

CONCEPTUAL PLAN
COLORADO RIVER WHITEWATER IMPROVEMENTS
PALISADE TO FRUITA
BY RECREATION ENGINEERING & PLANNING

Introduction:

This report, funded by the Grand Junction Riverfront Commission, is intended to investigate the feasibility of constructing whitewater river improvements within the Colorado River, between Palisade and Fruita. These projects are in response to the growing interest in whitewater boating in the area. Many people are trying the sport including the use of kayaks, canoes, inflatable boats, rafts, etc. It is a great way to learn outdoor skills, get quality exercise, learn about river safety, and have fun.

This area of the Colorado River is designated by the U.S.F.W.S. as critical habitat for the following two federally endangered fish: Colorado Pike Minnow, and Razorback Sucker. These projects will be designed to avoid negative impact to the habitat for these fish and, when possible, will seek to improve river characteristics to enhance fish habitat for these endangered species. Improving diversity of habitat as well as adding structure to various areas may help endangered fish habitat. Since these fish are quick "spurt" swimmers, they can easily swim up short distances of fast water. The drops and constrictions in the channel are envisioned to be similar to other areas that these fish would naturally encounter. Multiple channels, backwater areas, and slow deep pools will be left undisturbed where good habitat is present.

**Project
Description:**

Proposed locations for these river improvements are near or in cities and towns in the Grand Valley. Factors such as channel width, stream gradient, habitat characteristics, and flow volume dictate specific locations. New pools and narrow drops can allow for boating year-round, except when the pools freeze or during very low flows.

These improvements can consist of:

1. In-stream whitewater improvements such as drops, pools, constrictions, and random boulder placements. In addition, backwater pools and eddies may improve fish habitat.
2. Selective bank access improvements (i.e. put-ins and take-outs, gravel river trail, etc.) and bank regrading/restoration (i.e. vegetated terraces, boulder toe, seating areas, re-vegetation, etc.)
3. Existing and proposed trails in the area and parking is shown at each site and should be designed with these river parks in mind.

CONCEPTUAL PLAN
COLORADO RIVER WHITEWATER IMPROVEMENTS
PALISADE TO FRUITA
BY RECREATION ENGINEERING & PLANNING

4. Additional park improvements (i.e. formal parking, shelters, restrooms, changing rooms, etc.) can be included within the project as part of existing or proposed park plans.

All of these improvements are envisioned to be attractive, functional, permanent, and designed to blend in with and improve the natural environment.

Multiple Objectives:

These projects will serve many users. The whitewater drops and pools can improve fish habitat. Many fishermen can frequent the whitewater park area both during boating season and during the off-season. The area can be popular for walkers, joggers, picnickers, and for just spending time next to the river to watch the boaters. Many disadvantaged citizens can use the area through city and school boating and adventure programs or just for a summer inner-tube ride.

Maintenance:

In-stream improvements are virtually maintenance free unless there is a failure due to a major flooding event. Maintenance of future park improvements would require typical park maintenance for parking areas, restrooms, etc.

Anticipated Use:

All improvements should be free and open to the public. Whitewater improvements can be designed for a wide range of boating enthusiasts of all skill levels, with emphasis on the beginner level. Often, local schools can supply boats and instruction for weekly practice sessions for first-timers, encouraging more participation in the sport. Annual boating events (i.e. slalom, rodeo, down river) can also be held at these locations.

Costs:

See the attached cost estimates for each site. Normally, the bulk of this cost is in construction of in-channel improvements. These projects can be built in phases. First, in-stream drops and pools should be designed and constructed, as well as any related path/access construction. Second, formal park improvements, if any should be completed.

CONCEPTUAL PLAN
COLORADO RIVER WHITEWATER IMPROVEMENTS
PALISADE TO FRUITA
BY RECREATION ENGINEERING & PLANNING

Site #1

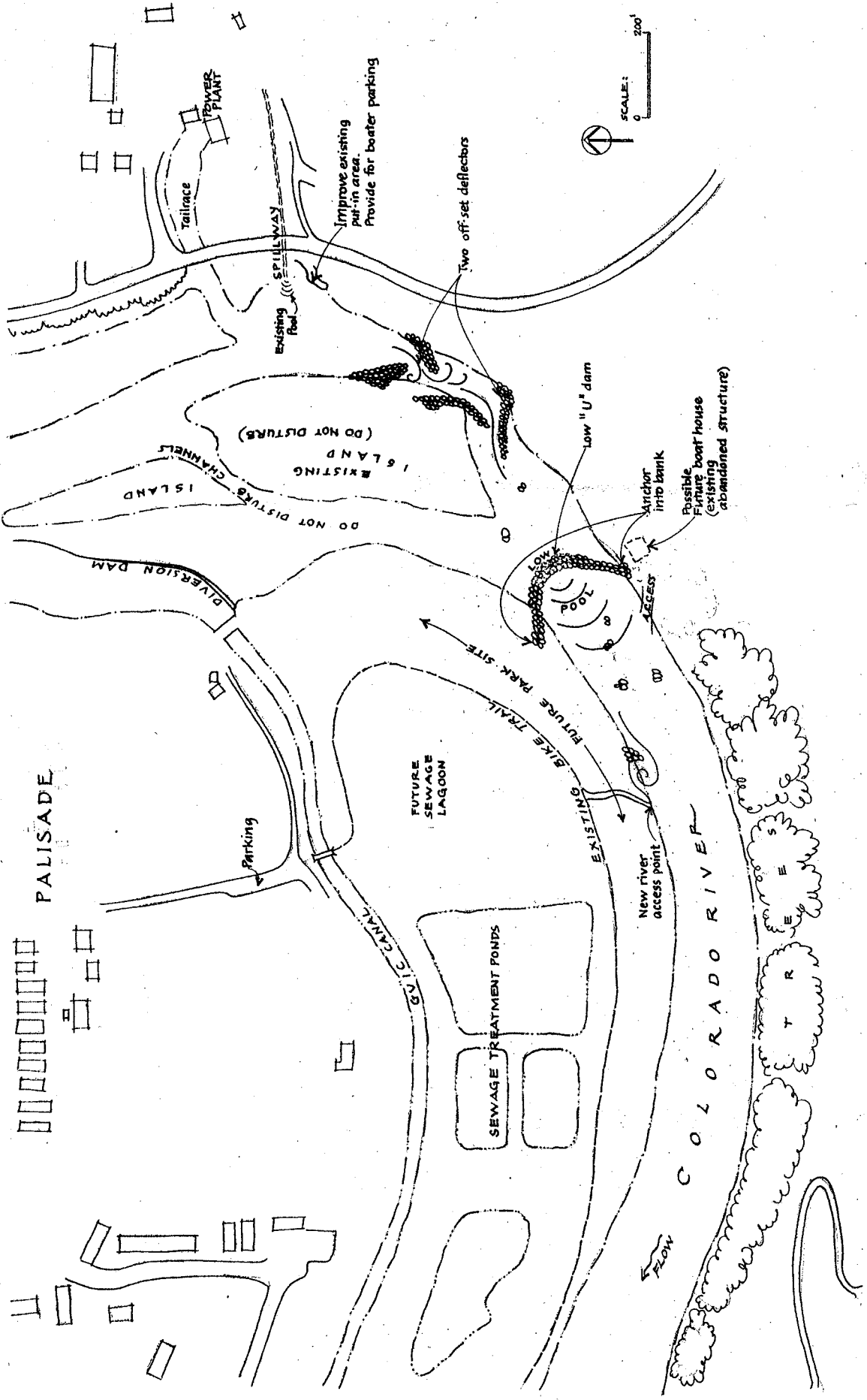
Palisade- River Bend Park Area

This site possesses adequate river gradient and river access for a whitewater park. It is the site of the proposed River Bend Park being planned by the town of Palisade. The proposed in-channel improvements would primarily be located within the eastern channel, downstream of the existing spillway inflow locations. River access can be incorporated within the new River Bend Park development or in the area of the power plant outfall.

Site #1

Cost Estimate

Item	Item Description	Estimated Quantity	Unit Price	Total
1.	Mobilization	L.S.	\$10,000	\$10,000
2.	2 double off-set deflectors (rock and grout)	1600 c.y.	\$60/c.y.	\$96,000
3.	Broad "U" Dam (rock and grout)	1000 c.y.	\$60/c.y.	\$60,000
4.	Large random boulders	12	\$400 ea.	\$5,000
5.	River access improvements	L.S.	\$6,000	\$6,000
			Subtotal	\$177,000
			+ 15%	\$26,000
			TOTAL	\$203,000



PALISADE

POWER PLANT

Toilet

SPILLWAY

EXISTING FOOT

Improve existing put-in area. Provide for boater parking

Two off-set deflectors

SCALE: 0 200'

DO NOT DISTURB CHANNELS
EXISTING ISLAND
(DO NOT DISTURB)

Low "U" dam

Anchor into bank

Possible Future boat house (existing abandoned structure)

TOOD

NEW RIVER access point

EXISTING BIKE TRAIL

FUTURE SEWAGE LAGOON

SEWAGE TREATMENT PONDS

CIVIC CANAL

Parking

COLORADO RIVER

FLOW

TYR

EE

EE

EE

EE

**CONCEPTUAL PLAN
 COLORADO RIVER WHITEWATER IMPROVEMENTS
 PALISADE TO FRUITA
 BY RECREATION ENGINEERING & PLANNING**

Site #2

Highway 32 Road- Corn Lake State Park

This site is located upstream of the Road 32 bridge. The river at this point has adequate gradient for a whitewater park and is fairly narrow. The left bank is a high, steep shale cliff for the full length of the site. The right bank is low with thick vegetation and some high-flow channels. An old concrete bridge pier is located within the channel, designating the upstream end of the site.

There is possible future access along an existing gravel road, west of the Clifton sewage treatment lagoons. There is existing access at Corn Lake and possible access from Road 32. Recommendations for in-channel improvements would consist of offset deflectors and a low "U" structure to confine the flow in order to create waves, pools, and eddies. These structures would be built by anchoring natural-appearing rock and grout into the channel bottom and banks.

Site #2

Cost Estimate

Item	Item Description	Estimated Quantity	Unit Price	Total
1.	Mobilization	L.S.	\$10,000	\$10,000
2.	2 off-set deflectors (rock and grout)	2400 c.y.	\$60/c.y.	\$144,000
3.	"V" Dam (rock and grout)	900 c.y.	\$60/c.y.	\$54,000
4.	Large random boulders	12	\$400 ea.	\$5,000
5.	River access improvements	L.S.	\$5,000	\$5,000
			Subtotal	\$218,000
			+ 15%	\$33,000
			TOTAL	\$251,000

Overflow channels
DO NOT DISTURB
(Endangered
fish habitat)

New
River Access

APPROX
SCALE: 1" = 200'



off-set deflectors

SEWAGE
TREATMENT
PONDS

Existing Abandoned
concrete bridge pier
with
pile

Low 1/2" dam

WILDLIFE
AREA
(DO NOT
DISTURB)

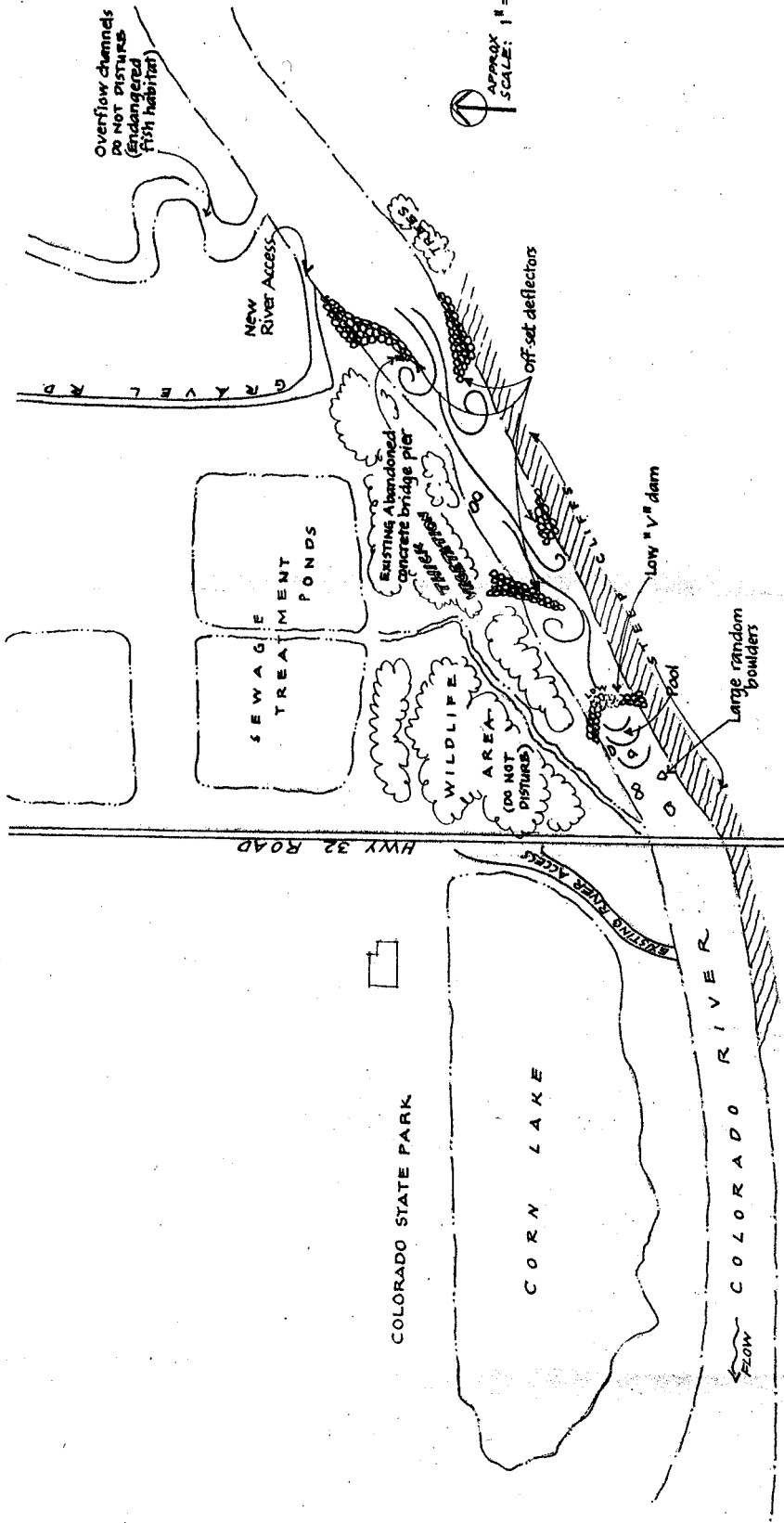
Large random
boulders

Hwy 32 Road

COLORADO STATE PARK

CORN LAKE

EXISTING RIVER ACCESS
FLOW
COLORADO RIVER



CONCEPTUAL PLAN
COLORADO RIVER WHITEWATER IMPROVEMENTS
PALISADE TO FRUITA
BY RECREATION ENGINEERING & PLANNING

Site #3

Las Colonias Park- Watson Island

This site is located between the confluence with the Gunnison River (near 5th Street Bridge) and the new bike/pedestrian bridge at Las Colonias Park. The river has three separate sections with adequate gradient for whitewater improvements:

1. Below the bike/ped bridge
2. Across from Watson Island (up-stream of 5th Street)
3. Between 5th Street Bridge and the confluence

The left bank is a high, steep, shale cliff. The right bank has a flood control levee the full length of the site with some separate small channels between the levee and the main river. Watson Island has public access, parking, and a trail on the island. The Las Colonias Park site is an open field designated for future park development. There are possibilities for improved river access upstream of 5th Street, at the bike/ped bridge area, or downstream of 5th Street, through a breach in the flood levee.

Recommendations for in-channel improvements consist of combinations of offset deflectors and low drops and pools. These structures should create waves, pools, and eddies in all three areas. These structures would be built by anchoring natural-appearing rock and grout into the river bottom and banks.

In addition to the main river channel, there is the opportunity to create a separate whitewater channel along the north edge of Watson Island. The existing channel could be regraded to create natural-appearing drops, pools, and eddies suitable for a whitewater slalom course.

CONCEPTUAL PLAN
COLORADO RIVER WHITEWATER IMPROVEMENTS
PALISADE TO FRUITA
BY RECREATION ENGINEERING & PLANNING

Site #3

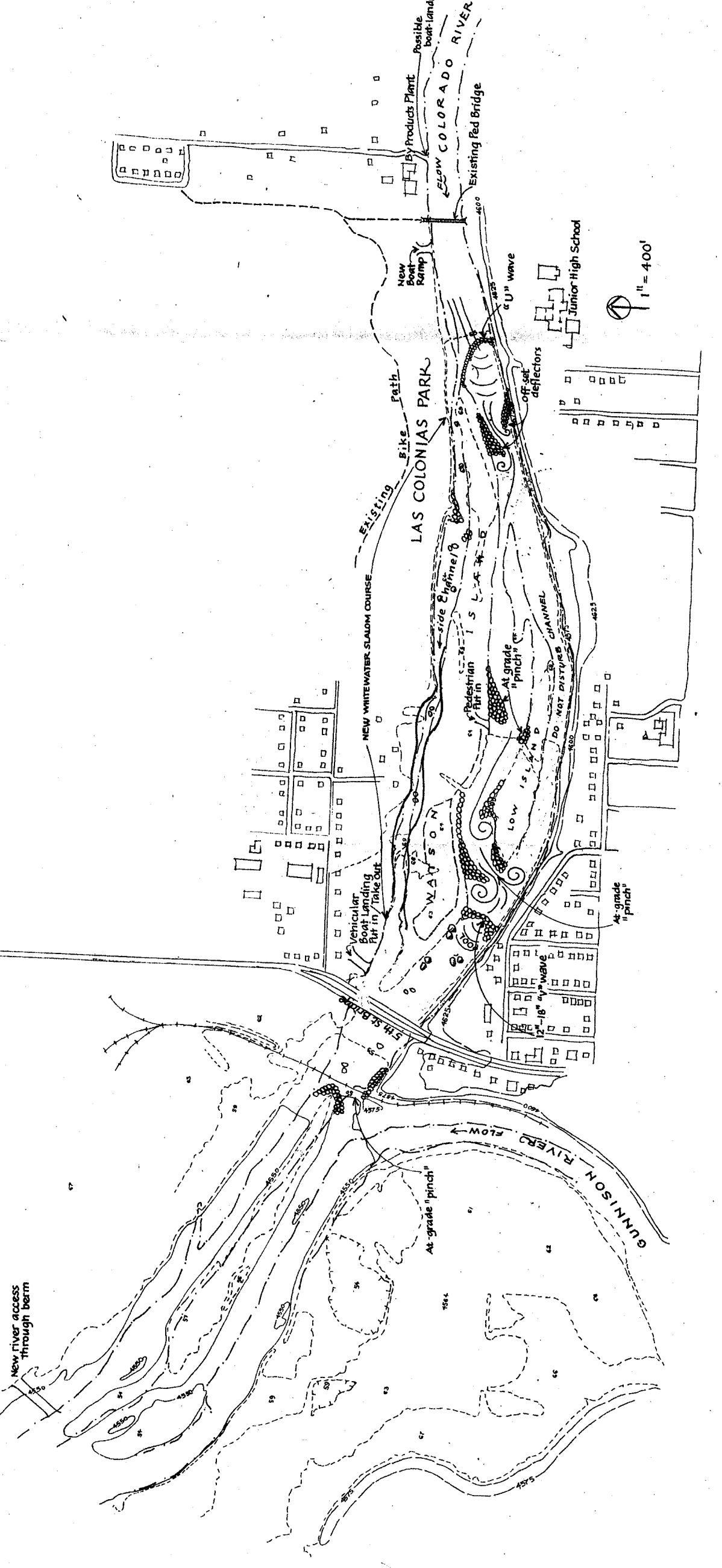
Cost Estimate

Item	Item Description	Estimated Quantity	Unit Price	Total
1.	Mobilization	L.S.	\$10,000	\$10,000
2.	6 deflectors (rock and grout)	3600 c.y.	\$60/c.y.	\$216,000
3.	"U" Dam (rock and grout)	1400 c.y.	\$60/c.y.	\$87,000
4.	"V" Dam (rock and grout)	1100 c.y.	\$60/c.y.	\$66,000
5.	Large random boulders	20	\$400 ea.	\$8,000
6.	River access improvements	3	\$5,000 ea	\$15,000
			Subtotal	\$402,000
			+ 15%	\$60,000
			TOTAL	\$462,000

Whitewater Course in Watson Island Channel

Cost Estimate

Item	Item Description	Estimated Quantity	Unit Price	Total
1.	Grading- excavation and bank regrading	4000 L.F. (10 c.y./L.F)	\$20/c.y.	\$80,000
2.	13 rock and grout structures	200 c.y. per structure	\$60/c.y.	\$156,000
			Subtotal	\$236,000
			+ 15%	\$35,000
			TOTAL	\$271,000



New river access
Through berm

1" = 400'

CONCEPTUAL PLAN
COLORADO RIVER WHITEWATER IMPROVEMENTS
PALISADE TO FRUITA
BY RECREATION ENGINEERING & PLANNING

Site #4

Old Fruita Bridge Site

This site is located upstream of the old bridge near Fruita, which is being converted into a bike/ped bridge. The main channel of the river at this point has adequate gradient. The left bank is a high, steep cliff. The right bank is low and a large island splits the main channel from secondary channels. There is possible river access at the old bridge and possibly upstream near the gravel pit operations. The site may be part of future Fruita/State Park park development.

Recommendations for in-channel improvements would consist of offset deflectors and a low "U" structure, made of natural-appearing rock and grout, anchored in the river bottom and banks.

Site #4

Cost Estimate

Item	Item Description	Estimated Quantity	Unit Price	Total
1.	Mobilization	L.S.	\$10,000	\$10,000
2.	2 deflectors (rock and grout)	2400 c.y.	\$60/c.y.	\$144,000
3.	"U" Dam (rock and grout)	1400 c.y.	\$60/c.y.	\$87,000
4.	Large random boulders	12	\$400 ea.	\$5,000
5.	River access improvements	2	\$5,000 ea	\$10,000
			Subtotal	\$256,000
			+ 15%	\$39,000
			TOTAL	\$295,000



SCALE: 1" = 400'

