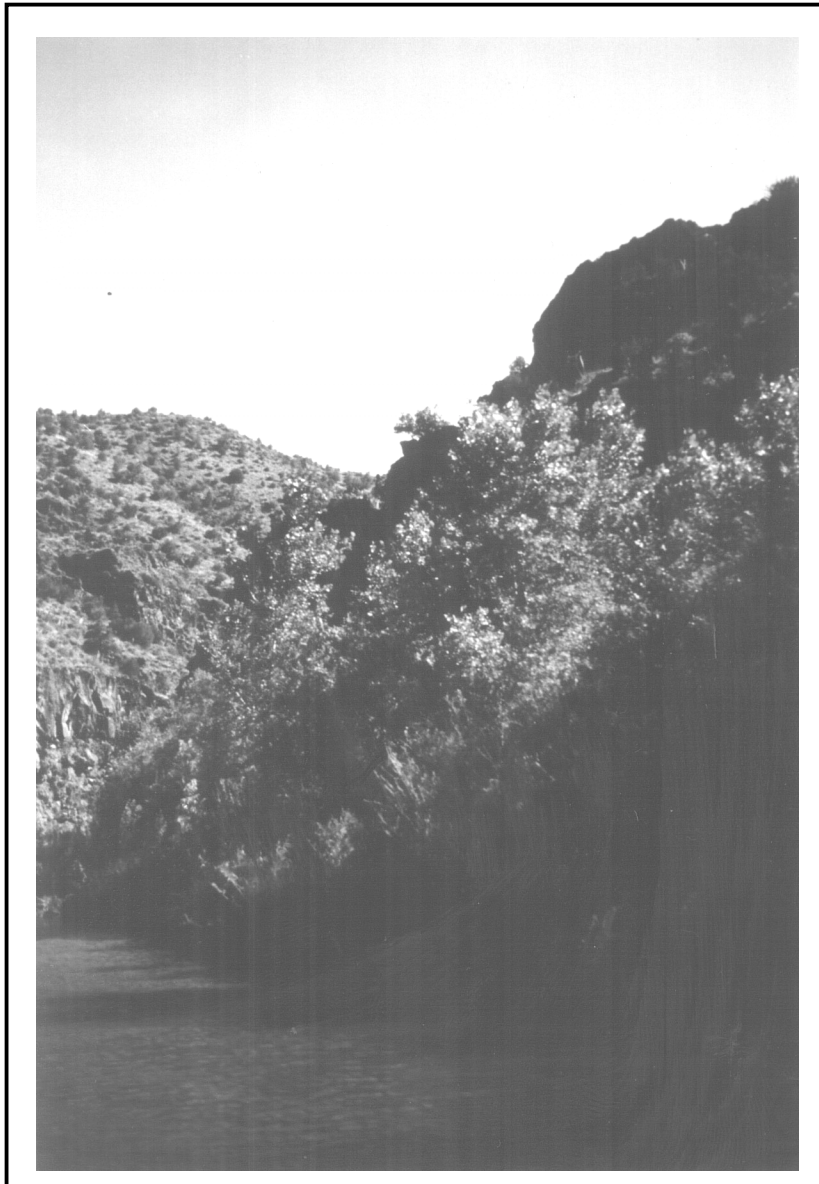


Photo: Mike Bradley

Figure 94. The Sundial Mountain Site is characterized by young Fremont's cottonwood, seepwillow, and Goodding's willow stands that occur along streambanks and side bars.

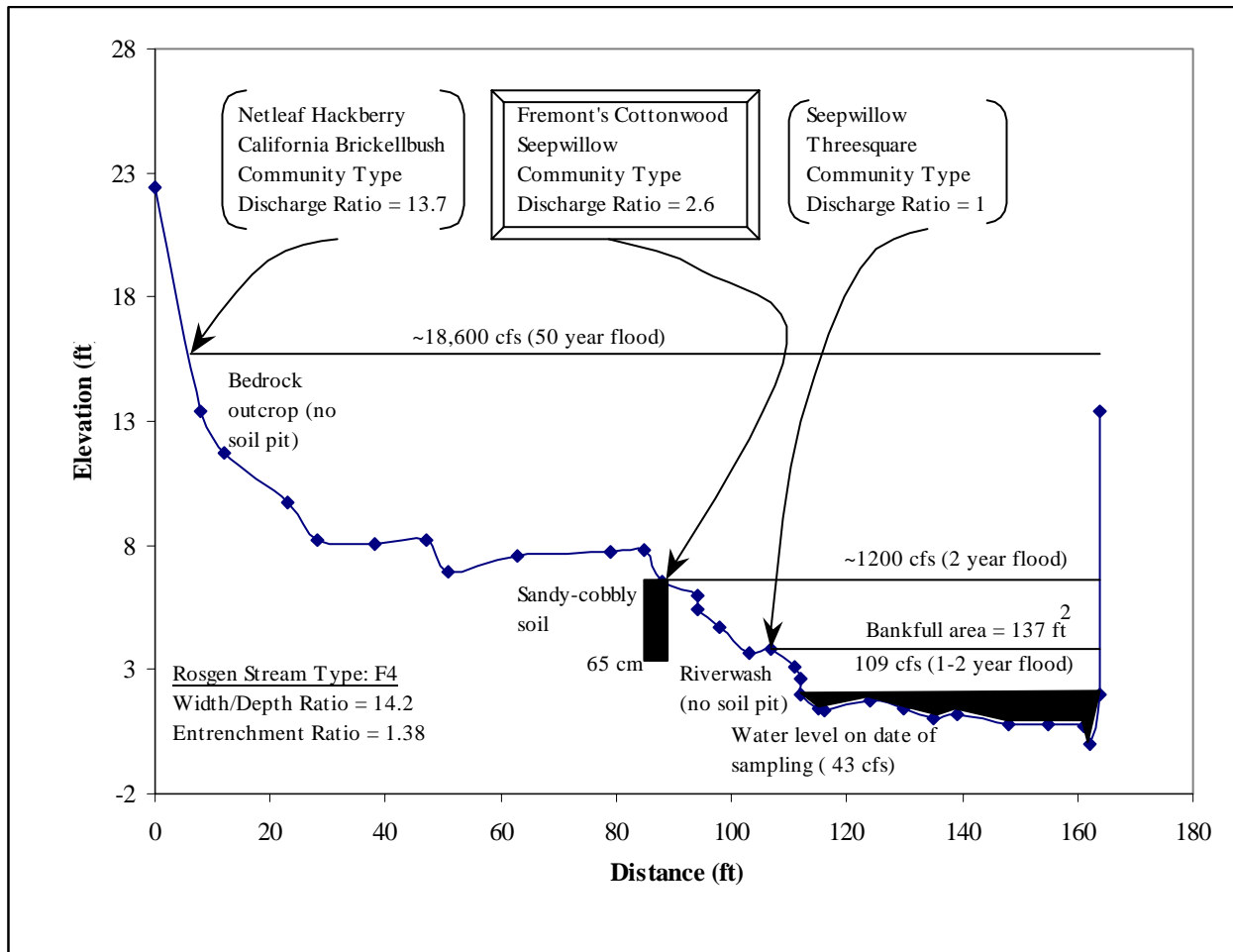


Figure 95. Cross-section of the San Francisco River (San Francisco -1) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

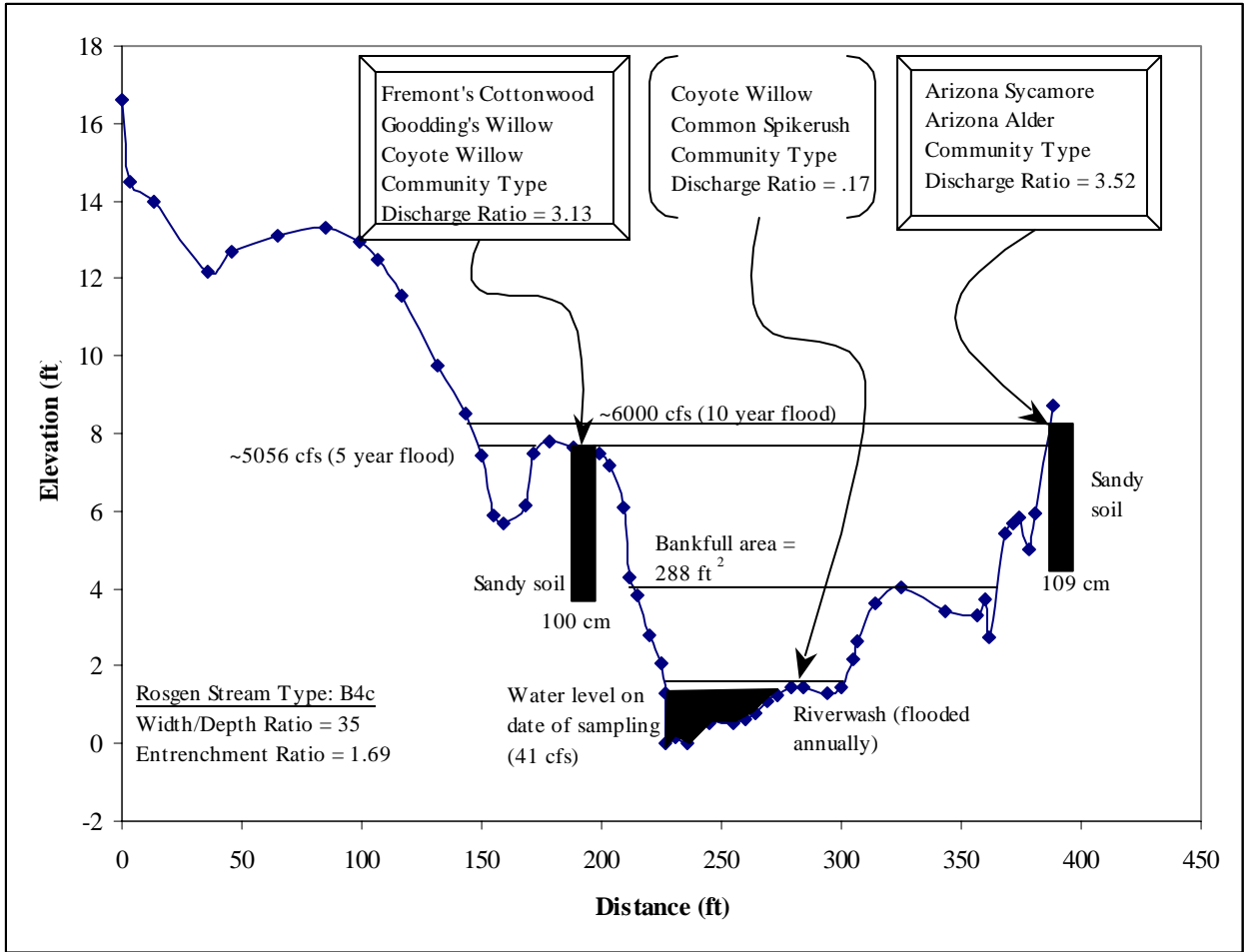


Figure 96. Cross-section of the San Francisco River (San Francisco-2) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

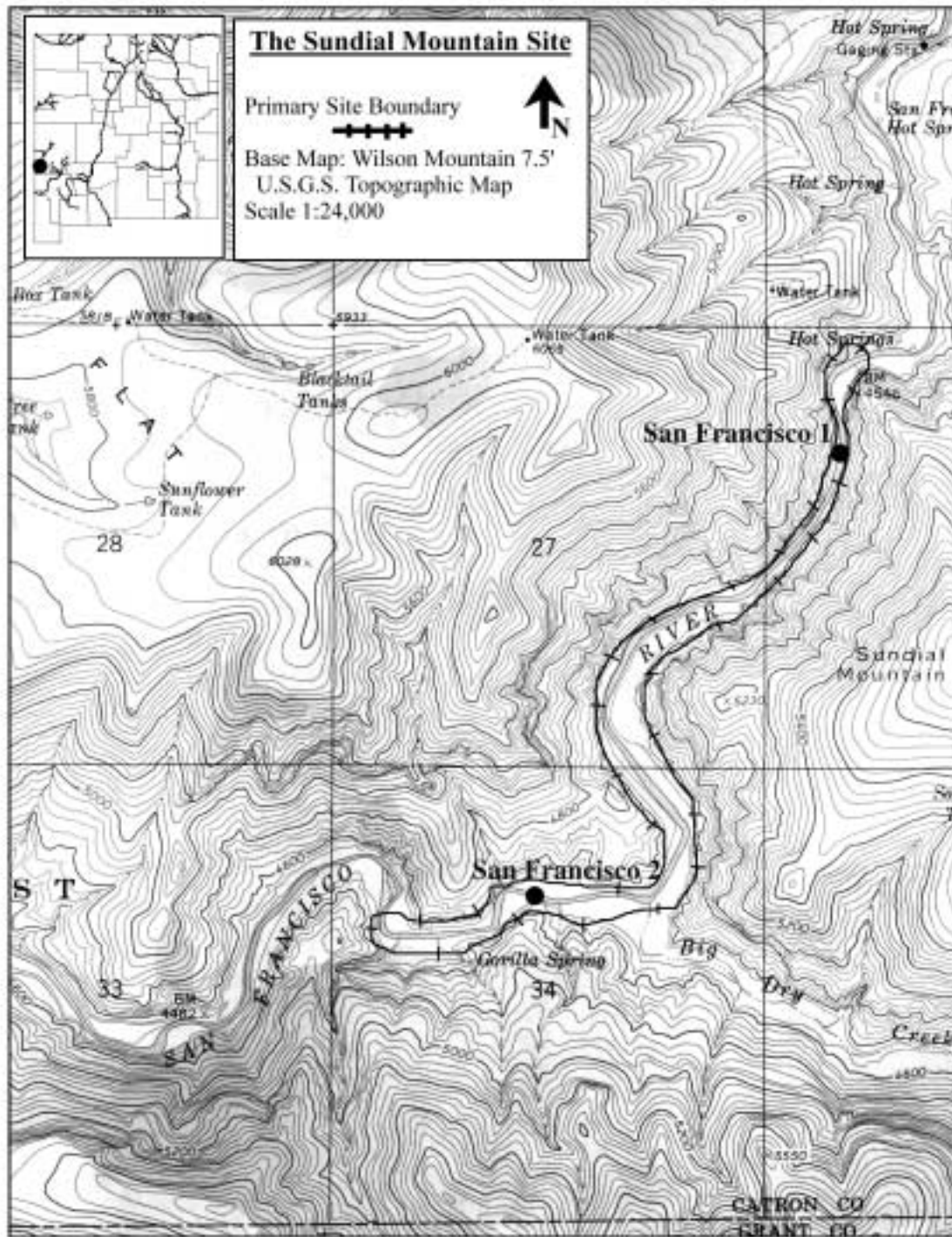


Figure 97. The boundary of the Sundial Mountain Site. Black dots indicate location of the stream cross-sections.

Tampico Draw

Watershed: Little Colorado **River:** Tampico Draw **Reach:** Tampico Draw
Site Number: 257 **Basin Number:** 15020004 **County:** MCKINLEY
Town: 13N **Range:** 16W **Section:** 34 **Northing:** 3913889 **Easting:** 176931
Quad. Map Name: UPPER NUTRIA **Site Size:** 18.8 Ha **Stream Length:** 3.4 km
Site Quality: A- **Rosgen Stream Type(s):** F2

Site Description: Tampico Draw is located in the Zuni Mountains south east of Gallup. It is a narrow, rock-walled mountain canyon with large boulders and rock outcrops. Creek flows are intermittent and a variety of shrubs including coyote willow, bluestem willow and young narrowleaf cottonwoods dominate the active channel. Other species include skunkbush sumac, shrubby cinquefoil, chokecherry, and Wood's rose. Uplands are dominated by aspen, Gambel's oak and Rocky Mountain juniper. A few mature narrowleaf cottonwoods occur on isolated small terraces. The confined canyons are inaccessible to cattle and other impacts to this site are minimal. As a result, communities are diverse and in excellent condition.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Bluestem Willow-Redosier Dogwood	B+	A	A	A-
Bluestem Willow-Coyote Willow/Sparse	B+	A	A	A-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveled: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Good

Landscape Mosaic: Good

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But herbaceous exotics are common.
Grazing: no	But the upper end of this site is grazed.
Fuel Wood: no	
Dumping: no	
ORV Use: no	
Roads: no	
Mowing: no	
Other Impacts: no	

Data Sources: Ground reconnaissance; field sampling.

Cross Section: Tampico Draw 1 **Jurisdiction:** Cibola National Forest
Plots: 96PD040 96PD041 **Survey Date:** 8/15/96
Investigators: Durkin, Bradley



Photo: Mike Bradley

Figure 98. Dense thickets of bluestem and coyote willow dominate the Tampico Draw Site.

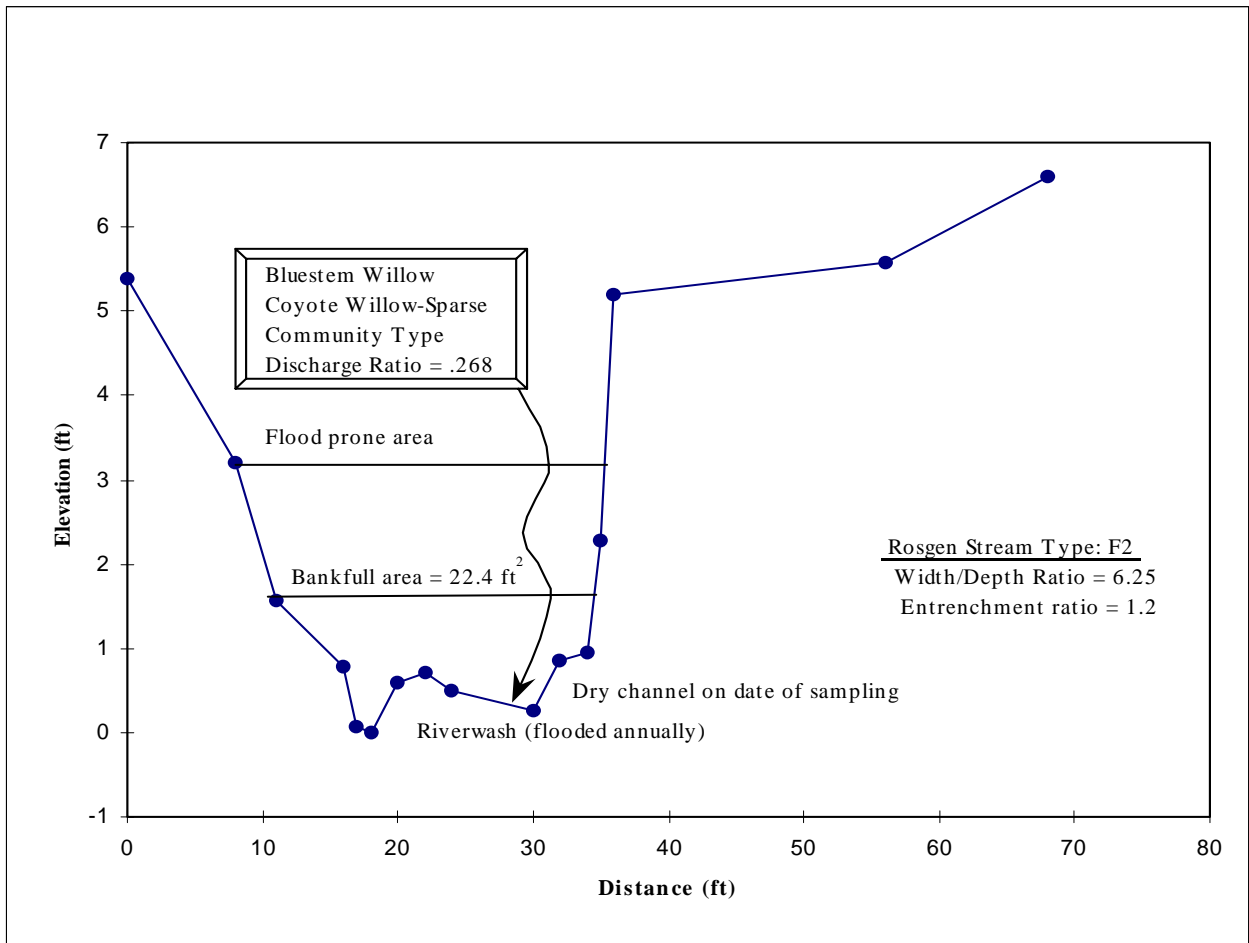


Figure 99. Cross-section of Tampico Draw (Tampico Draw-1) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

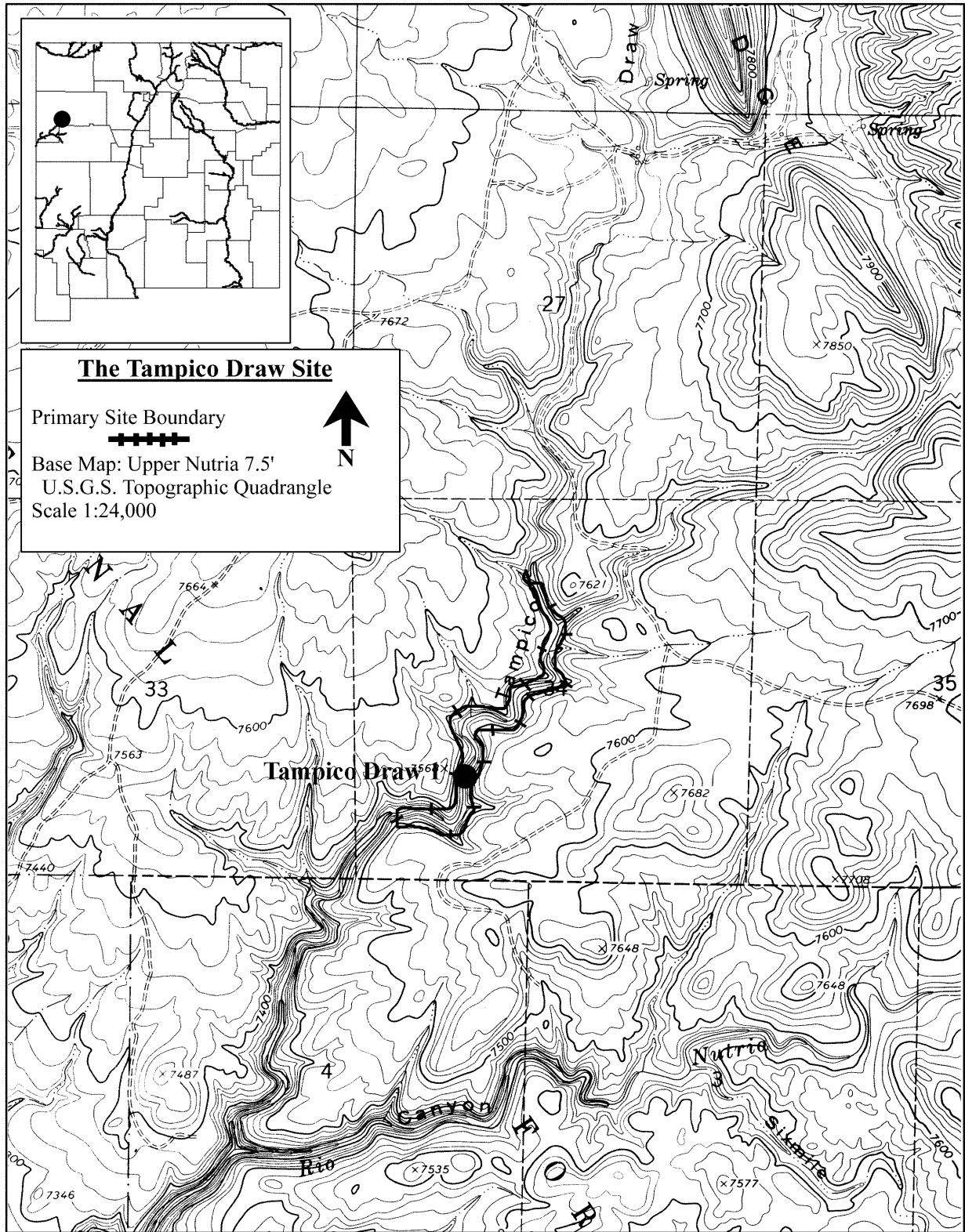


Figure 100. The boundary of the Tampico Draw Site. The black dot indicates the location of the stream cross-section.

Terrero

Watershed: Pecos **River:** Pecos **Reach:** Upper Pecos
Site Number: 314 **Basin Number:** 13060001 **County:** SAN MIGUEL
Town: 18N **Range:** 12E **Section:** 28 **Northing:** 3956710 **Easting:** 439120
Quad. Map Name: COWLES **Site Size:** 54 Ha **Stream Length:** 3.3 km
Site Quality: B+ **Rosgen Stream Type(s):** B3c

Site Description: The Terrero Site is located on the mainstem of the Pecos River a few miles upstream from the town of Pecos. The Pecos at this site is a mountain stream that is narrow and moderately confined. Streambanks and sidebars are dominated by thinleaf alder, redosier dogwood and narrowleaf cottonwood. Forested terraces are infrequent, but are typically dominated by blue spruce and Kentucky bluegrass. Overall, direct impacts are minimal and wetland communities are in good condition. Indirect impacts include a mine, highway, and irrigation ponds, all of which threaten the natural hydrologic regime of this site.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Blue Spruce/Kentucky Bluegrass	B+	B+	B+	B+
Thinleaf Alder/Redosier Dogwood	B+	B	B+	B+
Blue Spruce/Thinleaf Alder-Wood's Rose	B+	B+	B	B+
Narrowleaf Cottonwood/Thinleaf Alder-Redosier Dogwood	B	B+	B+	B+

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveled: No **Streambank Condition:** Excellent **Overall Hydrologic Regime:** Excellent

Landscape Mosaic: Good

Floodplain Impacts: **Comments:**
Exotic veg dominant: no
Grazing: no No evidence observed.
Fuel Wood: no
Dumping: no
ORV Use: no
Roads: yes The highway is out of the floodplain, but it still may affect stream hydrology.
Mowing: no
Other Impacts: yes Streamside trails increase erosion and trample vegetation.

Data Sources: Field sampling; ground reconnaissance.

Cross Section: P2, P4 **Jurisdiction:** Santa Fe National Forest

Plots: 92HK003 92HK004 92HK007 92HK008 **Survey Date:** 8/ 6/92
Investigators: Kirchner, Puschel

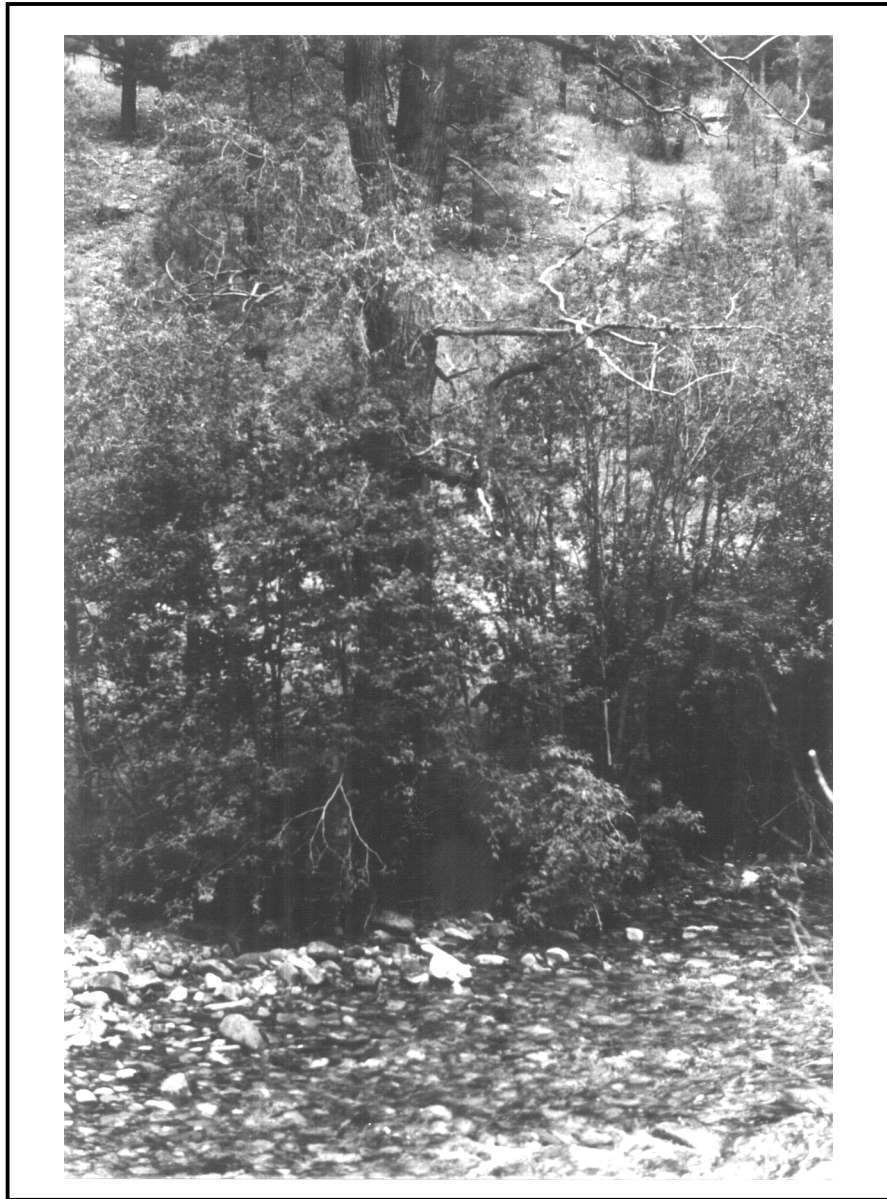


Photo: Mike Bradley

Figure 101. The Terrero Site on the upper Pecos is dominated by thinleaf alders and narrowleaf cottonwoods.

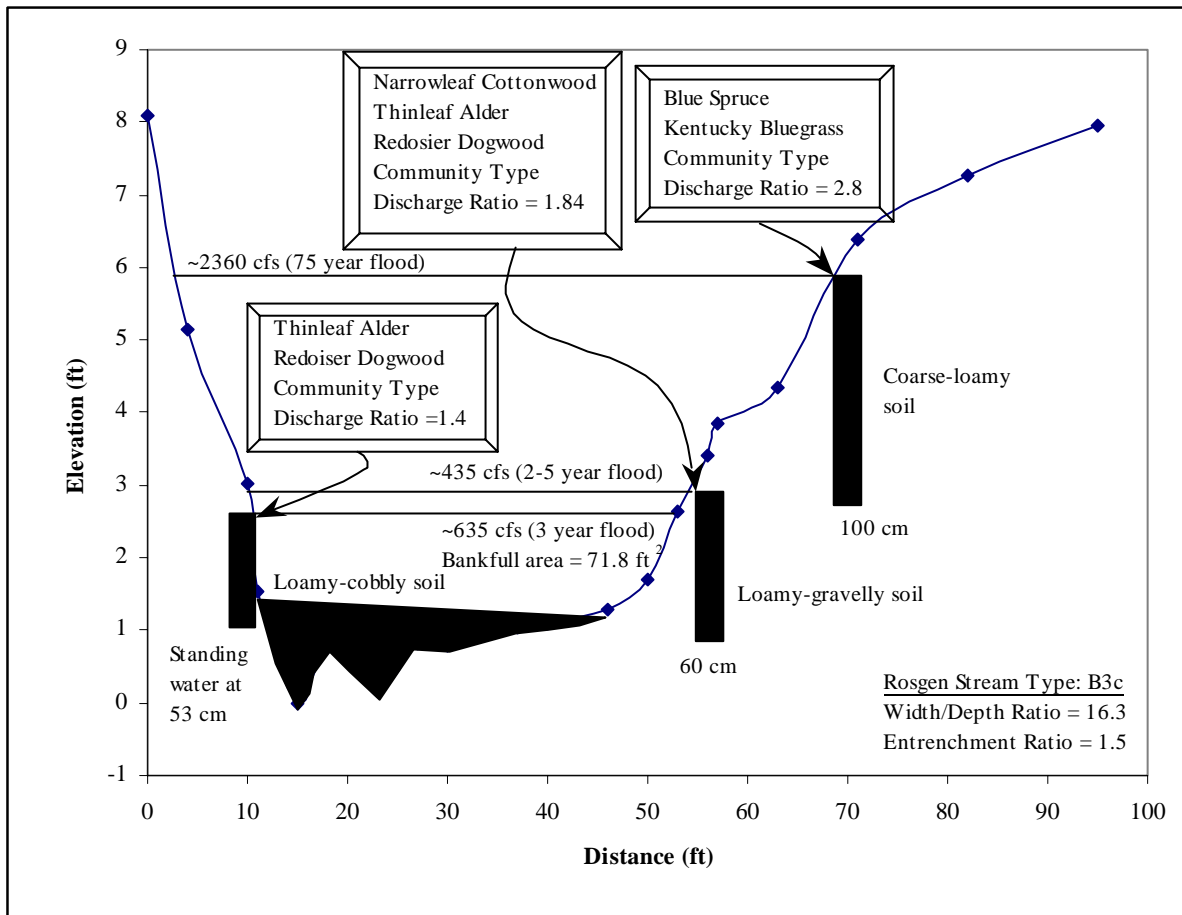


Figure 102. Cross-section of the Pecos River (P-2) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

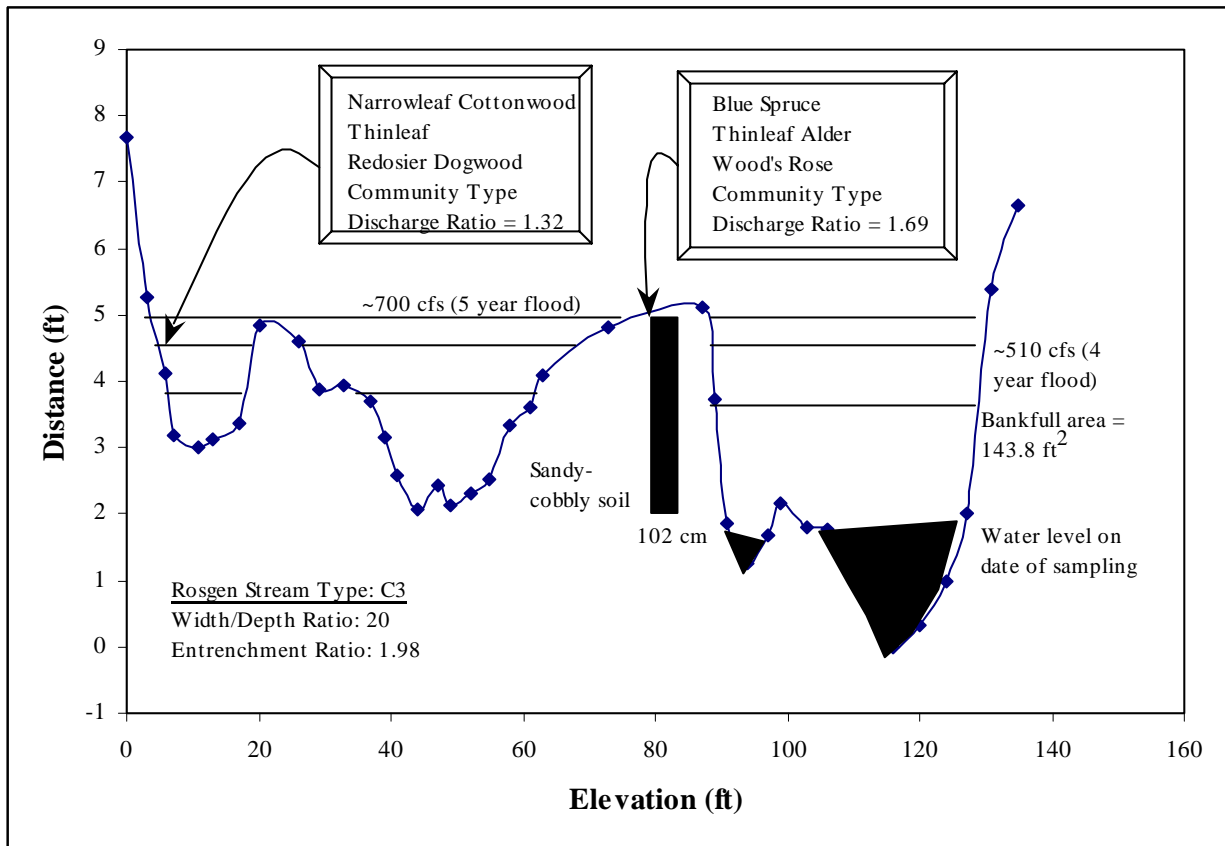


Figure 103. Cross-section of the Pecos River (P-4) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

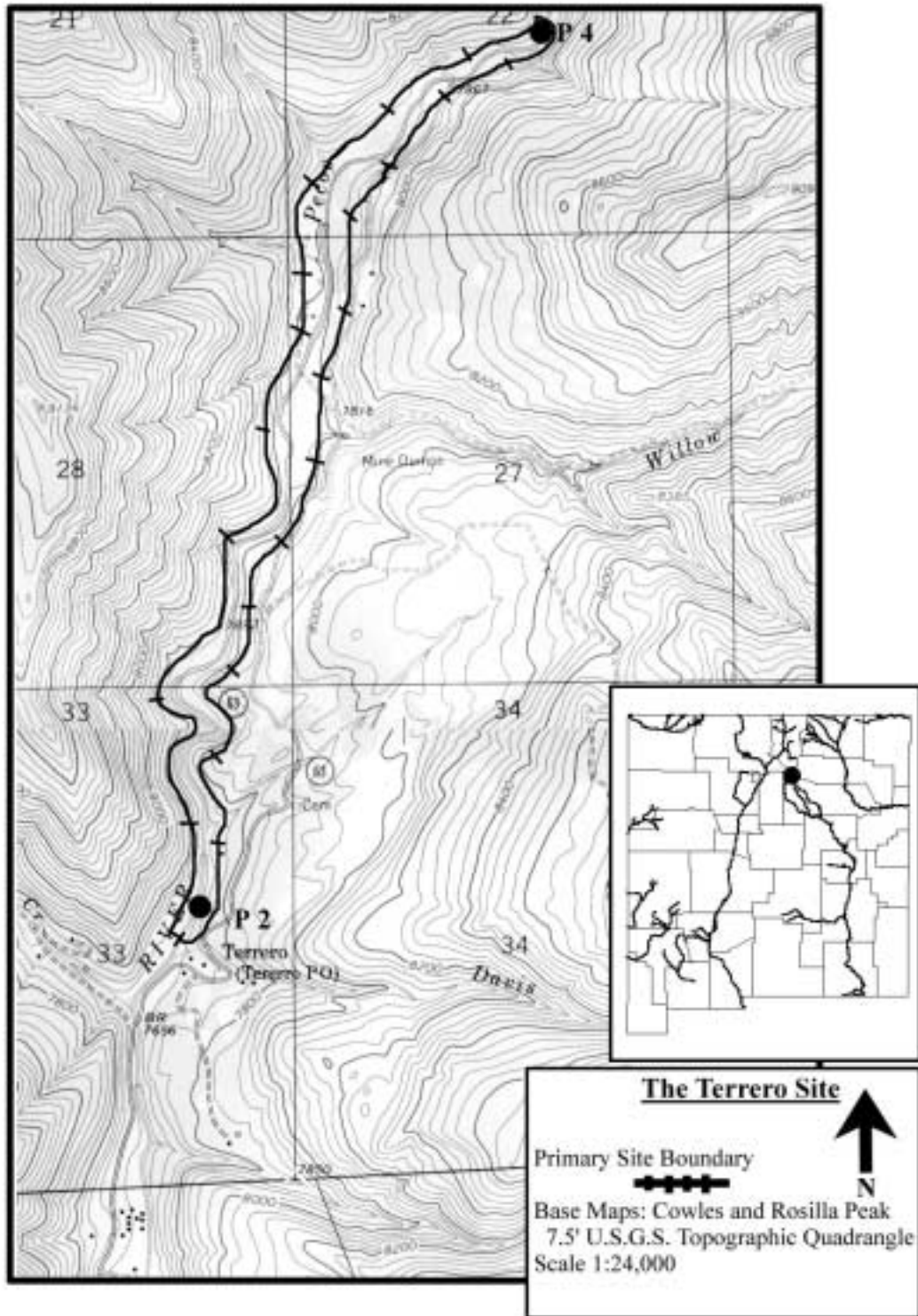


Figure 104. The boundary of the Terrero Site. Black dots indicate location of the stream cross-sections.

Thomas Arroyo

Watershed: San Juan **River:** La Plata **Reach:** La Plata
Site Number: 252 **Basin Number:** 14080105 **County:** SAN JUAN
Town: 32N **Range:** 13W **Section:** 27 **Northing:** 4094431 **Easting:** 216197
Quad. Map Name: LA PLATA **Site Size:** 35.2 Ha **Stream Length:** 1.7 km
Site Quality: B **Rosgen Stream Type(s):** C4

Site Description: The Thomas Arroyo Site is located on the mainstem of the La Plata River near the town of La Plata. Mature riparian forested wetlands are dominated by Rio Grande cottonwoods that form a closed canopy. Russian olive and saltcedar are common as well in the sub-canopy. Other common shrubs are boxelder and peachleaf willow. The cobbly river channel is bordered by somewhat well-vegetated banks dominated primarily by threesquare and creeping bentgrass with a mixture of other forbs and grasses. Smaller isolated bars nearby exhibit excellent cottonwood seedling regeneration, but saplings are rarely present. Sweetclover and coyote willow are common on these bars as well. Threats to this site include the Animas-La Plata River project, which would affect the hydrology of the wetland communities here. Agricultural fields and mining roads also pose threats. Generally, however, wetland communities are diverse and well-structured and in fair to good condition.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Threesquare-Redtop	B	B	C	B-
Rio Grande/Plains Cottonwood-Russian Olive/Saltcedar	C	B	B	C+

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Fair

Landscape Mosaic: Fair

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But Russian olive, saltcedar, and herbaceous exotics are very common in the understory.
Grazing: no	The area is fenced but some old cattle evidence was observed.
Fuel Wood: no	
Dumping: no	
ORV Use: no	
Roads: yes	A dirt road in the floodplain provides access to streambanks.
Mowing: no	
Other Impacts: no	

Data Sources: Aerial reconnaissance; NWI Maps; field sampling.

Cross Section: La Plata 4 **Jurisdiction:** Private

Plots: 96PD032 96PD033 **Survey Date:** 7/31/96
Investigators: Durkin, Bradley



Photo: Ted Cline

Figure 105. The Thomas Arroyo Site on the La Plata River. This is the largest continuous stand of Rio Grande cottonwoods remaining on the La Plata in New Mexico.

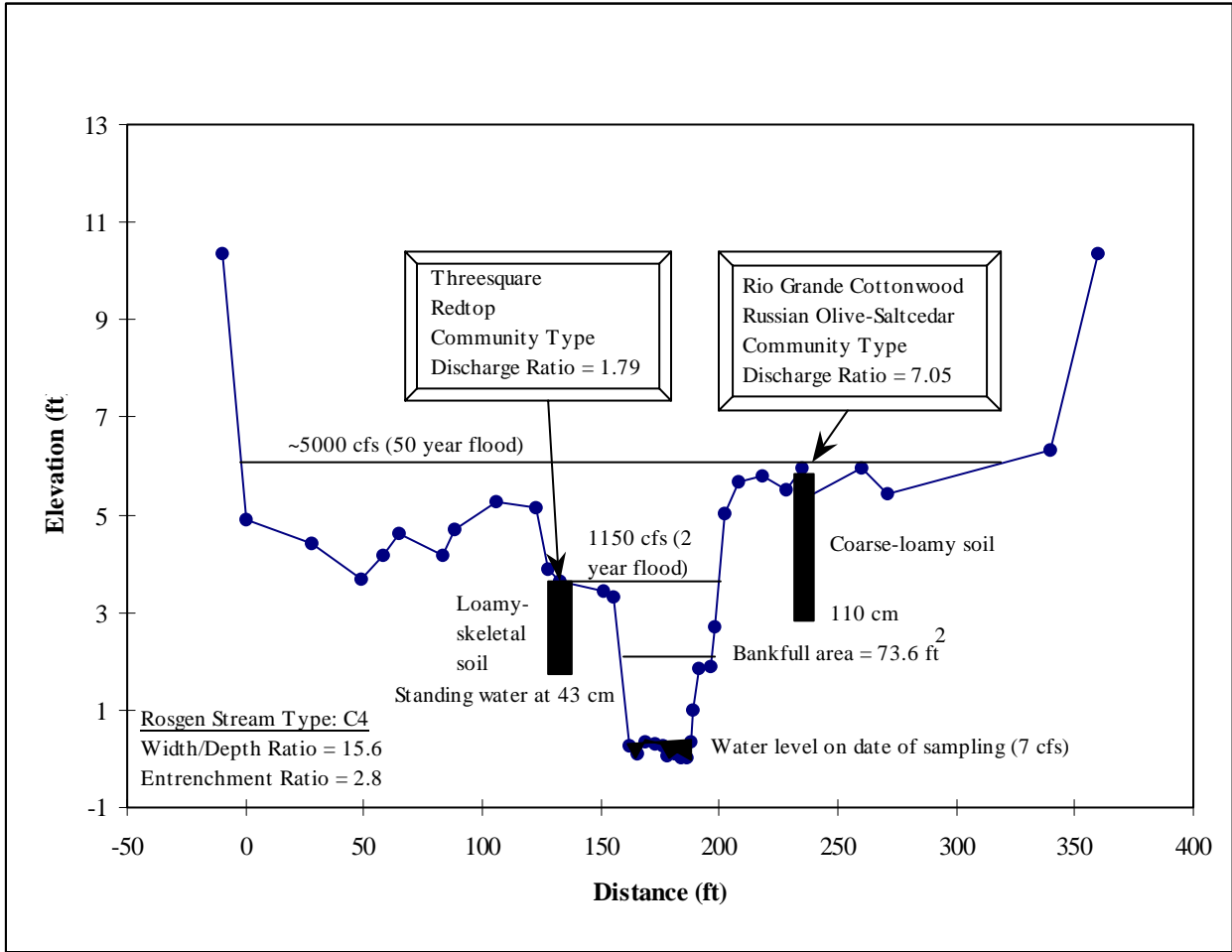


Figure 106. Cross-section of the La Plata River (La Plata-4) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

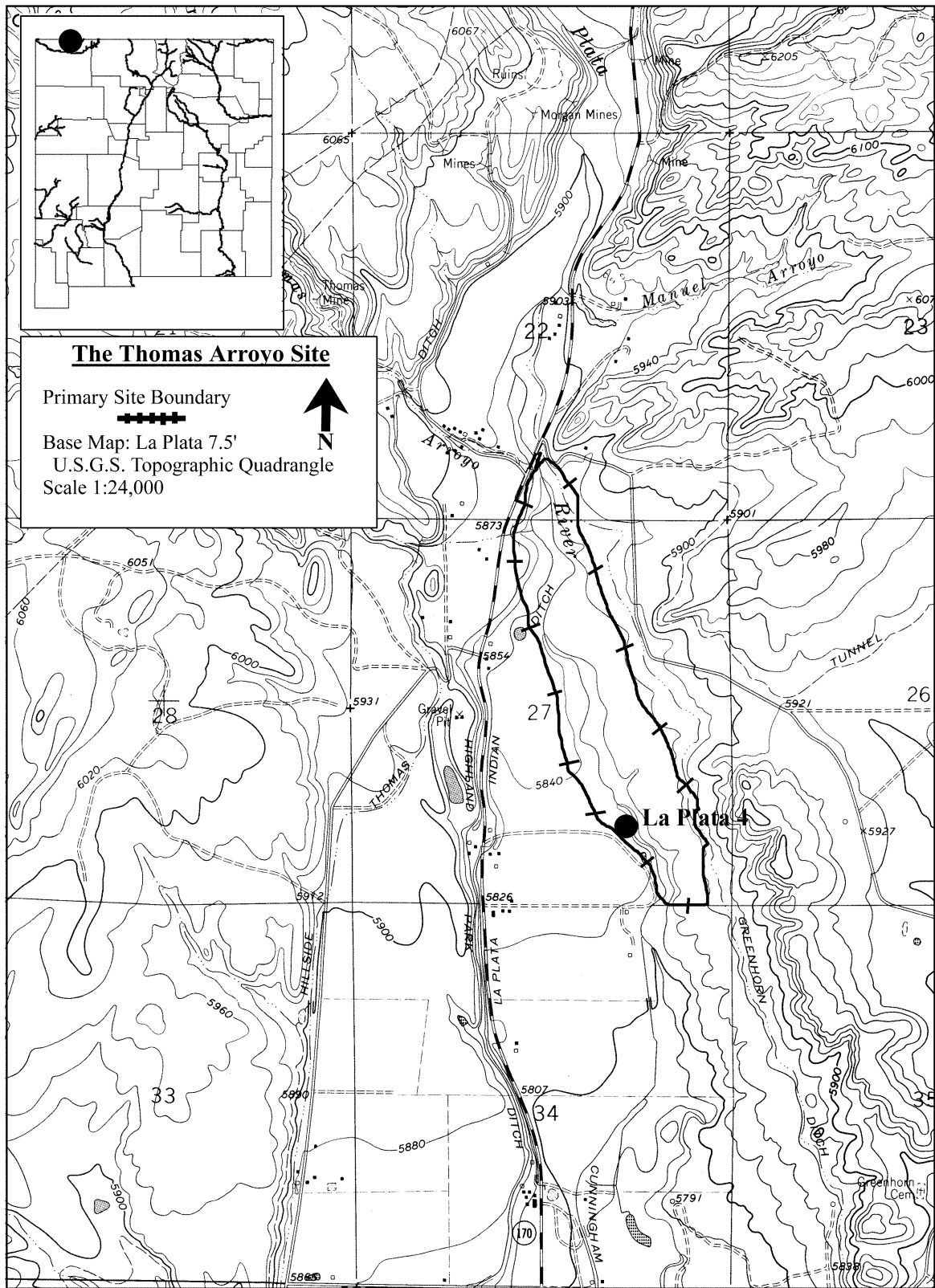


Figure 107. The boundary of the Thomas Arroyo Site. The black dot indicates the location of the stream cross-section.

Upper Chama

Watershed: Rio Grande **River:** Rio Chama **Reach:** Upper Chama
Site Number: 79 **Basin Number:** 13020102 **County:** RIO ARRIBA
Town: 31N **Range:** 03E **Section:** 28 **Northing:** 4081450 **Eastings:** 358930
Quad. Map Name: CHAMA **Site Size:** 16.3 Ha **Stream Length:** 2.1 km
Site Quality: B+ **Rosgen Stream Type(s):** C3

Site Description: The Upper Chama Site is located on the mainstem of the Chama River just downstream of the town of Chama. The site is characterized by stands of mixed-age narrowleaf cottonwoods. On young terraces, mature narrowleaf cottonwoods stands are common with understories dominated by Kentucky bluegrass, redosier dogwood, and Wood's rose. Side bars are dominated by thinleaf alder, coyote willow, and young narrowleaf cottonwoods. Streambanks are scoured and not well vegetated. Impacts to this site include urbanization and roads, which fragment riparian forests. The hydrological regime is slightly affected by mines, irrigation diversions, and ground water pumping. Overall, however, the wetland communities are diverse, well-developed, and undisturbed.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Narrowleaf Cottonwood/Coyote Willow	A	A	B	A-
Narrowleaf Cottonwood/Kentucky Bluegrass	B+	B	A	B
Thinleaf Alder/Redosier Dogwood	A	A	B	A-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Good

Landscape Mosaic: Good

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But herbaceous exotics are common.
Grazing: yes	Cattle and horses graze nearby pastures.
Fuel Wood: unknown	
Dumping: no	
ORV Use: no	
Roads: no	
Mowing: no	
Other Impacts: yes	Agriculture and buildings fragment riparian forests.

Data Sources: Ground reconnaissance; field sampling.

Cross Section: Chama 1 **Jurisdiction:** NM Game and Fish and private

Plots: 94PD084 94PD085 94PD086 **Survey Date:** 8/10/94
Investigators: Bradley, Durkin, Carr



Photo: Ted Cline

Figure 108. The Upper Chama Site on the Rio Chama just south of the town of Chama. Although fragmented by pastures and urbanization, this site contains nice stands of narrowleaf cottonwood.

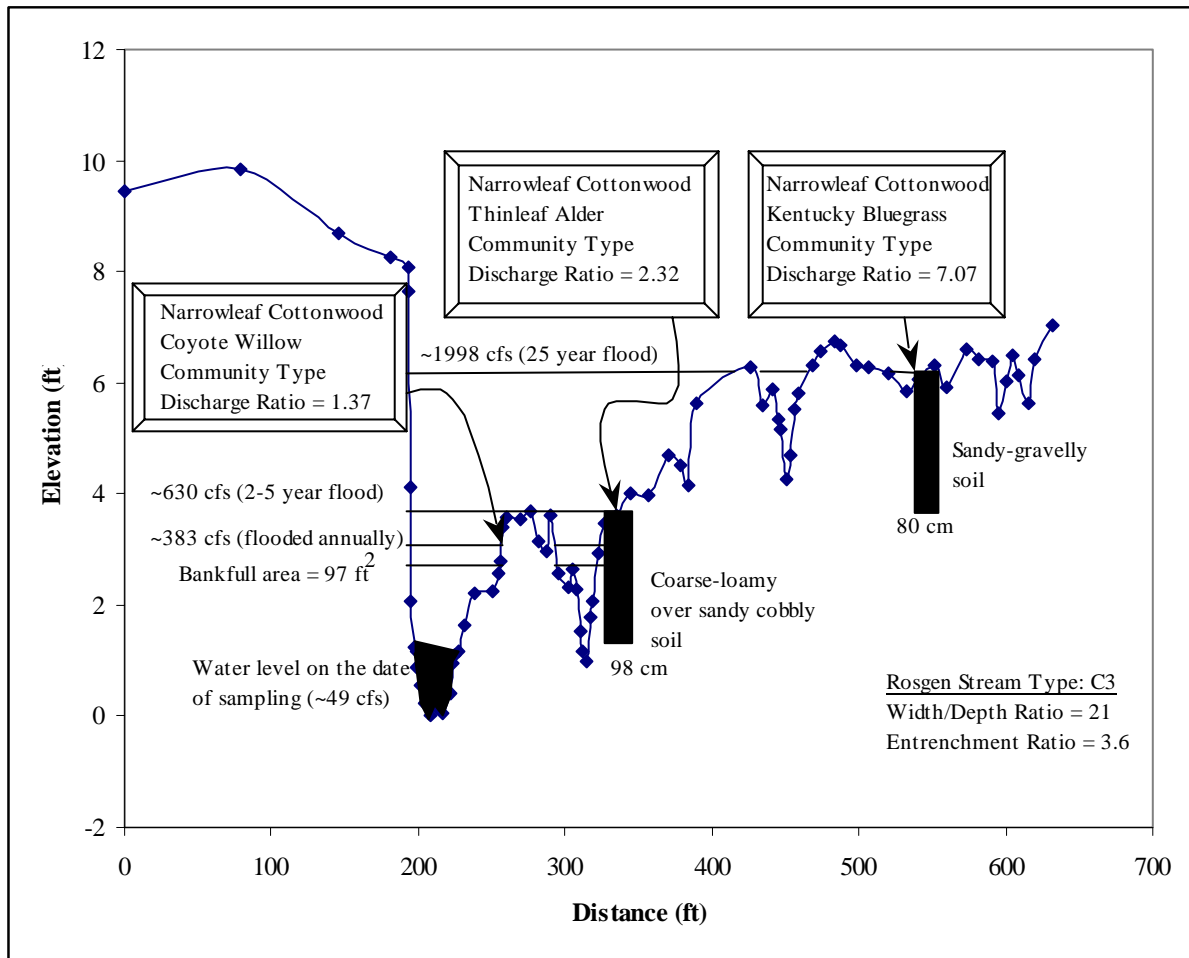


Figure 109. Cross-section of the Chama River (Chama-1) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

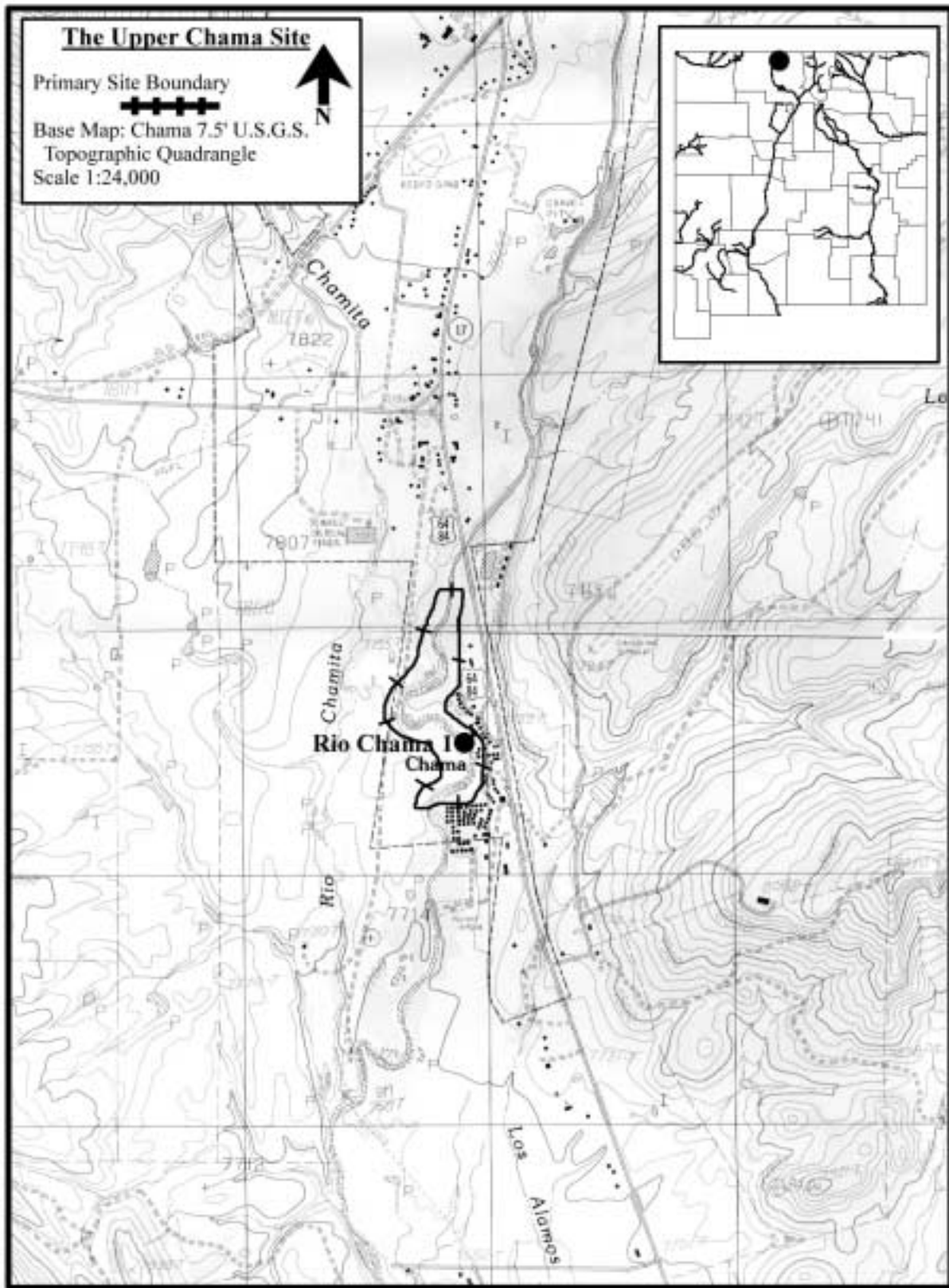


Figure 110. The boundary of the Upper Chama Site. The black dot indicates location of the stream cross-section.

Upper Nutria Canyon

Watershed: Little Colorado **River:** Rio Nutria **Reach:** Rio Nutria
Site Number: 256 **Basin Number:** 15020004 **County:** MCKINLEY
Town: 12N **Range:** 16W **Section:** 08 **Northing:** 3910688 **Easting:** 177823
Quad. Map Name: UPPER NUTRIA **Site Size:** 9.4 Ha **Stream Length:** 2.45 km
Site Quality: A- **Rosgen Stream Type(s):** B1

Site Description: The Upper Nutria Canyon Site is located in the Zuni Mountains south-east of Gallup. The Rio Nutria is characterized by a narrow canyon bordered by steep rock wall. Channel materials consist of bedrock outcrops, stones and boulders. The riparian vegetation is dominated by thinleaf alder and Pacific willow. This community is found on aggraded streambanks and sidebars. Other common associates include bluestem willow, dogwood, sumac, and currants. Impacts are few to this site and riparian communities are diverse and in excellent condition.

Vegetation Communities:	Viability Quality Size Final Rank
Thinleaf Alder-Pacific Willow	B A A A-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Excellent **Overall Hydrologic Regime:** Excellent

Landscape Mosaic: Good

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But herbaceous exotics are present.
Grazing: no	But upper part of site is grazed.
Fuel Wood: no	
Dumping: no	
ORV Use: no	
Roads: no	
Mowing: no	
Other Impacts: no	

Data Sources: Personal communication; field sampling.

Cross Section: Rio Nutria 1	Jurisdiction: Private, Cibola National Forest
Plots: 96PD039	Survey Date: 8/14/96
	Investigators: Bradley, Durkin

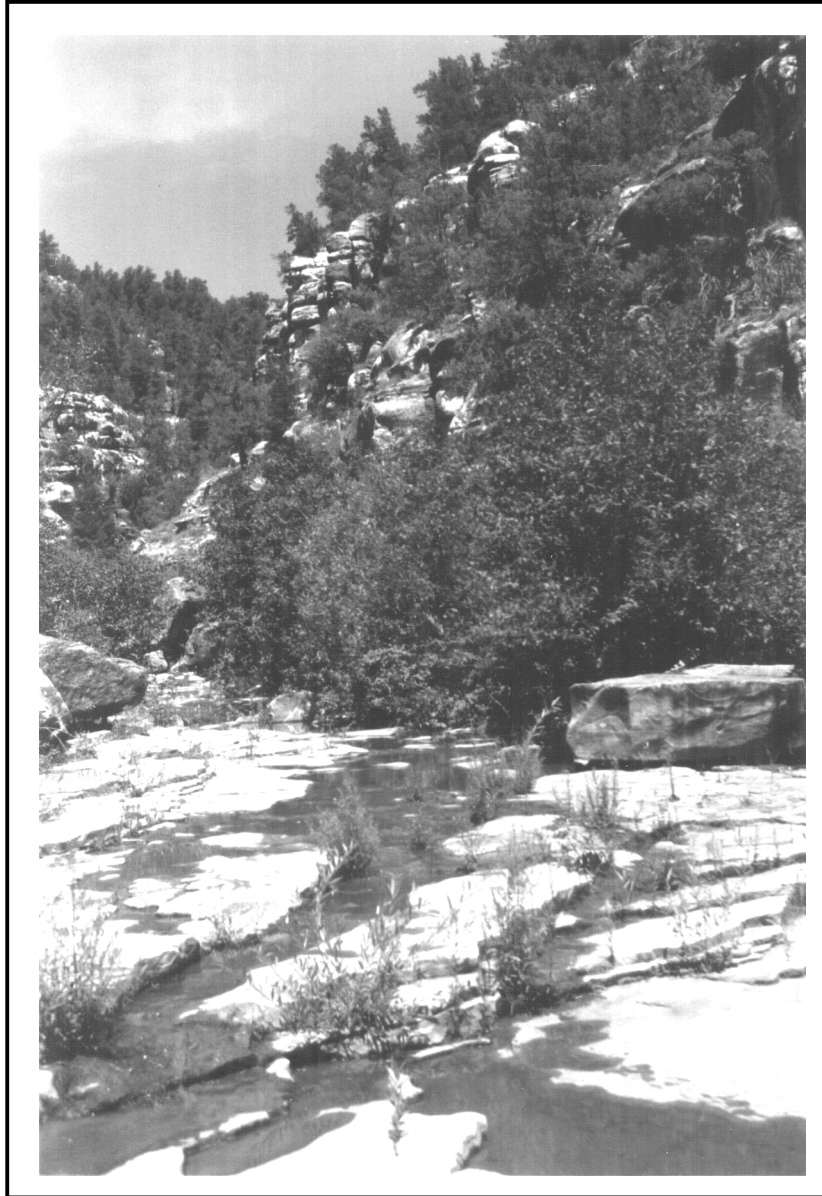


Photo: Mike Bradley

Figure 111. Thinleaf alders and willows dominate much of the Upper Nutria Canyon Site.

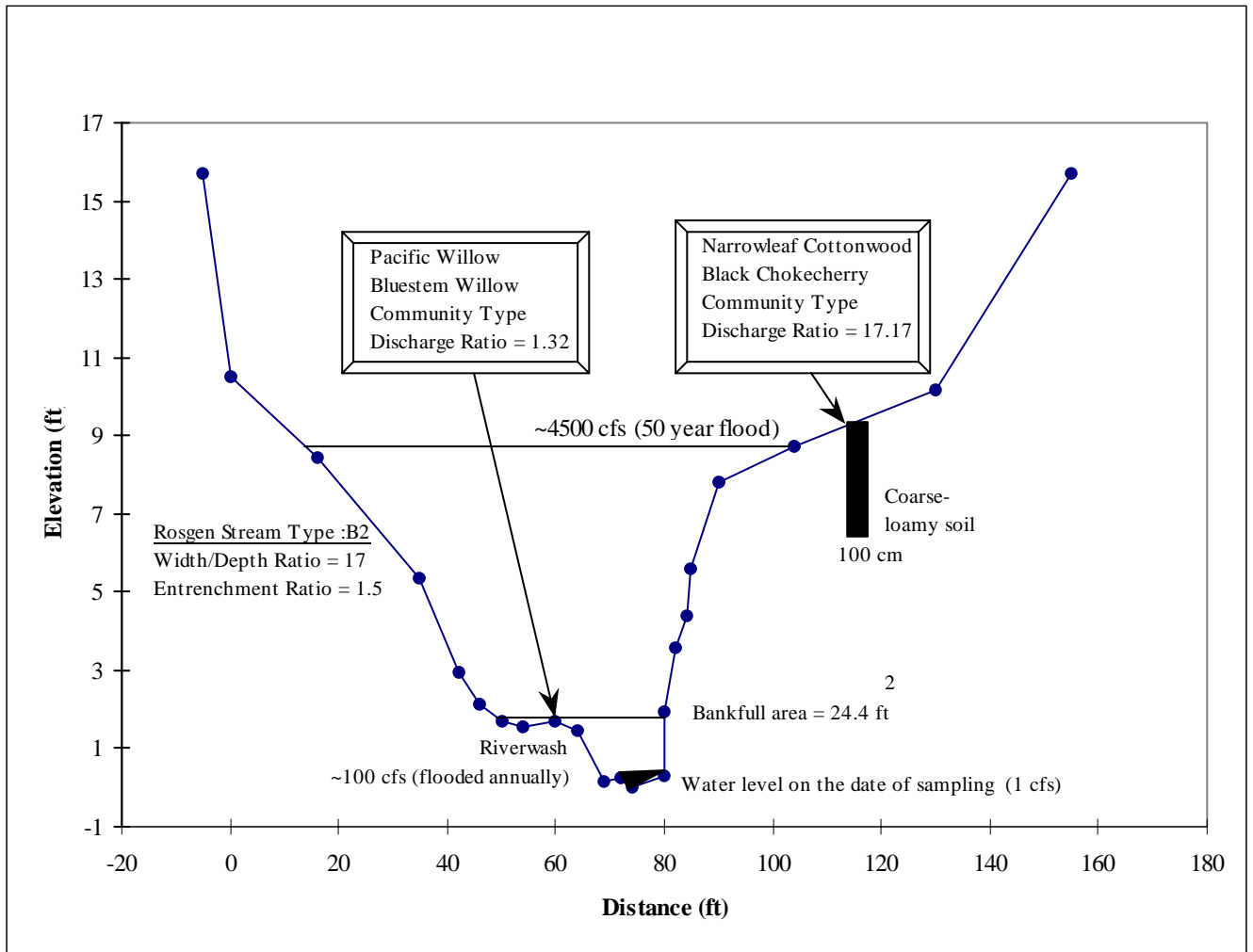


Figure 112. Cross-section of the Rio Nutria (Rio Nutria-2) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

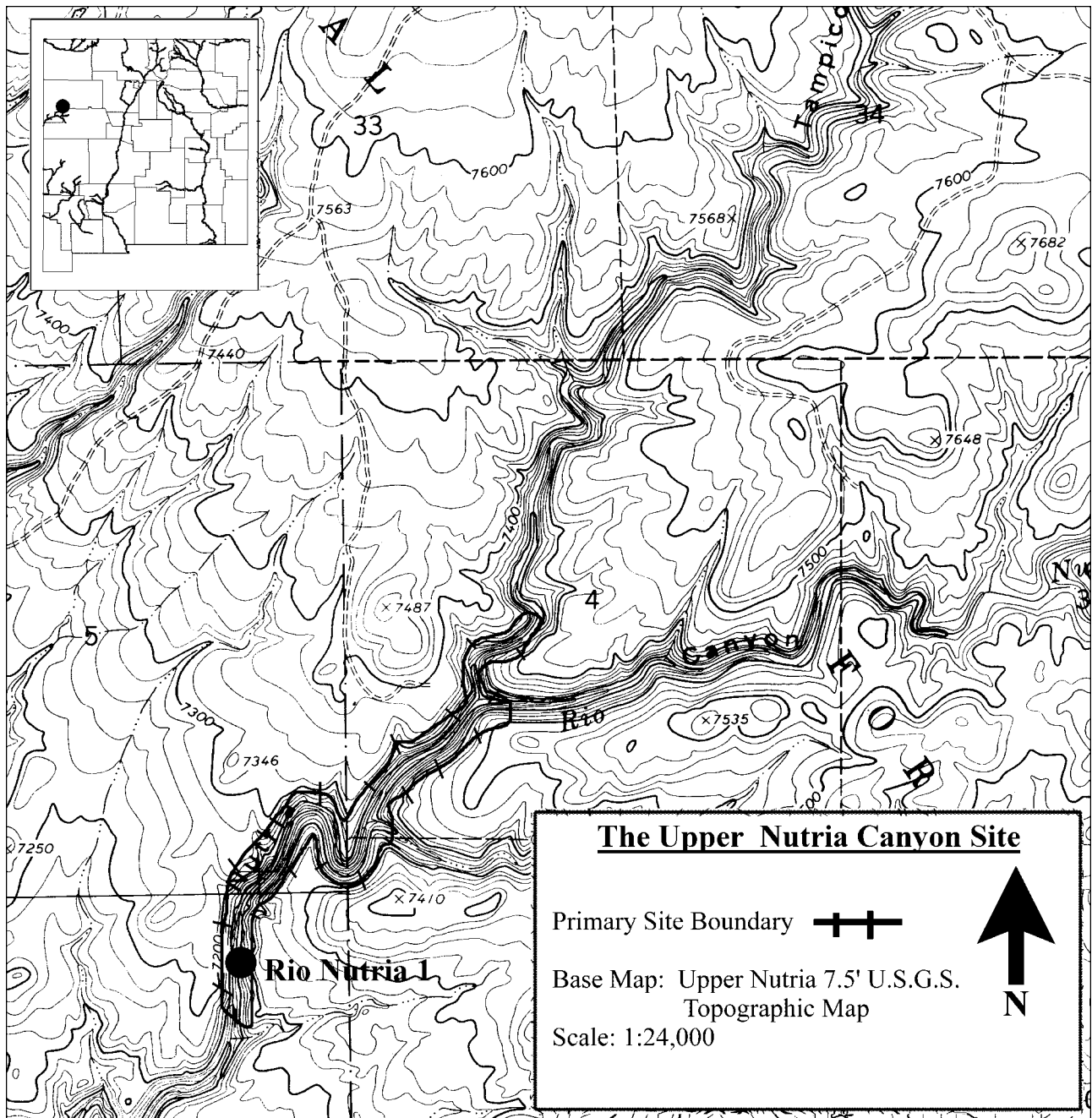


Figure 113. The boundary of the Upper Nutria Canyon Site. The black dot indicates the location of the stream cross-section.

Van Bremmer Park

Watershed: Canadian **River:** N/A **Reach:** Van Bremmer Park
Site Number: 311 **Basin Number:** 11080001 **County:** COLFAX
Town: **Range:** **Section:** **Northing:** 4077200 **Easting:** 491500
Quad. Map Name: VAN BREMMER PARK **Site Size:** 230 Ha **Stream Length:** N/A
Site Quality: A- **Rosgen Stream Type(s):** N/A

Site Description: The Van Bremmer Park Site is located in the Cimarron Mountains west of Raton. The marsh that occurs here is probably one of the biggest natural wetlands in the state. Hydrologically, the marsh is fed by three main drainages and snowmelt. Woolly sedge and spikerush dominate approximately 90% of the wetland with Baltic rush and creeping bentgrass common along the drier periphery. The Woolly Sedge-Spikerush CT is not known to occur anywhere else in the state. Other common species of the marsh include softstem bulrush and threesquare, which are common bordering open water areas. The only impact to this site is a road, which surrounds the wetland and affects the hydrology. Overall, however, the marshland is large, undisturbed, diverse, and in excellent condition.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Woolly Sedge-Common Spikerush	B+	A	A	A-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Excellent

Landscape Mosaic: Good

Floodplain Impacts: **Comments:**

Exotic veg dominant:	no	
Grazing:	yes	Elk graze the area extensively.
Fuel Wood:	no	
Dumping:	no	
ORV Use:	no	
Roads:	yes	A dirt road is on the fringe of the wetland.
Mowing:	no	
Other Impacts:	no	

Data Sources: Ground reconnaissance; field sampling.

Cross Section: None surveyed	Jurisdiction: Private
Plots: 97MB027	Survey Date: 9/ 8/97
	Investigators: Bradley, Durkin



Photo: Ted Cline

Figure 114. The Van Bremmer Park Site is dominated by woolly sedge, common spike rush, and softstem bulrush. This is believed to be one of the largest wetlands in New Mexico.

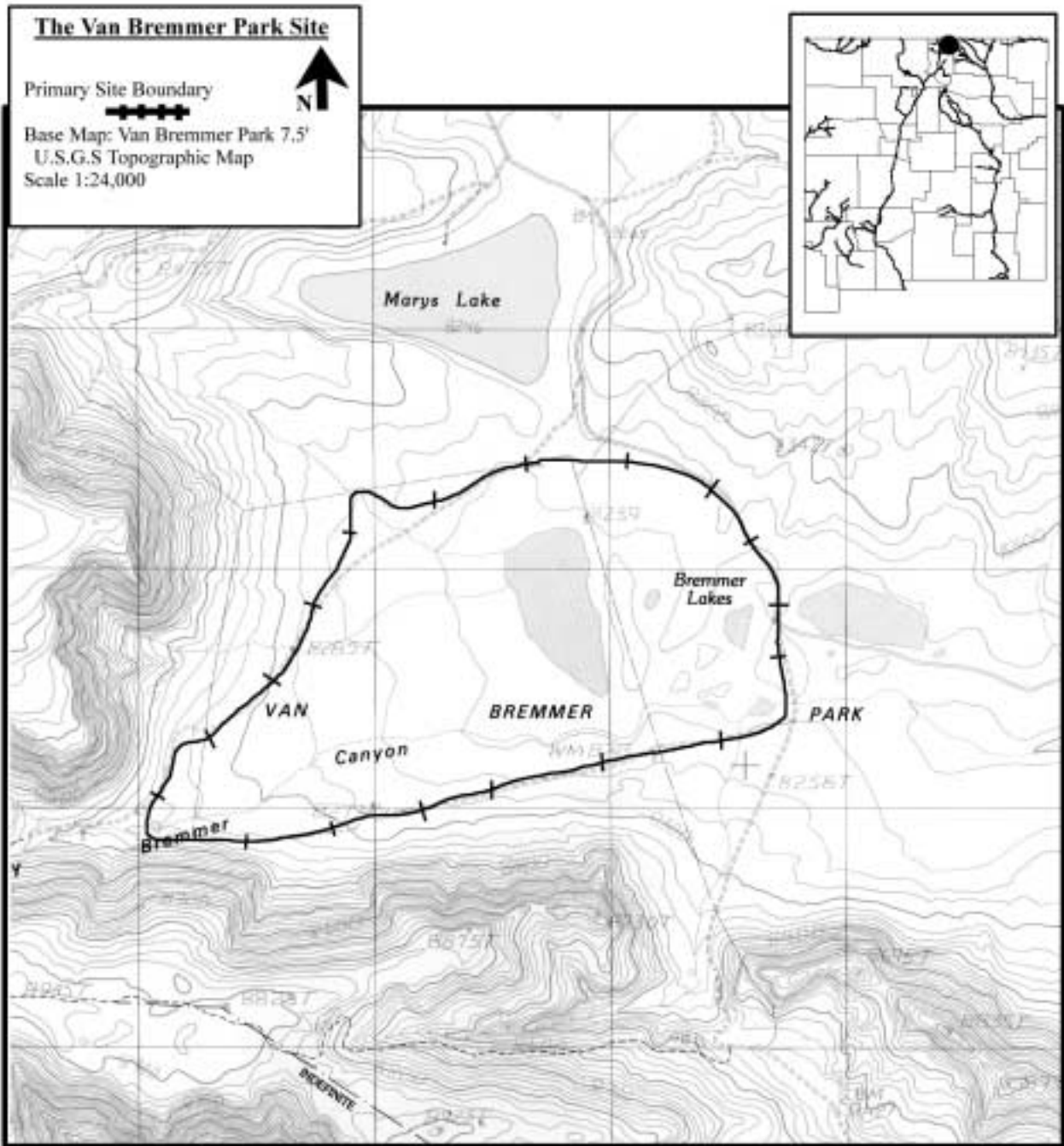


Figure 115. The boundary of the Van Bremmer Park Site.

White Sands

Watershed: Tularosa Basin **River:** N/A **Reach:** WSMR
Site Number: 316 **Basin Number:** 13050003 **County:** OTERO
Town: **Range:** **Section:** **Northing:** 3617923 **Easting:** 372392
Quad. Map Name: LAKE LUCERO NE **Site Size:** 493 Ha **Stream Length:** N/A
Site Quality: A- **Rosgen Stream Type(s):** N/A

Site Description: The shifting white sand dunes that make up the majority of the White Sands Site give the impression that the site is entirely devoid of vegetation. Oases of wetland vegetation do occur in this environment, however, in inter-dunal depressions that collect storm-water. Ground water is usually very close to the surface in these areas unless shifting sands have buried it. Small cottonwood stands dominate these areas with various understory grasses and shrubs including little bluestem, Indian ricegrass, rubber rabbitbrush, and hoary rosemarymint. Overall, these are unique areas and they remain relatively undisturbed.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Rio Grande/Plains Cottonwood/Indian Ricegrass	B+	A	B+	A-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** **Overall Hydrologic Regime:** Excellent

Landscape Mosaic: Excellent

Floodplain Impacts: **Comments:**

Exotic veg dominant: no
Grazing: no
Fuel Wood: no
Dumping: no
ORV Use: no
Roads: no
Mowing: no

Other Impacts: yes Military bombing strikes could slightly affect vegetation cover.

Data Sources: Field sampling, ground reconnaissance.

Cross Section: None surveyed **Jurisdiction:** White Sands Missile Range

Plots: 93MP150 93MP148 93MP154 **Survey Date:** 8/27/93
Investigators: Pando, Thompson



Photo: Esteban Muldavin

Figure 116. The White Sands Site. Rio Grande cottonwoods and Indian rice grass dominate the riparian areas of this site on White Sands Missile Range.

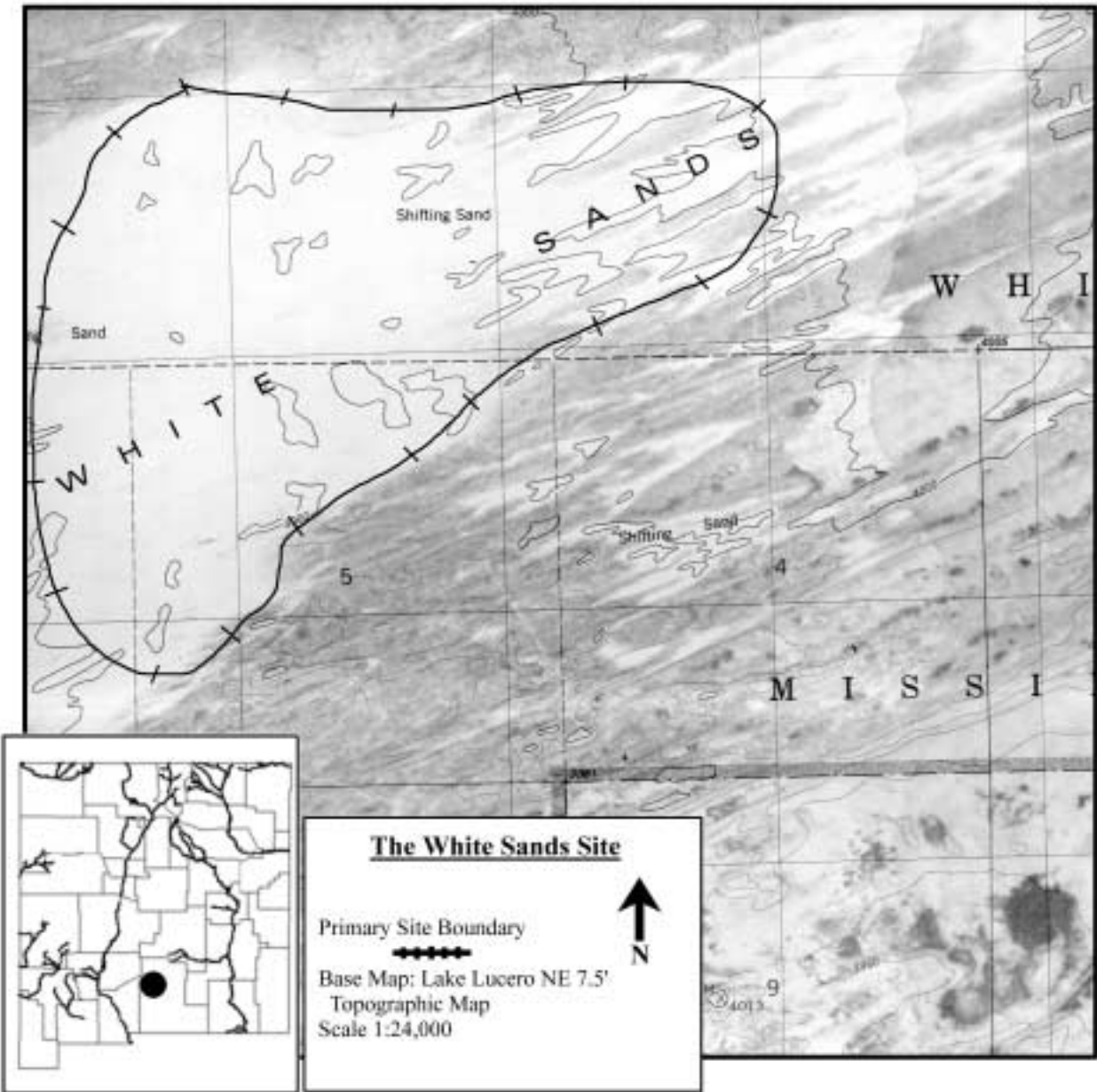


Figure 117. The boundary of the White Sands Site.

Yeso Creek

Watershed: Pecos **River:** Yeso Creek **Reach:** Yeso Creek
Site Number: 290 **Basin Number:** 13060003 **County:** DE BACA
Town: 01N **Range:** 25E **Section:** 26 **Northing:** 3792850 **Easting:** 564710
Quad. Map Name: ALAMO RANCH **Site Size:** 14 Ha **Stream Length:** 1.25 km
Site Quality: C+ **Rosgen Stream Type(s):** E6

Site Description: Yeso Creek is an intermittent stream that supports good quality wetland communities. The creek is a tributary of the Pecos River just a few miles south of Fort Sumner. Seepwillow and alkali sacaton stands dominate the streambanks and side bars of this site. The unique part of this area is the extensive cattail marsh that occurs here. This marsh may be valuable wildlife habitat in an area that is dominated by desert scrub. In areas where the channel pools or the water is slow moving, cattails form monotypic stands. Rio Grande cottonwoods are scarce and not well foliated. Saltcedar is common and presents a threat to the native vegetation of this site. The area is actively grazed as well. There are no major irrigation diversions, but the hydrology is affected by the highway and the bridge.

Vegetation Communities:	Viability	Quality	Size	Final Rank
Broadleaf Cattail/Monotypic Stand	B	B-	A	B-
Emory's Baccharis/Alkali Sacaton	C	B	B	B-

Hydrologic Impacts:
Flow Regulation: No **RipRapped:** No **Dredged:** No **Jetty Jacked:** No
Leveed: No **Streambank Condition:** Good **Overall Hydrologic Regime:** Good

Landscape Mosaic: Good

Floodplain Impacts:	Comments:
Exotic veg dominant: no	But saltcedar is well represented.
Grazing: yes	Cattle evidence is abundant.
Fuel Wood: no	
Dumping: no	
ORV Use: no	
Roads: yes	A highway fragments the site and affects hydrology.
Mowing: no	
Other Impacts: no	

Data Sources: Ground reconnaissance; field sampling.

Cross Section: Yeso Creek 1 **Jurisdiction:** Private, BLM
Plots: 93PD060 93PD061 **Survey Date:** 9/16/93
Investigators: Bradley, Durkin



Photo: Mike Bradley

Figure 118 The channel of Yeso Creek is dominated by cattails while streambanks are vegetated by seepwillows, saltcedar, and alkali sacaton.

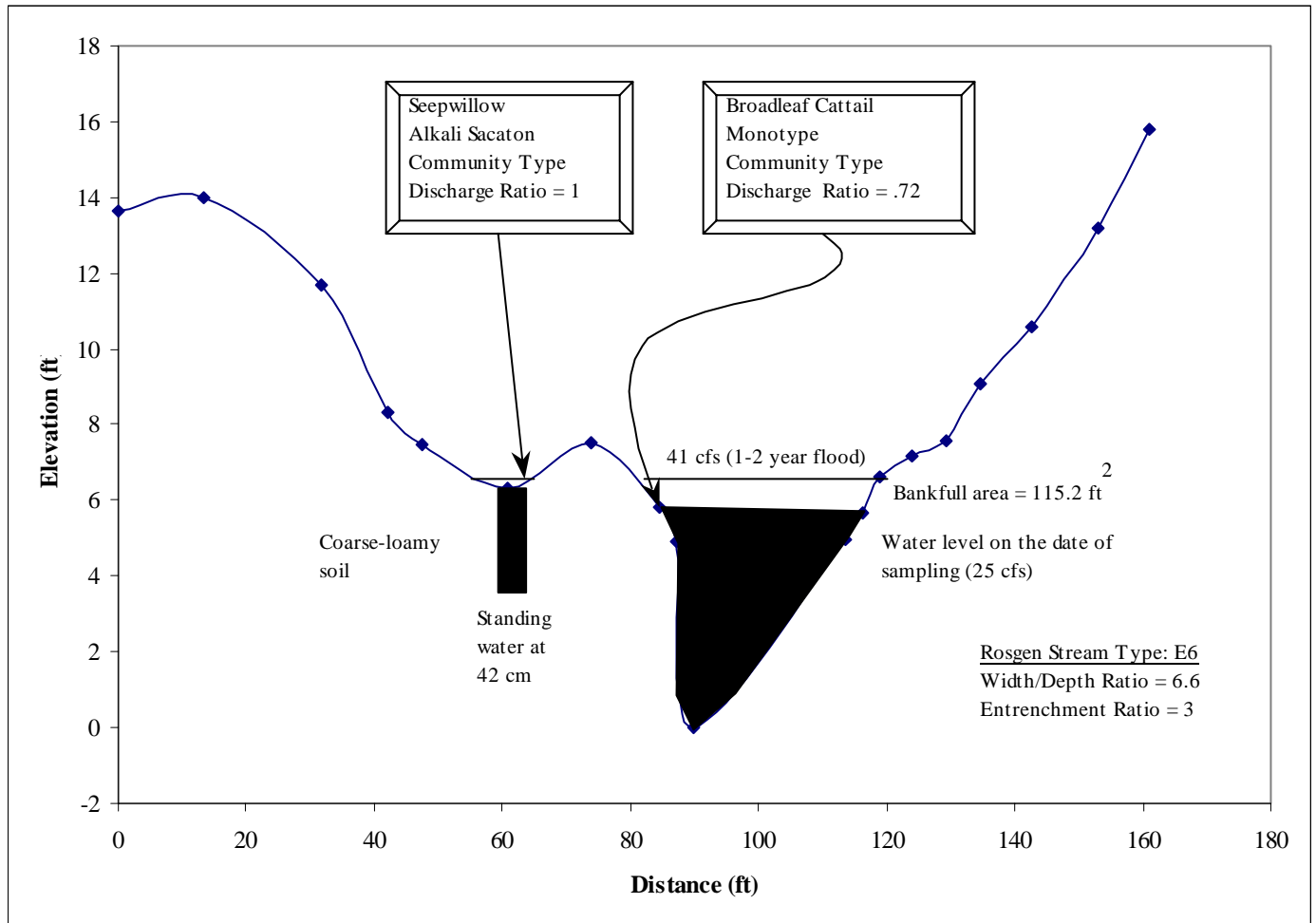


Figure 119. Cross-section of Yeso Creek (Yeso-1) showing the location of the community types (incidental types are in brackets), the water levels required to flood them, their respective discharge ratio, bankfull cross-sectional area, predominant soil texture, and depth of soil pit (if present). All flow and recurrence interval data are rough estimates and should be considered preliminary.

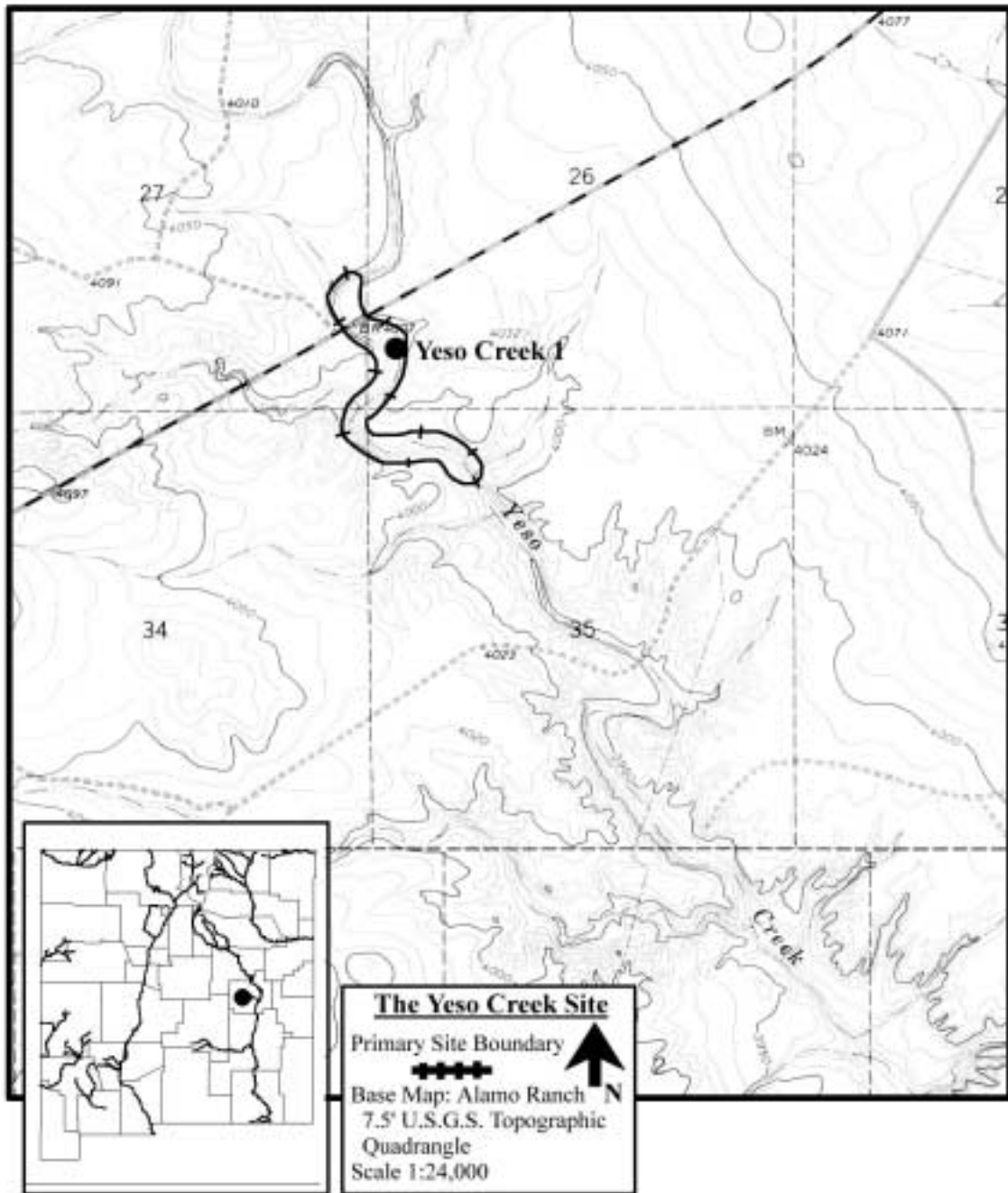


Figure 120. The boundary of the Yeso Creek Site. The black dot indicates location of the stream cross-section.

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