TUOLUMNE RIVER MINING REACH RESTORATION
PROJECT No. 2 -- MJ RUDDY SEGMENT

DA 8

I. TITLE PAGE

PROJECT APPLICANT

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PARTICIPANTS:

Tuolumne River Technical Advisory Committee (TRTAC) made up of the Turlock Irrigation District (TID), Modesto Irrigation District (MID), City & County of San Francisco (CCSF), California Dept. of Fish & Game (CDFG), and the U.S. Fish & Wildlife Service (USFWS). Collaborating stakeholder groups with TRTAC are the Tuolumne River Preservation Trust, Friends of the Tuolumne, California Sports Fishing Protection Alliance , Bay Area Water Users Association, East Stanislaus Resource Conservation District, National Marine Fishery Service (NMFS), and local mining operators and landowners.

COST SHARE PARTICIPANTS:

USFWS through the CVPIA-AFRP and TID, MID, and CCSF providing funds through the TRTAC.

SUMMARY DESCRIPTION:

The four Mining Reach projects involve restoration of instream aquatic habitat and shaded riverine aquatic habitat for the primary benefit of San Joaquin fall-run chinook salmon within a 6.1 mile reach (River Mile 34.2 to 40.3) of the lower Tuolumne River below La Grange Dam. The Mining Reach Project will return this reach of the river to a more natural, dynamic channel morphology that will improve, restore and protect instream and riparian habitat for fall run chinook salmon survival, including restoring hydrological and geomorphic processes. Portions of the 6.1 mile long reach will be reformed with a system of setback dikes to create a 500 foot wide riparian floodplain corridor. This includes recreating a riffle and run pattern that follows the restored meander channel of the river along with native vegetation planted on restored river terraces in a mix similar to that found on undisturbed segments of the river. The project elements requested to be funded by CALFED are within the MJ Ruddy Segment, river mile 36.5 to 37.6, the second of the four Mining Reach Projects.

BIOLOGICAL OBJECTIVES:

1. Restore and increase habitat for natural salmon production.
2. Reconstruct a natural channel geometry scaled to current channel forming flows.
3. Restore native riparian plant communities within their predicted hydrological regime.
4. Reduce salmonid fish predator habitat.

II. PROJECT DESCRIPTION

A. PROJECT DESCRIPTION AND APPROACH

The Tuolumne River Technical Advisory Committee (TRTAC), under the auspices of the 1995 Don Pedro Project Settlement Agreement (FERC License No. 2299), is developing a Riparian Corridor Habitat Restoration Plan to restore instream aquatic habitat and shaded riverine aquatic habitat for the primary benefit of San Joaquin fall-run chinook salmon in the Tuolumne River below La Grange Dam. The TRTAC has identified as a high priority project the restoration of a 6.1 mile reach (River Mile 34.2 to 40.3) damaged in the January 1997 floods. This is called the "Mining Reach" because there exists active sand and gravel mining operations within this reach.

The Mining Reach Project is divided into four segments; 7/11, MJ Ruddy, Warner, and Reed. The CEQA / NEPA mitigated EA/IS, and hydraulic design work for all four segments has been funded by available CVPIA - AFRP funds with a TID-MID-CCSF contribution towards permitting costs. Design, permitting, and construction funding for the 7-11 Segment has been provided by AFRP and CALFED. Completion of the construction Mining Reach Restoration will require funding for Segments 2, 3, and 4 over a three year period. This project, known as Project 2 , MJ Ruddy Segment, is a continuation of the Mining Reach project restoration construction currently funded by AFRP and CALFED. As a result of this project , the channel capacity in the project area will increase from 7,000 cfs to 15,000 cfs, the maximum regulated release from Don Pedro Reservoir. The sequence of segments to be constructed and the associated source of funding are intended to allow finished work to remain structurally sound against a designed flood event of 15,000 cubic feet per second in case subsequent funding is delayed or not forthcoming. The geomorphology firm of McBain & Trush designed the Mining Reach projects to tie into the downstream DFG "Reed Restoration Project" funded by the 4-Pumps program and originally scheduled for construction in 1997.

The original Mining Reach proposal from McBain & Trush was developed in 1997 and is Appendix B in the 1998 EA\IS. Copies were also in the original MJ Ruddy submittal, but are not attached to this abbreviated application. The overall scope remains the same, but the timing of construction for certain Phase 1 elements has changed. The attached project maps, M&T Figures 8 -11 from the EA/IS documentation of the project description, show the current labeling for the project elements. Permitting and construction design work for the MJ Ruddy Segment will be performed during the fall and winter of 1999 under existing AFRP contracts. Construction of the upstream 7-11 Segment, under existing AFRP and CALFED contracts, is anticipated to start in mid 1999. Pre construction project specific monitoring, funded by AFRP, started in the spring of 1998.

The four Mining Reach projects will return this 6.1 mile reach of river to a more natural, dynamic channel morphology that will improve, restore and protect instream aquatic habitat and shaded riverine aquatic habitat for San Joaquin fall-run chinook salmon productivity and will

help restore natural hydrological and geomorphic processes. Portions of the 6.1 mile long reach will be reformed to a 500 foot wide riparian floodplain corridor, including the recreation of a riffle and run pattern that would follow the restored meander channel of the river. Native vegetation will be planted on restored river terraces in a mix similar to that found on undisturbed segments of the river. The riparian reforestation is intended to provide food and shade for juvenile salmon as well as terrestrial habitat. Terrestrial species will benefit from a more continuous corridor of riparian habitat in the restored areas. The wider river channel will allow channel meander to provide a sustainable and dynamic river morphology, i.e., flood flow-related channel-bed movement with periodic scour, that partially or fully restores the processes associated with natural salmon production and survival. This project can also can be viewed as a large scale demonstration project to test the effectiveness of the proposed restoration project design and monitoring as applied to similar types of fish and riparian habitat restoration work in other rivers and streams within the Central Valley.

The setback dikes will require significant quantities of imported materials to fill in deep pit areas created by past gravel mining, but this will re-create a riffle and run pattern that follows the restored meander channel of the river. The channel will be hydraulically sized using currently regulated flows to be an active riverine channel with full grown riparian vegetation. These regulated flows periodically could reach as high as 15,000 cfs for short periods. It is anticipated and planned that during these high flow events there will be some movement of the channel within the flood plain to expose added spawning materials and clean existing spawning gravels. To minimize long term future maintenance expenditures, this restoration work is being designed with the intent to provide a self maintaining riparian floodway channel once the revegetation is completed and established.

B. GENERAL CONDITIONS OF PROPOSED WORK

That portion of the reconstruction work in the flowing water of the river with heavy equipment is anticipated to be limited for fishery reasons to an annual opportunity window of 90 working days from mid-June through September of each season when the salmon are not as abundant in the river. Construction out of the water will occur through out the year with appropriate erosion control measures. The restoration plantings are also seasonally restricted to the winter months when planting materials are dormant. Construction design, revegetation design, permitting, and acquisition of conservation easements will be done for this Segment during the construction on the 7\11 Segment. Construction, revegetation, and monitoring will be funded as separate task elements.

Some of the dike and reconstruction materials will be mined from existing tailings deposits, under County use permits, at the upstream end of the mining reach. One benefit of using these tailings is that it may be possible to restore additional floodplain habitat during the mining of these excavation areas. Significant quantities of materials will be purchased from existing active mining areas on the back side of the setback levees to reduce haul costs. If most of the materials are locally available they can be hauled to the project site on private roads, so the impact on public roads should be minimized. The project EA/IS identified and addressed mitigation for utilization and transportation of the various sources of restoration materials locally available for this project. Additional materials for the major setback levees may need to be

imported into the site. There are additional deposits of dredger tailings along the Tuolumne River and near Snelling along the Merced River. We have an option to also utilize some of the clean rock materials from January 1997 flood debris excavated from La Grange reservoir. However, the project materials cost estimates are based on cost information using the local mining sources adjacent to the river.

Creation of the riparian floodway habitat zone by the setback dikes will require the long term maintenance of project improvements. TID and MID are working with the landowners to develop some form of locally administered conservation easement process that protects the public investment, but at the same time protects the property rights of the mining operators land owners. Purchase of these conservation easements will be with AFRP funds.

III. PROJECT LOCATION

The overall Mining Reach project covers a 6.1 mile length of channel and is located on the lower Tuolumne River, between river mile 34.2 and river mile 40.3, approximately 23 miles east of Modesto in Stanislaus County. Project No. 2 MJ Ruddy Segment is between river mile 36.5 and 37.6. The project location is shown in Figures 1 and 2.

IV. EXPECTED ECOLOGICAL OBJECTIVES & PROJECT BENEFITS

1. Reduce salmonid stranding and predation in gravel mining ponds during dike breaks that occur at high river flows and flood events.
2. Restore and increase habitat for natural salmon production.
3. Reconstruct a natural river channel geometry scaled to current channel forming flows.
4. Restore native riparian plant communities within their predicted hydrological regime.

The Mining Reach projects address the ERPP objectives and visions for the Tuolumne River Ecological Unit identified on pages 409 & 410 of the ERPP Vol. II. These include restoration of stream & riparian habitat; ecological processes; gravel recruitment, transport, and cleaning processes; a diverse self-sustaining riparian corridor; and predator reduction.

A. BACKGROUND & TECHNICAL JUSTIFICATION

The Tuolumne River is a major tributary of the San Joaquin River. The Don Pedro Project is the largest reservoir located above the fall-run chinook salmon spawning reach on the Tuolumne River. Don Pedro Reservoir is owned by the TID and the MID and is licensed by the Federal Energy Regulatory Commission (FERC).

The fall run chinook salmon in the tributaries of the San Joaquin River are currently listed as a species of concern by the USFWS. Anadromous salmonid populations in the lower Tuolumne River require adequate ecosystem health to achieve and sustain their potential productivity. Restoring and maintaining dynamic geomorphic processes are crucial for insuring healthy river ecosystems with natural productive salmonid populations. When complete restoration of a river ecosystem is infeasible, as for alluvial rivers regulated by dams, limiting factors, such as limited available spawning riffles and associated habitat and periodic entrapment

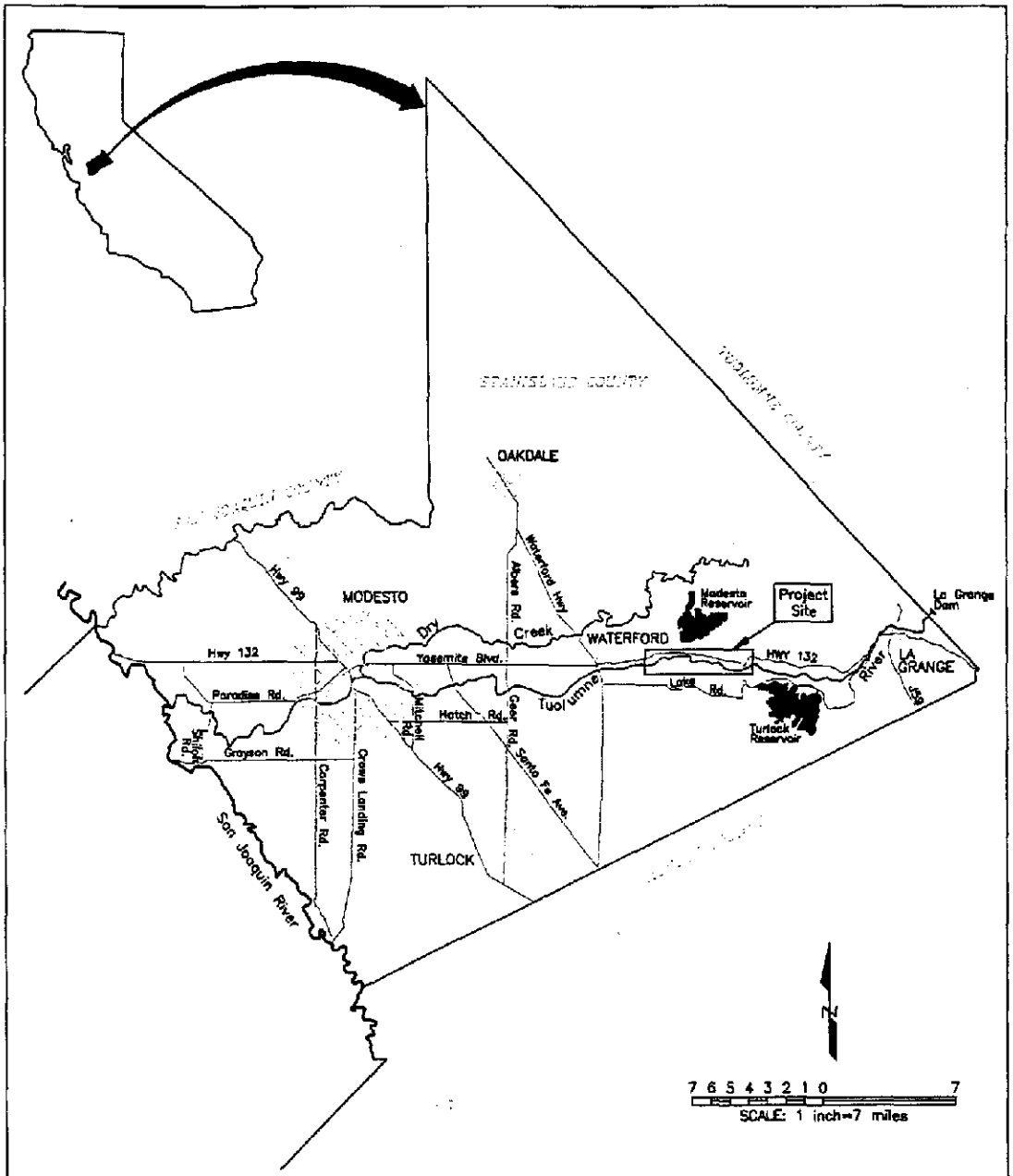

FIGURE 1 PROJECT SITE LOCATION
GRAVEL MINING REACH FLOODWAY RESTORATION
TUOLUMNE RIVER MILE 34.2 TO 40.3

McBain & Trush 1999

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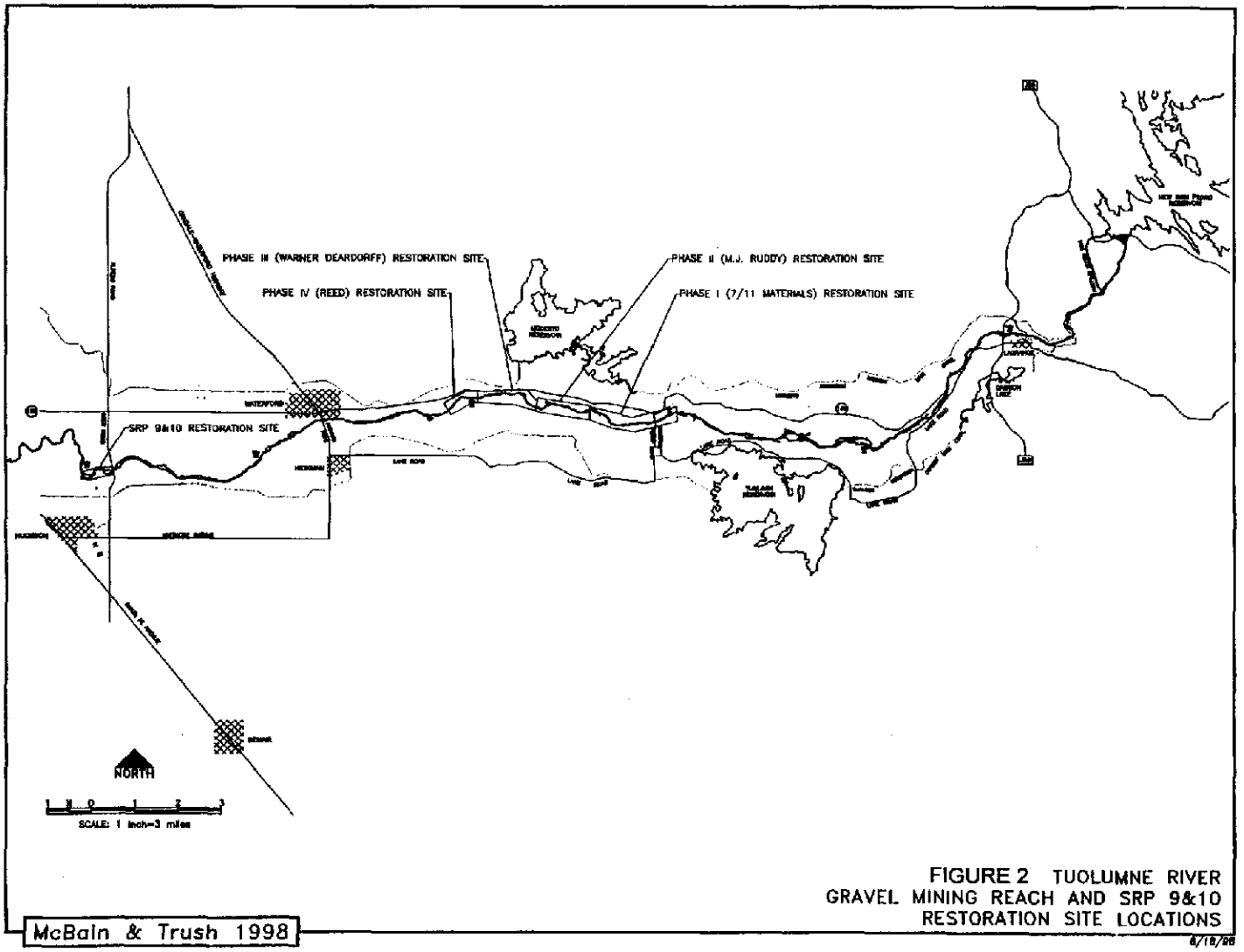

FIGURE 2 TUOLUMNE RIVER
GRAVEL MINING REACH AND SRP 9&10
RESTORATION SITE LOCATIONS

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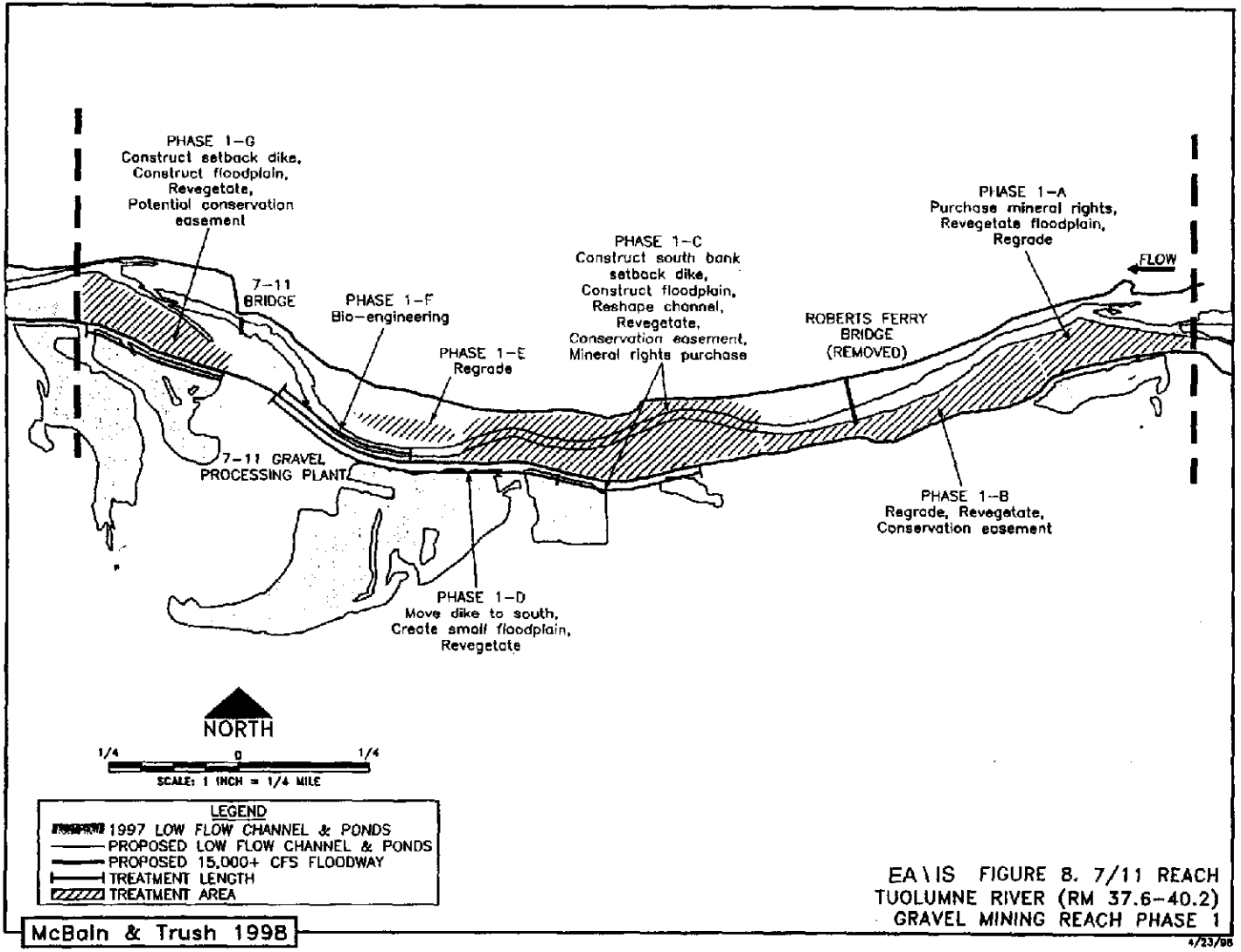
of juvenile salmon in mining pits during high river flows, must be identified for prioritizing actions that would best improve the ecosystem, particularly salmonid habitat.

The TRTAC specifically identified habitat conditions to be improved for the enhancement of natural salmon production in the Tuolumne River. The TRTAC has developed a final draft integrated, long-term fish and riparian habitat restoration plan and monitoring program that utilizes adaptive management for enhancing the natural production of salmon. The TRTAC and the AFRP have each funded $117,500 towards developing this integrated restoration plan, including a public outreach program. The river has been divided into seven reaches with individual segments representing specific types of restoration projects within each reach. Some of these projects focus on restoration of geomorphic processes, others for riparian restoration and predator reduction, and still others deal with gravel re-introduction and cleaning.

The Tuolumne River supports a population of fall-run chinook salmon, whose numbers have fluctuated from 40,000 fish in 1985, to a low of 100 fish in 1991, and is on another upward swing with 7,200 fish in 1997 and 7,900 in 1998. One of many stressors identified in recent studies on the Tuolumne River that limit salmonid populations is the aggregate extraction pits, which are a byproduct of extensive in-stream and off-channel mining. Many of these instream and off-channel pits have negatively impacted salmonid populations by stranding juveniles in ponds and fostering predator fish populations (bass). Additionally, spawning and rearing habitats have been negatively impacted by either complete removal during aggregate extraction, degradation by channel encroachment, or fine sediment infiltration. Many of the off-channel pits had a small topsoil berm separating them from the river. Common floods (e.g., 1983,1986,1995) of 6,000 cfs to 11,000 cfs have breached some of these berms. In addition, the January 1997 flood (estimated at 59,000 cfs) breached nearly every berm in the Mining Reach. Aggregate miners completed emergency repairs to separate some of the ponds from the Tuolumne River and placed the river back into its pre-flood channel in the fall of 1997. However, most of these emergency repairs are only a temporary solution, as shown by the breach of the Warner Segment dike in 1998 at flows of less than 7,000 cfs.

The floods of January 1997 provided a unique opportunity during the development of the Restoration Plan to design a 6.1 mile model riparian habitat floodway with a system of setback dikes. The ecological benefits of a restored floodway, with increased flood capacity downstream of La Grange providing a long-term flood protection in this reach and capacity for a more variable flood flow regime, presents an opportunity with common objectives among the irrigation districts, landowners, mining interests, and those interested in restoration. The goal of this project is to restore riparian habitats, salmonid habitats, and a continuous floodway through this six mile reach of the Tuolumne River. The objectives include:

1. Improve salmonid spawning and rearing habitats by restoring an alternate bar (pool riffle) morphology, restoring spawning habitat within the meandering channel, and filling in-channel mining pits;
2. Improve juvenile salmon survival by preventing future connection between the Tuolumne River and off-channel mining pits;
3. Restore native riparian communities on appropriate geomorphic surfaces (i.e., active channel and floodplain terraces) within the restored floodway;



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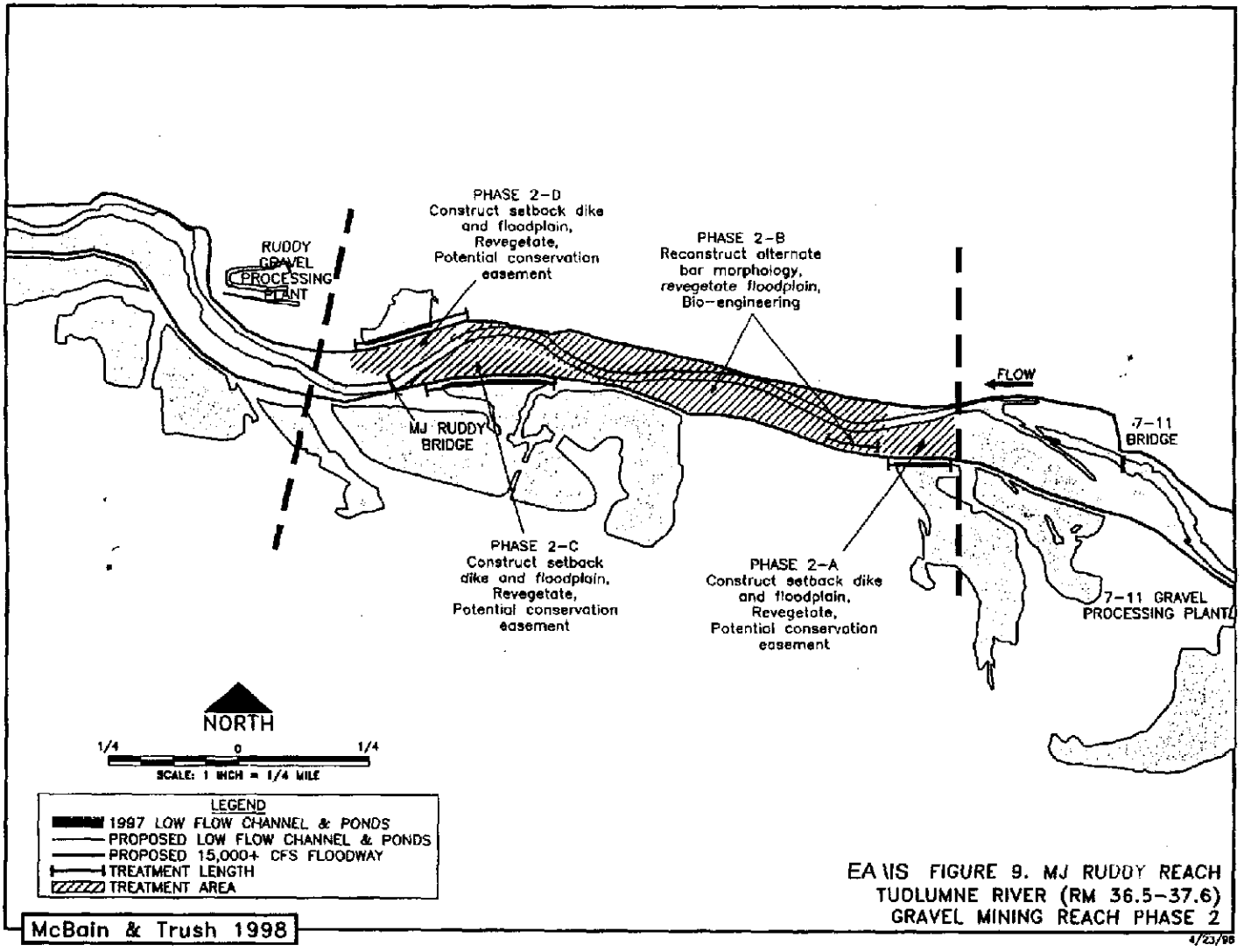

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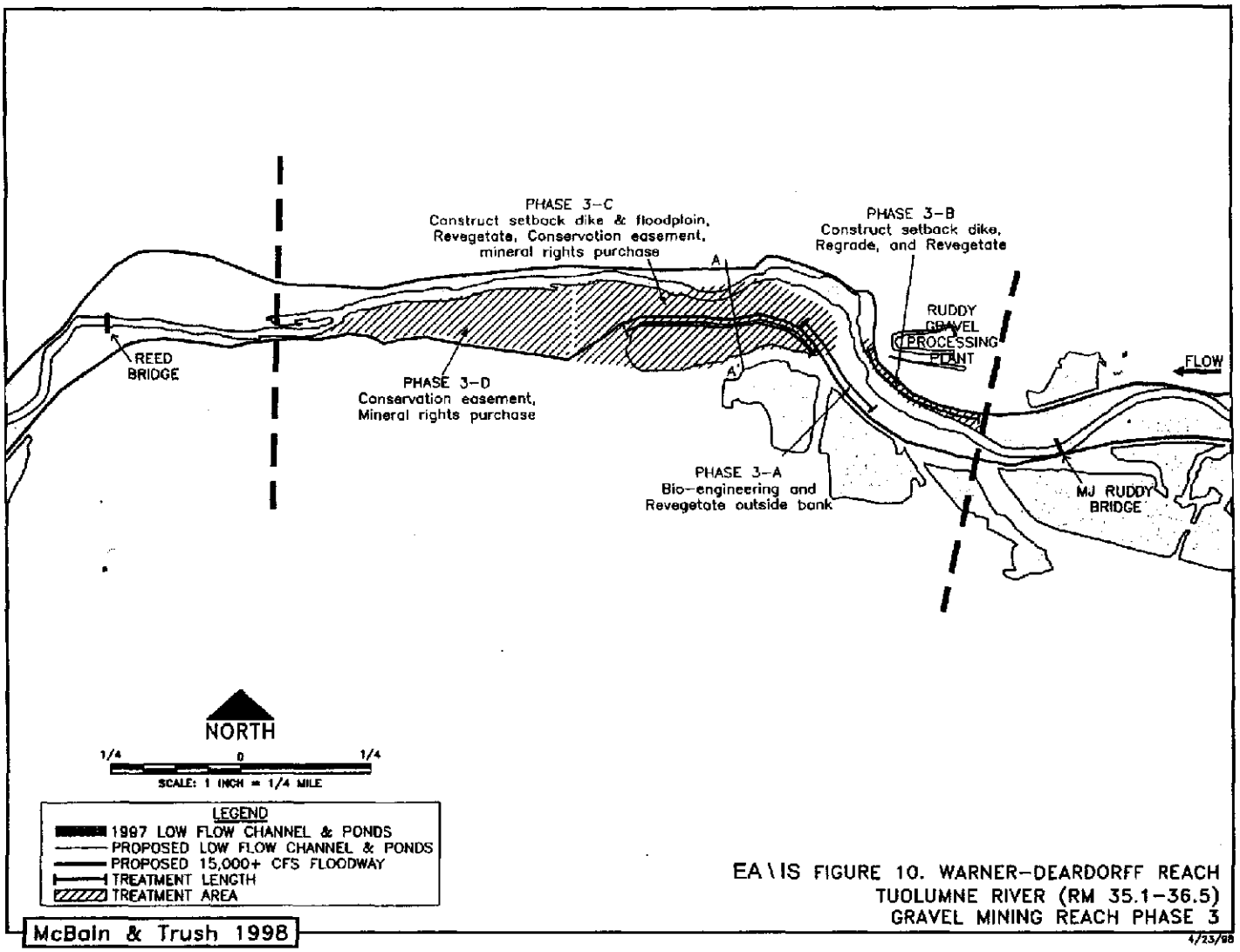

EA\IS FIGURE 10. WARNER-DEARDORFF REACH
TUOLUMNE RIVER (RM 35.1-36.5)
GRAVEL MINING REACH PHASE 3

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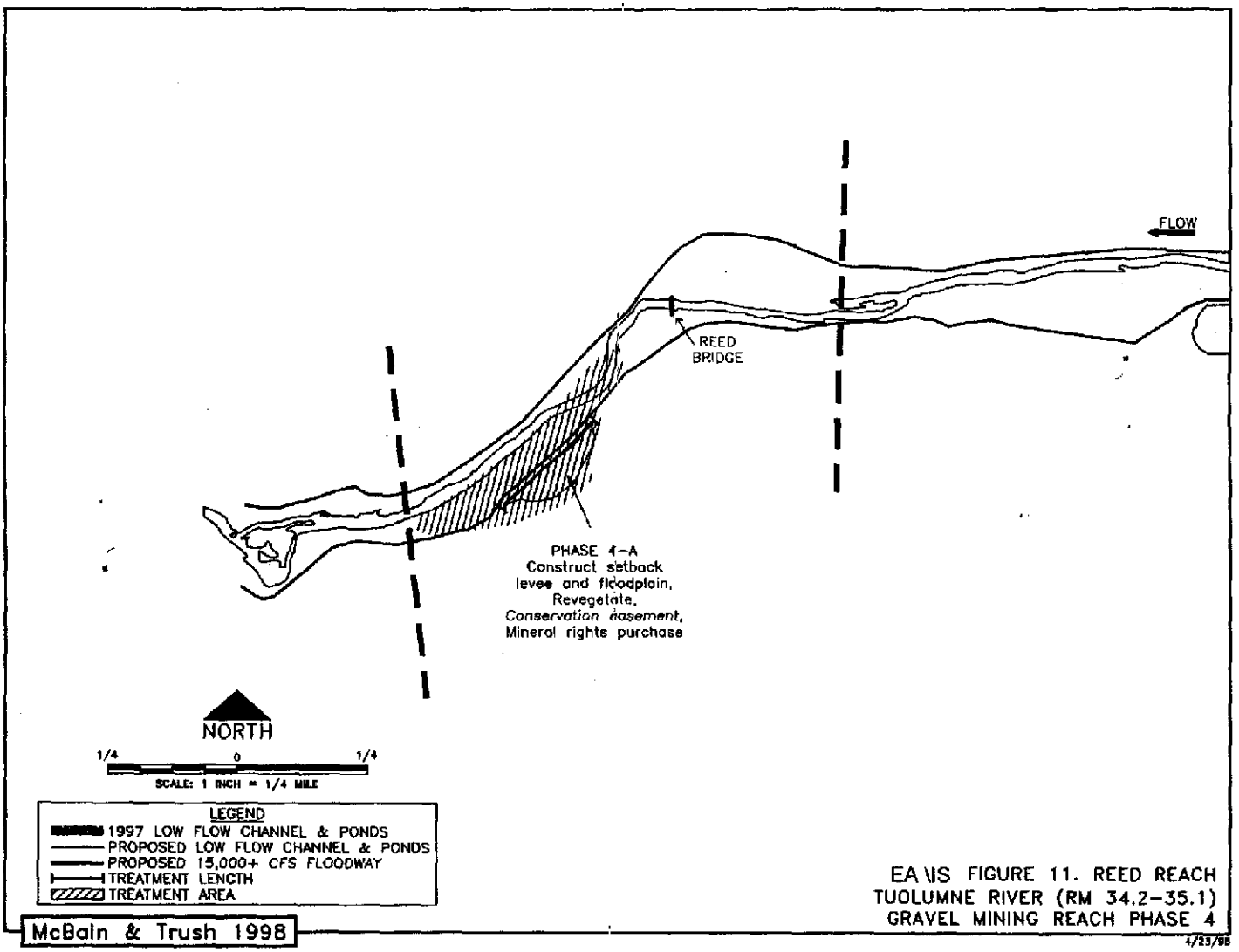

EA \IS FIGURE 11. REED REACH
TUOLUMNE RIVER (RM 34.2-35.1)
GRAVEL MINING REACH PHASE 4

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4. Restore habitats for special status species (e.g., egrets, ospreys, herons);
5. Isolate off-channel aggregate extraction pits that were connected to the Tuolumne River by the January 1997 flood;
6. Restore a fully vegetated riparian floodway width that will safely convey up to 15,000 cfs, the maximum regulated flood flows from Don Pedro Dam;
7. Allow the river channel the ability to migrate within the restored floodway to improve and maintain riparian and salmonid habitat;
8. Remove floodway "bottlenecks created by inadequate berms that are subject to failure at threshold flows, (6,000 cfs) thus protecting aggregate extraction operations and other human structures from future flood damage.

NOTE: The attached four maps, Figures 8 through 11 from the EA/IS, show how the typical design and restoration treatments are integrated within the entire Mining Reach Project, starting with the 7-11 Reach (RM 37.6-40.3), the M. J. Ruddy Reach (RM 36.5-37.6), the Warner-Deardorff Reach (RM 35.1-36.5), and finishing with the Reed Reach (RM 34.2-35.1).

V. MONITORING PLAN

A detailed mitigation and monitoring program for the Mining Reach was developed with the project EA/IS, Attachment D; 27 pages. Assuming continued funding for this and the remainder of the Mining Reach segments, Tables 1 and 2 from the EA\IS summarize the basic monitoring program and cost estimates over the life of the restoration project. With the delay in starting construction in the 7\11 Segment, the post construction portions of the schedule have shifted one year. This allows two years of pre-project data to be collected. The monitoring activities can be grouped into three basic areas:

1. Physical & Geomorphic Processes:
   Pre and post construction changes will be recorded from the as-built engineering drawings. This assures that the desired channel contours, cross sections, and thalweg line were built as designed and these as-built records can be used to assess future geomorphological changes after major flood events. Bed mobility using tracer rocks will be used to evaluate fluvial processes. Gravel quality will be monitored under the FERC Settlement Agreement (FSA) monitoring program.

2. Riparian habitat:
   Revegetation will require annual inspections during the first few years to confirm survival of planted materials, perform replanting if deemed necessary, and to assess natural changes in the vegetation mix. This will be part of the contractor's warrantee period. Monitoring vegetation would then be reduced to evaluations after significant flood events.

   Note: The riparian forest restoration planting is designed to accommodate monitoring. There are 19 different hexagonal planting units classed by predominant vegetation type. These planting units are grouped together to recreate the diverse mosaic patches and strings of vegetation found on undisturbed areas of the Tuolumne. This plan enables the center point for any "hex" that will be monitored to be

Table 1. Monitoring schedule based on a sequence of hypothesized flows, to illustrate the proposed monitoring scheme.

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Hypothetical annual peak discharge		*Q=3650cfs*	*Q=7280cfs*	*Q=2980cfs*	*Q=1200cfs*	*Q=10400cfs*	*Q=8010cfs*	*Q=5870cfs*		
CONSTRUCTION										
SRP 9 and 10		SRP 9								
GRAVEL MINING REACH		PHASE I	PHASE II	PHASE III	PHASE IV					
MONITORING										
SRP 9										
GEOMORPHOLOGY	pb	ab,rx		rx, n, xs, thal		rx*, xs, thal	xs	xs, thal		
FISHERIES	ef, sv, map	ef, sv, map, sss	ef, sv, sss	ef, sv, sss	sss	sss	sss	sss#		
RIPARIAN		ab, pp, $	$	pp	pp			pp		
SRP 10										
GEOMORPHOLOGY		pb		ab, rx, xs, thal		rx*, xs, thal	xs	xs, thal		
FISHERIES	ef, sv, map	ef, sv	ef, sv, sss	ef, sv, map, sss	sss	sss	sss	sss#		
RIPARIAN				ab, pp, $	$	pp	pp		pp	
GRAVEL MINING REACH PHASE I										
GEOMORPHOLOGY	pb	ab,rx		n, rx, xs, thal		rx*, xs, thal	xs, thal	xs, thal		
FISHERIES	map	map, sss	sss	sss	sss	sss	sss	sss#		
RIPARIAN		ab, pp, $	bio, $	pp	pp	bio		pp, bio		
GRAVEL MINING REACH PHASE II										
GEOMORPHOLOGY	pb			ab, n, rx, thal		rx*, xs, thal	xs, thal	xs, thal		
FISHERIES		map	map, sss	sss	sss	sss	sss	sss#		
RIPARIAN			ab, pp, bio, $	$	pp	pp, bio	bio	pp, bio		
GRAVEL MINING REACH PHASE III										
GEOMORPHOLOGY	pb			ab, rx, thal		rx*, n, xs, thal	xs, thal	xs, thal		
FISHERIES			map	map, sss	sss	sss	sss	sss#		
RIPARIAN				*ab, pp, $*	$	pp, bio	pp, bio	bio	pp	
GRAVEL MINING REACH PHASE IV										
GEOMORPHOLOGY			pb		ab, rx	rx*, xs, thal	n, xs, thal	xs, thal		
FISHERIES				map	map, sss	sss	sss	sss#		
RIPARIAN					ab, pp, $	$	pp	pp		pp
ANNUAL BUDGET:	$92,555	$109,192	$154,026	$124,696	$74,619	$184,773	$142,269	$98,230	$20,416	$10,588

Geomorphology symbols: pb=pre-built channel topography; ab=as-built channel topography; n=manning's "n"hydraulic calculation; rx= *bed mobility with tracer rocks; thal= channel vertical adjustment with thalweg profile;* xs= channel planform adjustment with cross-section profiles; *=bed mobility observed;

Fisheries symbols: ef=bass abundance by electrofishing; sv=smolt survival estimate; map=habitat mapping; sss=annual spawning and seining surveys; # denotes that spawning surveys will occur annually by CDFG

Riparian symbols: pb=pre-built vegetation; ab=as-built vegetation; pp=project performance plots; bio=bioengineered bank protection; $=last year of irrigation

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Table 2. Estimated costs associated with the hypothesized monitoring schedule. The budget assumes all monitoring components are implemented as described in the schedule.

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	TOTAL
SRP 9 and 10											
Geomorphic Processes	$1,563	$3,480	$20,880	$0	$0	$19,530	$15,610	$3,920	$0	$0	$64,983
Fisheries Resources	$75,670	$56,415	$58,515	$51,060	$4,200	$2,100	$0	$0	$0	$0	$247,960
Riparian Resources	$0	$8,145	$0	$16,290	$8,145	$8,145	$16,290	$0	$8,145	$0	$65,160
SRP 9 AND 10 SUBTOTAL	$77,233	$68,040	$79,395	$67,350	$12,345	$29,775	$31,900	$3,920	$8,145	$0	$378,103
GRAVEL MINING REACH											
Geomorphic Processes	$1,563	$6,690	$31,815	$8,000	$8,655	$107,225	$71,065	$53,525	$0	$0	$288,538
Fisheries Resources	$5,355	$14,910	$17,010	$19,110	$18,960	$9,405	$4,200	$2,100	$0	$0	$91,050
Riparian Resources	$0	$9,625	$11,805	$18,900	$27,675	$21,570	$22,170	$29,755	$10,415	$9,625	$161,740
MINING REACH SUBTOTAL	$6,918	$31,225	$60,630	$46,010	$55,490	$138,200	$97,435	$85,380	$10,415	$9,625	$541,328
ANNUAL REPORT:	$8,415	$9,927	$14,003	$11,336	$6,784	$16,798	$12,934	$8,930	$1,856	$963	$91,943
ANNUAL BUDGET TOTAL	$92,565	$109,192	$154,028	$124,696	$74,619	$184,773	$142,269	$98,230	$20,416	$10,588	$1,011,373
GRAND TOTAL:	$1,011,373										
YEARLY AVERAGE:	$101,137										

relocated at a later date from the as-built drawings and project bench marks.

3. Fishery Resources changes:
   This will involve evaluation of pre and post project changes in habitat conditions and populations for both fish predators and salmon. Monitoring criteria would include items such as flow velocity, temperature, comparisons of estimated transit time through the old vs. new stream channel, combined with sampling observations of fish populations and spawning riffle conditions.

Pre project monitoring started in 1998. Post project monitoring will start after the completion of the 7\11 Segment and increase as more segments are restored. Generally the monitoring for a given segment will extend for 2 years after the completion of construction. The more detailed monitoring plan is available through the District as is the mitigation monitoring outlined in the EA\IS. The project specific monitoring was designed to compliment the fishery monitoring requirements of the FSA. Annual monitoring summaries will be provided to the TRATC, and other interested parties upon request. In addition, the Districts and CCSF spend an average of $100,000 per year on FSA monitoring for the Tuolumne River.

The first level of peer review comes from the biologists that make up the regular representation on the TRTAC. There is a monitoring subcommittee of the TRTAC charged with close technical review of the FSA and project specific monitoring. Recently the UC Davis Centers for Water and Wildland Resources was asked to evaluate competing fry and smolt survival methods currently used on the Tuolumne River. Stillwater Sciences provides technical design of monitoring programs and statistical analysis of the results.

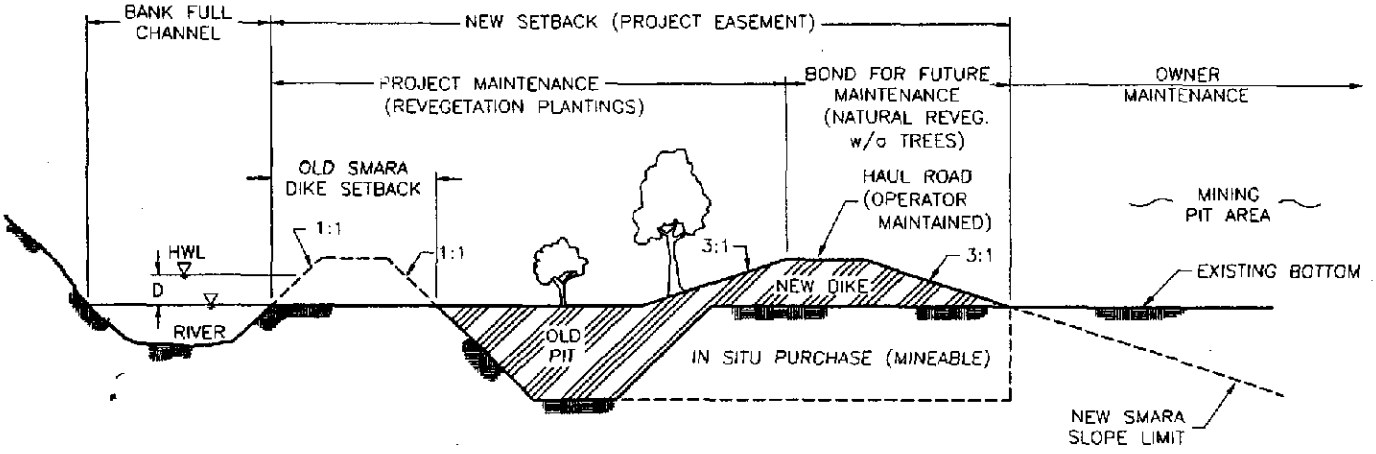
VI. TECNICAL FEASIBILITY & IMPLEMENTABILITY

A. CEQA \ NEPA

This is the third of several restoration projects being proposed for the Tuolumne River based on the restoration plan developed by the TRTAC. The staff is working closely with the affected landowners in the development of site specific adjustments to create final plans. The firm of EDAW, Inc. was hired to assist with the CEQA, NEPA, and permitting work. The NEPA work was jointly prepared with the USFWS and coordinated with the AFRP program. A mitigated EA/IS was jointly developed between TID, as project manager & lead agency, and the USFWS as a Federal funding agency. The EA/IS was tiered off the 1995 EIS for the Don Pedro Project FSA. Public and agency comments were heard in July and August 1998 and the comments focused on economic issues of compensation for conservation easements and lost availability of aggregate supplies. No environmental comments were received.

The final EA\IS approval is pending resolution of the complex compensation issues involved with the acquisition of the conservation easements starting with the 7\11 Segment. TID control of the conservation easements has taken a long time to resolve with the landowners due to their concerns over potential public access to their land. The easement maintenance also ties to revisions to portions of the reclamation plans in the County Use Permits issued to the mining companies. The same process will be used on easements in the three subsequent segments in the

CONSERVATION EASEMENT ELEMENTS



CHANNEL DYNAMICS

$Q_1=V_1A_1=V_1W_1D$
$Q_1=8000$ cfs
$Q_F=V_12W_1D=15{,}000$ cfs
$Q_B=V_24W_1D=15{,}000$ cfs $V_2=\frac{1}{2}V_1$

PROJECT NOTES:

1) NEW CONSTRUCTION TO CUP & SMARA STANDARD 3:1 SLOPES
2) NEW DIKE CONSTRUCTED BY PROJECT
3) REVEGETATION TO PROJECT STANDARDS

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FIGURE 3

W.FRYER 30 MAR 98

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Mining Reach. Development and acceptance of an appraisal process that covers land owner and leasehold mining interests has taken longer than anticipated. Figure 3 shows in a cross section typical easement elements that are involved in the ROW issues.

B. PERMITS

A partial list of the anticipated permits and agencies to be dealt with is as follows: 404 Fill & Dredge Permit from the USCOE; 1600 Series Streambed Alteration Agreement from CDFG, a mining lease and Boundary Delineation finding from the State Lands Commission; an exemption from the SMARA permit by the CMGB; Stanislaus County use permit; RWQCB 401 waiver for water quality; and an Encroachment Permit from the Reclamation Board. Completion of the permits require final acceptance of the EA\IS and project specific design drawings.

VII. COSTS AND SCHEDULES

BUDGET COSTS

The CALFED is being asked to fund 51% of the Project No. 2 MJ Ruddy Segment of the overall Mining Reach project and AFRP has budgeted the remaining 49% of the estimated costs. The total amount being requested from CALFED is $3,235,000, consisting of $375,000 for revegetation, $2,276,000 for setback levee construction and floodplain reconstruction, $239,000 for construction management (9%), $80,000 for project management (3%), and a $265,000 construction contingency (10%). There are four construction portions, 2-A to 2-D, and one overall revegetation component in this segment of the Mining Reach, as shown in Figure 9 from the EA\IS. The attached spreadsheets ,Table 3 "Mining Reach - MJ Ruddy Segment Budget" and Table 4, detail the cost break down. The USFWS-AFRP has budgeted for the balance of the public works construction, $3,079,000, including $112,000 for project monitoring and $200,000 for conservation easements. The contract agreements with AFRP are being prepared. The construction management and monitoring funding was not in the original RFP submittal reviewed by the integration team. The construction management costs were not in the original McBain design report and the monitoring costs were developed from the EA\IS mitigation.

SCHEDULE

The attached Gantt chart schedule Figure 4 shows how the basic components that make up the work for the MJ Ruddy Segment fit into the total restoration construction schedule for the overall Mining Reach. Detailed segment specific schedules are used to track the projects.

This funding request is designed to assure that funds for construction are available prior to bidding for the work that starts in the spring of 2000. This will provide for a smooth continuum of construction that fits into the seasonal limits on instream restoration construction. Securing funding at this time provides an opportunity to accelerate the schedule, if the construction on the 7\11 Segment allows construction in the first quarter of 2000. Such funding assurances also provide an incentive for mobilized contractors to submit lower bids for future work.

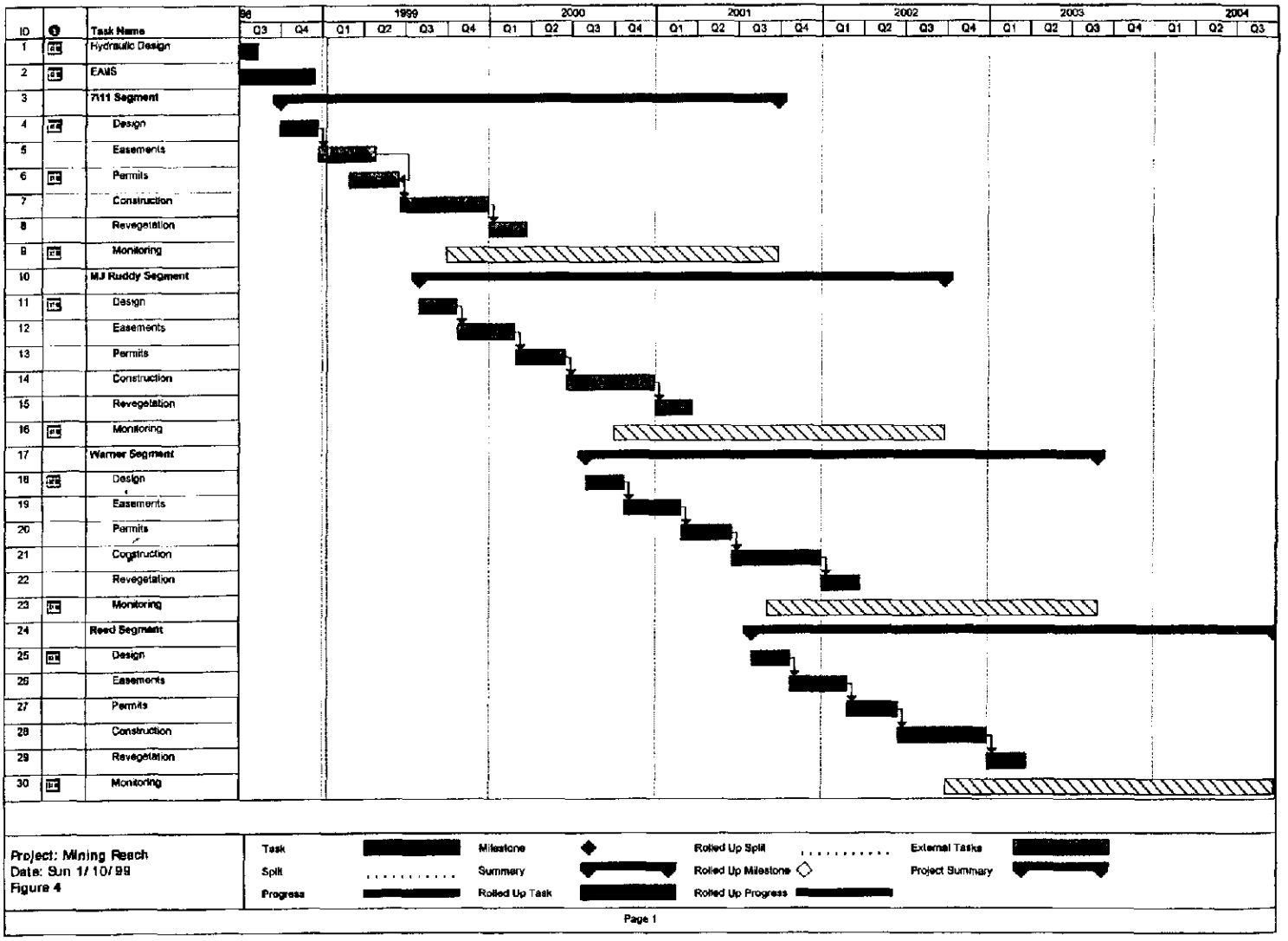

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TABLE 3 **PROJECT BUDGET SUMMARY**

MJ RUDDY SEGMENT Rm 36.5 to 37.6

Construction Task from M&T Figure 4	Description of work		Cost Estimates	Option by fund source
Phase 2A	Setback Dike & Restore Floodplain		407,000	AFRP
Phase 2B	Reconstruct Channel Form		174,000	CALFED
Phase 2C	Setback Dike & Restore Floodplain		2,102,000	CALFED
Phase 2D	Setback Dike & Restore Floodplain		1,491,000	AFRP
		sub total	4,174,000	
All Phases	Revegetation		375,000	CALFED
All Phases	Monitoring (EA\IS plan: yrs 2001 - 2002)		112,000	AFRP
All Phases	Conservation Easements		200,000	AFRP
All Phases	Design & ROW Engineering	8%	364,000	AFRP
		sub total	1,051,000	
All Phases	Contingency	10%	523,000	
All Phases	Construction Management	9%	409,000	
All Phases	Project Management	3%	157,000	
	PROJECT TOTAL		**6,314,000**	
CALFED Share	Construction	55%	2,276,000	
	Revegetation	100%	375,000	
		sub total	2,651,000	
	Contingency	10%	265,000	
	Construction Management	9%	239,000	
	Project Management	3%	80,000	
	CALFED Total	**51%**	**3,235,000**	
AFRP Share	Construction	45%	1,898,000	
	Monitoring	100%	112,000	
	Conservation Easements	100%	200,000	
	Design & ROW Engineering	100%	364,000	
		sub total	2,574,000	
	Contingency	10%	257,000	
	Construction Management	9%	171,000	
	Project Management	3%	77,000	
	AFRP Total	**49%**	**3,079,000**	

Comments: 1. In the original Mining Reach proposal from McBain & Trush, Appendix 1, the revegetation was approximately 8% of the cost and has been separated from each plan element into an overall Segment expense .
2. Construction management was not in the original McBain & Trush report.
3. Monitoring reflects the estimates developed for the EA\IS on this project.

TABLE 4 **QUARTERLY PROJECT BUDGET ESTIMATES**

MJ RUDDY SEGMENT Rm 36.5 to 37.6

$1,000's

Task	%	1999		2000				2001		2002	Total Cost Estimates	Funding Source
		Jul - Sep	Oct -Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct -Dec	Jan - Mar	Apr - Dec			
Phase 2A					100	200	107				407	AFRP
Phase 2B						157		17			174	CALFED
Phase 2C					200	800	890	212			2,102	CALFED
Phase 2D					200	525	615	151			1,491	AFRP
sub total		-	-	-	500	1,682	1,612	380	-	-	4,174	
Revegetation			75				150	100	25	25	375	CALFED
Monitoring				10				10	33	59	112	AFRP
Easements				200							200	AFRP
Engineering	8%	175	175	14							364	AFRP
sub total		175	250	224	1,000	3,364	3,374	870		84	1,051	
CALFED Share												
Construction	55%	-	-	-	200	957	890	229	-	-	2,276	
Revegetation	100%	-	75	-	-	-	150	100	25	25	375	
		-	75	-	200	957	1,040	329	25	25	2,651	
Contingency	10%	-	8	-	20	96	104	33	3	3	265	
Construction Mgt.	9%	-	7	-	18	86	94	30	2	2	239	
Project Mgt.	3%	-	2	-	6	29	31	10	1	1	80	
CALFED Total	**51%**	-	92	-	244	1,168	1,269	401	31	31	**3,235**	

TABLE 4 **QUARTERLY PROJECT BUDGET ESTIMATES**

MJ RUDDY SEGMENT Rm 36.5 to 37.6

$1,000's

Task	%	1999		2000				2001		2002	Total Cost Estimates	Funding Source
		Jul - Sep	Oct -Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct -Dec	Jan - Mar	Apr - Dec			
AFRP Share												
Construction	45%	-	-	-	300	725	722	151	-	-	1,898	
Monitoring	100%	-	-	10	-	-	-	10	33	59	112	
Easements	100%	-	-	200	-	-	-	-	-	-	200	
Engineering	100%	175	175	14	-	-	-	-	-	-	364	
sub total		175	175	224	300	725	722	161	33	59	2,574	
Contingency	10%	18	18	22	30	73	72	16	3	6	257	
Construction Mgt.	9%	-	-	-	27	66	66	14	-	-	171	
Project Mgt.	3%	5	5	7	9	22	22	5	1	2	77	
AFRP Total	**49%**	198	198	253	366	885	881	196	37	67	**3,079**	
PROJECT TOTAL		**198**	**289**	**253**	**610**	**2,052**	**2,150**	**597**	**68**	**97**	**6,314**	

Comments:

1. In the original Mining Reach proposal from McBain & Trush, Appendix 1, the revegetation was approximately 8% of the cost and has been separated from each plan element into an overall Segment expense .
2. Construction management was not in the original McBain & Trush report.
3. Monitoring reflects the estimates developed for the EA\IS on this project.

VIII. THIRD PARTY IMPACTS

The parties most directly impacted by the proposed project are the local landowners and the aggregate mining operators. The TID staff and consultants have been and will continue to meet with the affected stakeholders to listen to and address their individual concerns. The EA\IS public comment process in July 1998 identified all four of the Mining Reach projects to the local city and county agencies as well as all land owners and aggregate mining operators in the project area. Their comments have been incorporated in the mitigation measures where applicable. Their comments also required a more extensive compensation process to be developed for the conservation easements required in the project, the completion of which has delayed permitting and construction on the 7\11 Segment of the Mining Reach projects. Recognizing there are specific individual concerns, the landowners and the mining operators have been cooperative and supportive of the project. The EA/IS for all the Mining Reach projects outlines the mitigation and monitoring that are to be followed to minimize impacts associated with the restoration activities. Development of added aggregate reserves to make up for the materials used in this project is a long term economic issue with the County.

The TRTAC is currently conducting a broader outreach program, with City and County staffs and local groups, introducing the Riparian Corridor Habitat Restoration Plan being developed for the entire lower Tuolumne River below La Grange Dam. The Mining Reach projects being 1 of 7 river segment treatments identified in this plan.

IX. APPLICANT QUALIFICATIONS

Since 1971, TID, MID, and CCSF have, in cooperation with DFG and USFWS, monitored river conditions and developed programs that enhance the natural production of fall-run chinook salmon in the Tuolumne River. The project manager for these activities has been TID.

Project Management

The Project Manager is Wilton Fryer, P.E. Mr. Fryer graduated from the University of California at Davis with a BS in Soil & Water Science, an MS in Irrigation Science, and later an ME in Civil Engineering with an emphasis in water resources. He is currently registered as both a Civil Engineer and an Agricultural Engineer. Accomplishments are: development and implementation of the Oakdale Irrigation District Irrigation Master Plan; directed a $22 million canal rehabilitation project for OID where 54 miles of dirt canals were replaced with pipe; development of the OID domestic water service system; designer and project manager for a replacement water treatment plant for the La Grange Domestic Water System.

Tim Ford has been the staff aquatic biologist for TID and MID since 1981. Mr. Ford graduated from the University of California at Davis with a BS in Wildlife & Fisheries Biology in 1977. He worked as a Biological Technician for the Modoc, Tahoe, and Stanislaus National Forests prior to working for the Districts. Mr. Ford is tasked with planning, coordinating and conducting the aquatic resources program for the Districts, and his responsibilities at TID include field studies, program development, consultant supervision, and coordination with Don Pedro

project operations.

Design & Technical Support

The firm of EDAW Inc. has been retained to perform the CEQA and NEPA environmental work and to obtain necessary permits.

TID Engineering Administration will assist with providing construction management and inspection services to the project. Contracting support and financial service support as needed will be provided by TID staff. The engineering firm of HDR, Inc. has been retained to prepare detailed construction plans and specifications, oversee construction management, and assist with ROW easement documentation. The firm of HART, Inc., will provide revegetation design.

Project concept design work has been performed by the firm of McBain & Trush, who will continue to provide oversight of the civil construction design work, bio-engineering and revegetation design, and fluvial process monitoring. McBain & Trush is a professional consulting partnership specializing in applying fluvial geomorphic and ecological research to river management and restoration, particularly in regulated river ecosystems. The principals on this project are Scott McBain, Dr. William Trush, and John Bair. Scott McBain is a hydraulic engineer and fluvial geomorphologist with a MS in Civil Engineering from the University of California at Berkeley. He specializes in effects of high stream flows on channel morphology, bedload transport, watershed sediment yields, and stream restoration. Dr. William Trush is an adjunct professor in the Humboldt State University Fisheries Department, specializing in anadromous fish ecology, anadromous fish interactions with fluvial geomorphology, channel maintenance flows and hydrology, riparian ecology, and stream restoration and management. He is also Director of the HSU Institute for River Ecosystems. John Bair is a riparian botanist with a MS in Environmental Systems form Humboldt State University. He specializes in riparian interactions with geomorphic processes and riparian restoration.

The firm of Stillwater Sciences has been retained to assist with the design and implementation of the fishery monitoring plan components. Stillwater Sciences is actively involved with the river wide monitoring associated with the Districts' FERC Settlement Agreement.

X. NON-ECOSYSTEM OBJECTIVES

Expansion of the riparian floodway capacity to 15,000 cfs in the Mining Reach is consistent with the Governor's Flood Emergency Action Team recommendations and the subsequent Corps of Engineers preliminary flood improvement feasibility studies on the Tuolumne River.

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