

## IV. RIVER IMPROVEMENT ELEMENT

### A. OBJECTIVES

Three sites within the specific plan area (the Town and Country site, the Hanalei Tower site, and the Hanalei Hotel site) are located adjacent to the San Diego River. The primary objective of the river improvement element of this specific plan is to develop coordinated flood control and wetlands management programs for these three sites which provide both flood protection and wetlands mitigation and which adhere to the guidelines and criteria established by the City's Floodplain Section and the San Diego River Wetlands Management Plan. Flood protection within the specific plan area will be provided against the future 100-year flood identified as 49,000 cubic feet per second (cfs) by the City of San Diego and the U.S. Army Corps of Engineers.

### B. RIVER CORRIDOR DESIGN CONCEPT

The overall river corridor design concept envisioned by the Mission Valley Community Plan and the San Diego River Wetlands Management Plan is that of a natural-appearing, enhanced river channel providing a natural and useable open space corridor within the valley. Both the community plan and the wetlands management plan recognize the urbanized nature of Mission Valley and the degree to which existing development has occurred near the river corridor. The need for a comprehensive flood protection program for existing and future development within the valley is also recognized as is the need for preservation and enhancement of existing wetland habitats and compensation for habitat lost as a result of development.

The river corridor design concept for the Atlas Specific Plan consists of two major components - a flood management program and a revegetation program. Each of these components has been specifically tailored to the individual characteristics of the river-oriented sites within the specific plan area. The revegetation plan is an integral part of the river corridor design. Its chief purpose is to mitigate for losses of wetland habitat resulting from floodway improvements.

At the Town and Country site, existing development is located adjacent to both the north and south sides of the pilot channel. This area, including property both within the Town and Country site and within the boundaries of the Fashion Valley Shopping Center, is also expected to accommodate a variety of public facilities as shown on various local plans and documents. These facilities include a flood control channel, wetlands revegetation, right-of-way for the LRT, an LRT station, Camino de la Reina (a circulation element road), and pedestrian and bicycle pathways. Portions of these facilities would be located on both the Town and Country and Fashion Valley properties. The river corridor design concept for the Town and Country area must therefore focus on accommodating all of these facilities, while at the same time provide the maximum degree of flood protection and wetlands mitigation possible.

At the Hanalei Tower and Hanalei Hotel sites, little or no development has occurred adjacent to the pilot channel. The Hanalei Tower site is currently vacant, and the Hanalei Hotel property consists of a 448-room hotel and banquet facilities oriented more toward Hotel Circle than toward the river. The north side of the pilot channel is occupied by the River Valley golf course. Since little existing development is located adjacent to the pilot channel, good opportunities exist for provision of a wider open space corridor as envisioned in the Mission Valley Community Plan. The design concept in this area focuses on providing river orientation for existing and proposed developments, and providing an open space corridor along the river. Flood protection is not as great a concern in this area since a larger area is available to carry floodwaters and phasing of construction at the site is being coordinated with the channel improvements proposed by Levi/Cushman and Warner Ranch.

### C. FLOOD MANAGEMENT PROGRAM

In order to develop a comprehensive flood management program for the Atlas Specific Plan, a computerized hydraulic study was conducted by Boyle Engineering Inc.. The Boyle Engineering study focused primarily on the area between SR-163 and Fashion Valley Road (essentially the Town and Country site), but also established the limits of the 49,000 cfs floodway (existing conditions) for the Hanalei Tower and Hanalei Hotel sites.

Key terms in understanding the management of a flood-prone area are the floodplain, the floodway, and the floodplain fringe. These terms are defined as follows:

floodplain - refers to the land surface which is unindated by the 100-year flood (49,000 cfs).

floodway - refers to the channel of a river and the adjacent land areas that must be reserved in order to convey the 100-year flood without increasing the water surface elevation by more than one foot.

floodplain fringe - refers to the area within the floodplain, but outside the floodway, which may be developed by raising the ground level at least two feet above the water surface elevation of the design flood, in this case the 100-year flood (49,000 cfs).

The HEC-2 computer program developed by the Army Corps of Engineers was used to calculate water surface profiles, and floodway and floodplain limits for the study area. Cross-sectional data was based upon City of San Diego data for existing conditions west of SR-163 and upon data provided by Dr. Howard H. Chang of San Diego State University for sections east of SR-163. The assumptions for the area east of SR-163 assumed implementation of flood control improvements upstream from SR-163, as outlined in the specific plan for the First San Diego River Improvement Project (FSDRIP).

As part of the flood management program, the 49,000 cfs floodplain and a new 49,000 cfs floodway were defined for the study area between the Morena Boulevard bridge and SR-163. The 49,000 cfs floodway was developed by constricting the

existing floodplain equal amounts on each side of the river until a maximum 1 foot rise in the water surface elevation was obtained in accordance with federal criteria. Figure 6 shows the proposed 49,000 cfs floodplain limits and the proposed 49,000 cfs floodway relative to the existing 49,000 cfs floodplain.

The effects of the 49,000 cfs flood were modeled for three river improvement construction scenarios to ensure continuity and coordination between FSDRIP, Atlas Hotels, Levi-Cushman, and Warner Ranch. The first scenario establishes the base water surface elevations for comparison with the next two cases and assumes that FSDRIP is constructed east of SR-163 while the existing pilot channel remains in its present state west of SR-163. The second scenario also assumes FSDRIP improvements in place east of SR-163, the proposed Town and Country improvements between SR-163 and Fashion Valley Road, and a transition channel west of Fashion Valley Road to match the existing pilot channel 1100' west of Fashion Valley Road (see Figures 8 and 13). The third scenario addresses the fully improved condition for the San Diego River with FSDRIP in place east of SR-163, the proposed Town and Country improvements constructed between SR-163 and Fashion Valley Road, and the channel improvements proposed by Levi-Cushman and Warner Ranch west of Fashion Valley Road. Figure 12 demonstrates how these improvements will ultimately fit together.



Critical to the computation of water surface elevations are the selection of appropriate friction factors or "n-values" for the computer model. The n-values selected are based on the characteristics of the area studied, and include the type and extent of vegetation as defined in the revegetation plan; material of the flow area (earth, pavement, riprap, etc.); the surface irregularity of the channel sides and bottom; and possible obstructions. After careful consideration and comparison with n-values used in FSDRIP, the Levi-Cushman, and Warner Ranch improvement plans, the roughness coefficients were assigned as follows:

Main Channel	n = (average) 0.060
Vegetated Buffer Areas	n = 0.05
Parking Lots	n = 0.02 to 0.035

#### Town and Country - Existing Conditions

The first step for evaluating any proposed improvements for the study areas was to establish a "benchmark" for comparison. While the current floodplain and floodway are based on a 100-year discharge of 36,000 cfs, it is estimated by the Corps of Engineers that increased runoff from future development in the San Diego River watershed will eventually yield a 100-year peak discharge of 49,000 cfs. The City is requiring all new developments to be based on a 100-year peak discharge of 49,000 cfs. The effects of the 49,000 cfs flood at the Town and Country were first modeled assuming no channel improvements beyond the "existing condition," which includes a "pilot channel" between Fashion Valley Road and SR-163.



-  AREAS REMOVED FROM 49,000 CFS FLOODPLAIN
-  PROPOSED 49,000 CFS FLOODPLAIN FRINGE



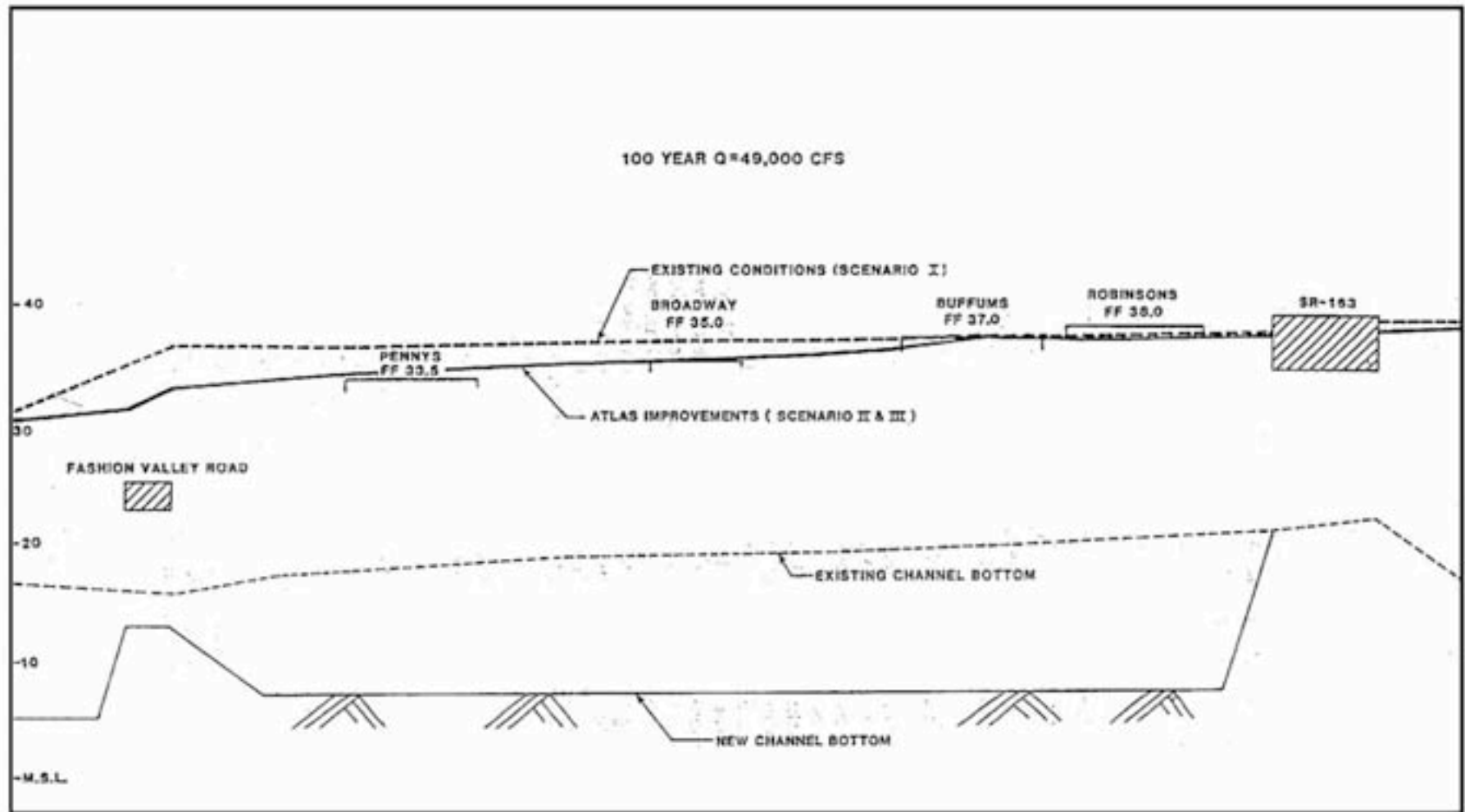
**Existing and Proposed Floodplain and Floodway  
with FSDRIP, Atlas and Levi-Cushman Improvements**

Atlas Specific Plan

**6**

FIGURE





Town and Country Hotel  
100-Year Water Surface Profiles

Atlas Specific Plan

7

FIGURE



The results of the modeling studies showed that in the reach between Fashion Valley Road and SR-163, virtually the entire area between Friars Road and I-8 would be flooded in a 100-year flood as shown in Figure 6. Additionally, the existing condition profile shown on Figure 7 shows that the depth of the flooding would be great enough to inundate the first floors of most, if not all, of the buildings in Fashion Valley to the north of the river, as well as the Town & Country Hotel and Union-Tribune buildings (not shown on profile) to the south. Flooding would be 2.8 feet deep in J.C. Penny's, 1.5 feet deep in the Broadway, and 0.5 feet deep in Buffums. On the south side of the river, flooding would be 3.0 feet above finished floor elevation at the existing Town and Country Hotel.

The study also showed that at several locations along the present pilot channel, the velocity of flow in a 100-year flood would exceed seven feet per second. This is considered to be erosive for the types of vegetation and soil in the area. Additionally, flood waters frequently cause the closure of Fashion Valley Road and Avenida del Rio even in minor storms (less than 10-year frequency).

#### Town and Country Site - Flood Management Program

A variety of considerations were involved in developing the flood management program for the Town and Country site. These included alleviating valley-wide flooding; reducing existing flooding depths at the Fashion Valley Shopping Center, if possible; the need to accommodate the Camino de la Reina crossing over the San Diego River without creating backwater problems for FSDRIP or the area east of the Town and Country site; and the objective of accommodating the uses proposed under the Atlas Specific Plan in a manner consistent with the flood control and wetlands criteria established by the City of San Diego. The Town and Country flood management program meets most of these objectives. It lowers the depth of flooding on the Fashion Valley Shopping Center; contains the 100-year flood flow along the south channel bank between SR-163 and Fashion Valley Road and 10-year flood flow along the north channel bank; provides a new 10-year protection crossing at Fashion Valley Road; provides 10-year protection for the Camino de la Reina bridge across the San Diego River; and, meets the habitat replacement criteria of the San Diego River Wetlands Management Plan, with the exception of meeting the percentage criteria for freshwater marsh habitat as identified in that plan.

The proposed flood management program for the Town and Country site is the product of an evolutionary process which considered various alternatives before arriving at an acceptable and reasonable solution. A "natural" channel capable of containing the entire 49,000 cfs flood within its banks was the first alternative to be studied. Such a channel would need to be approximately 400 feet wide (based on the FSDRIP and Levi-Cushman projects) and would require converting nearly the entire existing Town and Country parking lot, portions of the Copley parking lot and half the existing Fashion Valley parking lot into a flood control corridor. Due to the significant loss of existing parking facilities, such an alternative would be unacceptable to Atlas Hotels, Inc., Copley and the Fashion Valley shopping center.

Since a natural channel and 100-year capacity would not be feasible, other alternatives were considered. One of the alternatives considered consisted of box culverts parallel to the existing channel. These box culverts would be prohibitively



expensive for the relatively small conveyance capacity they would provide. Additionally, they would require transition structures at the upstream end of dubious hydraulic feasibility. Other alternatives considered the use of concrete and other lining materials in the channel. These included: a trapezoidal channel with a concrete bottom and lined side slopes; a low flow rectangular concrete channel with natural side slopes above the low flow channel; and, a natural low flow channel alongside a concrete side channel. Each of these alternatives failed to meet the San Diego River Wetlands Management Plan criteria of providing a natural river channel and/or were prohibitively expensive.

Based on discussions of these alternatives with representatives of the San Diego City Planning Department, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service and the California Department of Fish and Game, it was determined that the flood management program as defined in this Specific Plan best met the criteria of the San Diego River Wetlands Management Plan by maintaining a totally natural channel with flow velocities of 7 fps or lower, even though the north side of the river channel is not provided with 100-year flood protection.

#### Town and Country - Proposed Improvements

As discussed in the San Diego River Wetlands Management Plan, the existing pilot channel adjacent to the Town and Country site was created after 1977 as part of a program aimed at reducing flooding problems in particularly flood-prone areas of Mission Valley. The pilot channel was not intended to handle high-magnitude floods and does not represent the "natural" configuration of the San Diego River. In conjunction with the proposed Town and Country improvements, the existing pilot channel will be widened from 110 feet to an average width of 200 feet between Fashion Valley Road and the proposed Camino de la Reina Bridge, increasing to approximately 300 feet wide at SR-163. The proposed river channels for both the Levi-Cushman and FSDRIP specific plans have a width of approximately 400 feet. The smaller width of the Atlas Specific Plan river channel is due to the constraints of existing development on both sides of the river. The existence of these constraints is recognized in the San Diego River Wetlands Management Plan. The new channel, which will be deeper and wider than the existing channel, will easily accommodate the 10-year flood (4,600 cfs) and will carry approximately 50 percent of the flow during the 100-year flood. During the 100-year storm, a portion of the flow will utilize the paved parking areas south of the Fashion Valley Shopping Center. A 30-foot (average) wide buffer area south of the channel from Fashion Valley Road to SR-163, and a 2-foot (average) wide landscape setback strip north of the channel from Fashion Valley Road to the new Camino de la Reina Bridge will be revegetated as discussed later in this section. The existing car rental agency located in the floodway adjacent to the Town and Country site will also be removed in conjunction with specific plan implementation.

Proposed flood control improvements at the Town and Country site are illustrated in Figures 8, 9, 10, 11, 12 and 13. Figure 8 shows a plan view of the proposed improvements at the Town and Country site. Figure 13 illustrates the Atlas Specific Plan channel improvement transition to existing conditions west of Fashion Valley Road. Figure 12 demonstrates how these improvements will ultimately match with the improvements proposed by FSDRIP upstream and Levi-

Cushman downstream. Figures 9, 10, and 11 show typical cross-sections of the improvements with the 10-year and 100-year water surface elevations (WSEL). As part of the implementation of the Atlas Specific Plan, the existing culverts at Fashion Valley Road will be removed and replaced with a new 80-foot long, 3-span bridge and the grades along Fashion Valley Road will be adjusted slightly to match the new location of the channel crossing. The bridge crossing will be capable of safely passing a 10-year flood. Fashion Valley representatives are currently studying alternatives to the Atlas proposed flood control improvements at Fashion Valley Road to further reduce the existing flooding potential on the Fashion Valley Shopping Center property. Atlas Hotels, Inc. will continue to cooperate in this effort. Should an alternative solution be developed which further reduces the flooding potential on the Fashion Valley Shopping Center property, Atlas Hotels, Inc. will incorporate that solution into subsequent detailed engineering design provided that: the alternative solution meets the approval of all City, State and Federal agencies having jurisdiction prior to the time the river improvements are implemented; the solution does not limit the development of the Atlas properties as provided in this specific plan; and all additional costs resulting from the alternative solution shall be borne by Fashion Valley.

The effect of the channel improvements will be to narrow the floodplain and floodway, and to lower the water surface elevation by  $\frac{1}{2}$  to 2 feet or more between Fashion Valley Road and SR-163. By lowering the water surface elevation and improving the channel, the flooding hazard to the Town and Country site, the Copley and Golden properties, and a portion of the Fashion Valley site will be eliminated. Table 5 summarizes the various scenarios evaluated in the flood control study and Table 6 summarizes the effect that the proposed improvements will have on the water surface elevations in a 100-year flood.

Table 5

Comparison of Water Surface Elevations in a 100-Year Flood  
for Three Improvement Phasing Scenarios

Scenario I:	FSDRIP in place east of SR-163 Existing conditions west of SR-163
Scenario II:	FSDRIP in place east of SR-163 Atlas improvements constructed between Fashion Valley Road and SR-163 Existing conditions west of Fashion Valley Road
Scenario III:	FSDRIP in place east of SR-163 Atlas improvements constructed between Fashion Valley Road and SR-163 Levi-Cushman and Warner Ranch improvements constructed west of Fashion Valley Road



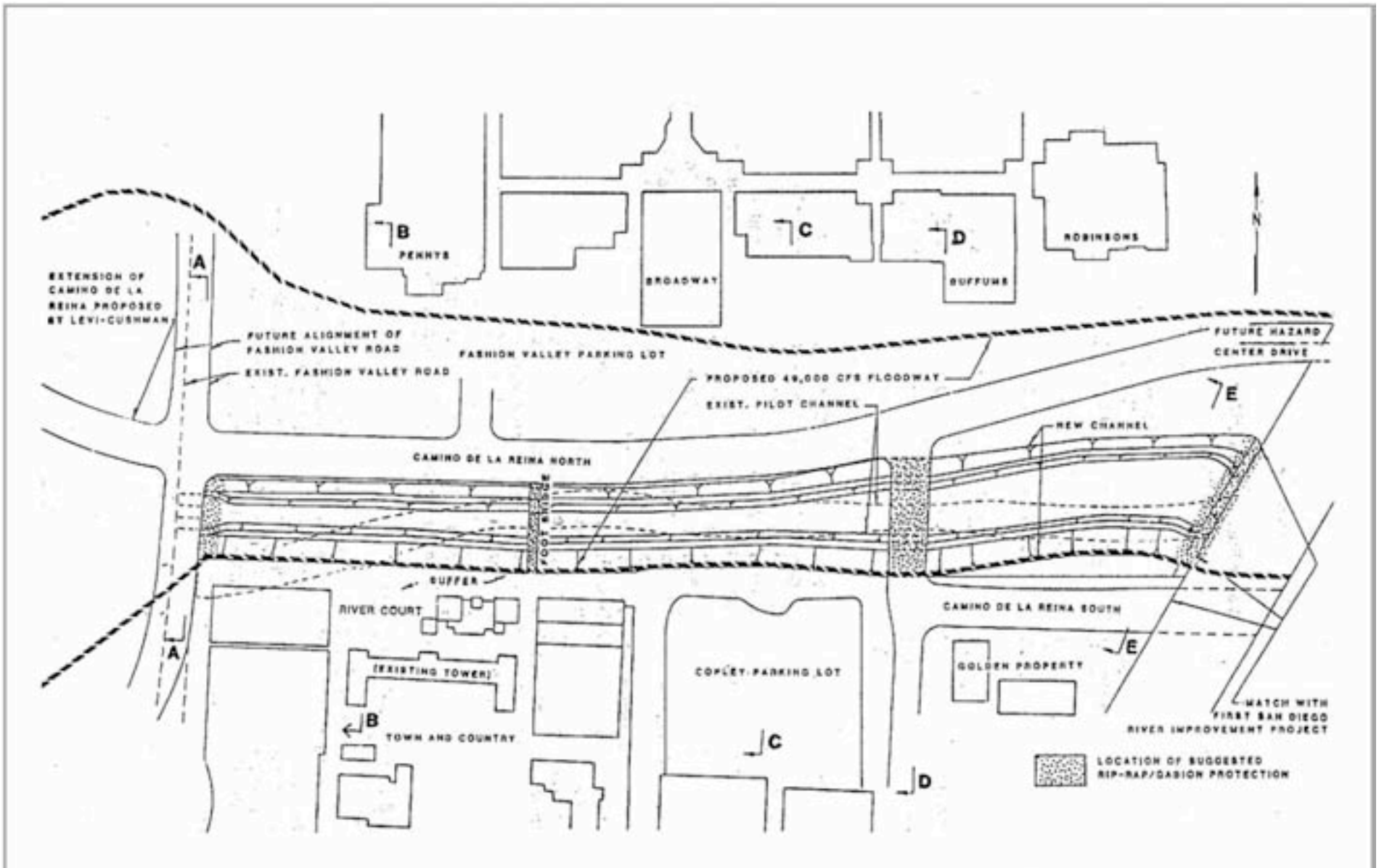
Table 6  
Water Surface Elevations  
(in feet)

<u>Location Description</u>	<u>WSEL Scenario I</u>	<u>WSEL Scenario II</u>	<u>Change in WSEL Scenario I to II</u>	<u>Scenario III</u>	<u>Change in WSEL Scenario I to III</u>
Fashion Valley Road	36.4	33.2	-3.2	33.2	-3.2
150' west of footbridge	36.3	34.1	-2.2	34.1	-2.2
East side of existing Town & Country Hotel	36.5	34.8	-1.7	34.8	-1.7
West side of SR-163	37.7	37.3	-0.4	37.3	-0.4
East side of SR-163	38.3	38.0	-0.3	38.0	-0.3

The U.S. Army Corps of Engineers studies and other investigations of the Mission Valley area indicate a variable groundwater level between 10-20 feet above mean sea level in the vicinity of the Town and Country Hotel. The existing channel bottom in this area is approximately 17 feet above mean sea level and year-round water exists in the channel subject to a seasonal variation in depth of several feet. The proposed channel improvements at the Town and Country site will lower the existing channel bottom to approximately 7 feet above mean sea level. To meet the objectives of the U.S. Fish and Wildlife Service and the San Diego River Wetlands Management Plan for the maintenance of year-round water flow in the channel reach between SR-163 and Fashion Valley Road, the invert at the Fashion Valley Road Bridge will be raised six feet above the level of the channel bottom as part of the flood control improvements. A year-round pond with a depth of approximately six feet will thus be created by this raising of invert. To promote the continuance of freshwater marsh habitat in the channel, the channel improvement will include "benches" (slightly sloped areas near the bottom of the channel) to promote freshwater marsh habitat. This is discussed in detail in the revegetation plan section of the Atlas Specific Plan. As discussed in maintenance of the revegetation efforts, willows and other such woodland vegetation will occupy the slope banks. This will help slow flow in the channel during floods.

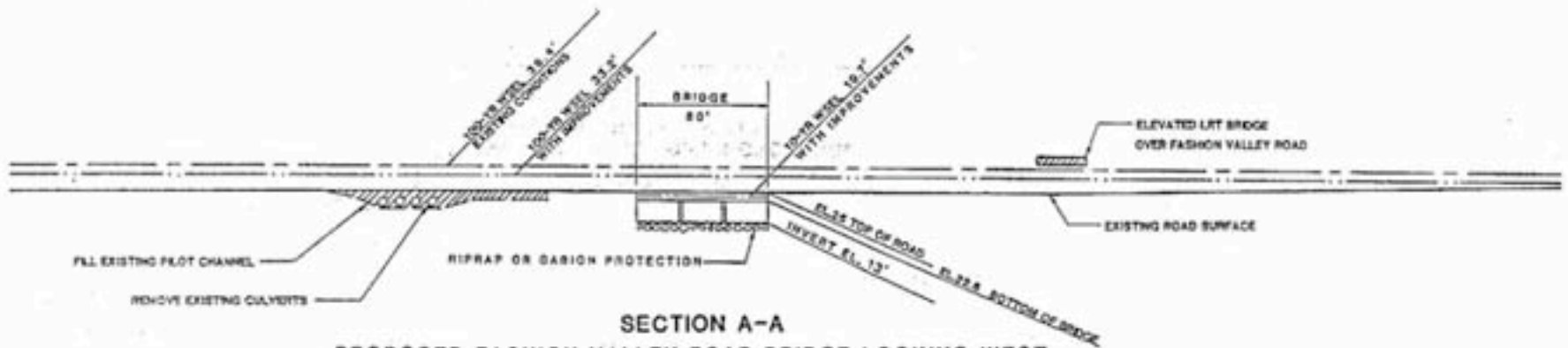
#### Town and Country - Public Safety

As shown on Figure 7 and Table 6, the 49,000 cfs 100-year water surface elevation will be lowered with implementation of the proposed improvements by improving the channel section and constructing a new crossing at Fashion Valley Road. This will help to alleviate major flooding of structures at the Fashion Valley Shopping Center as discussed below and will provide 100-year protection for the properties south of the river, between SR-163 and Fashion Valley Road.

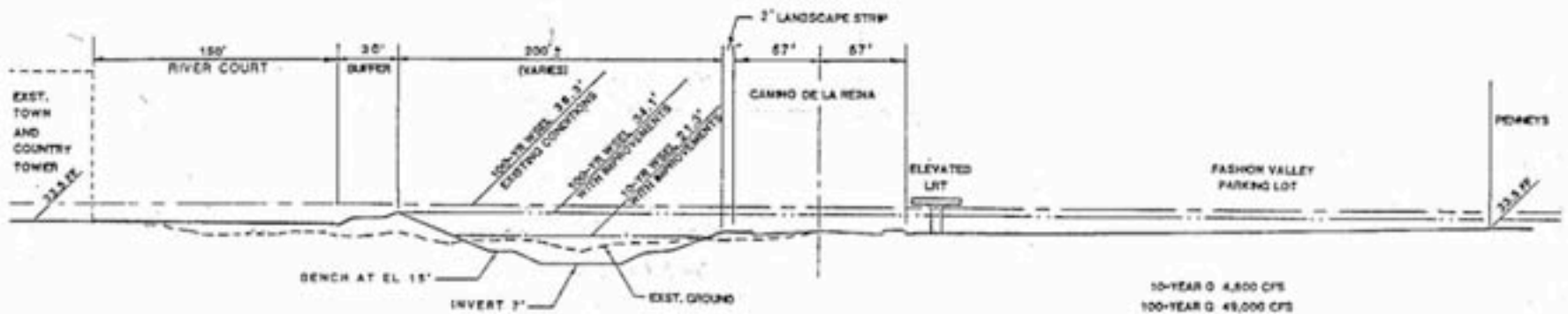


**Town and Country Hotel  
Proposed Flood Control Channel and Floodway  
Atlas Specific Plan**





**SECTION A-A**  
**PROPOSED FASHION VALLEY ROAD BRIDGE LOOKING WEST**  
 ( CITY CROSS SECTION NO. 28043 )



**SECTION B-B**  
**BETWEEN TOWN AND COUNTRY HOTEL AND J.C.PENNEY'S**  
 ( CITY CROSS SECTION NO. 28453 )

10-YEAR Q: 4,800 CFS  
 100-YEAR Q: 49,000 CFS

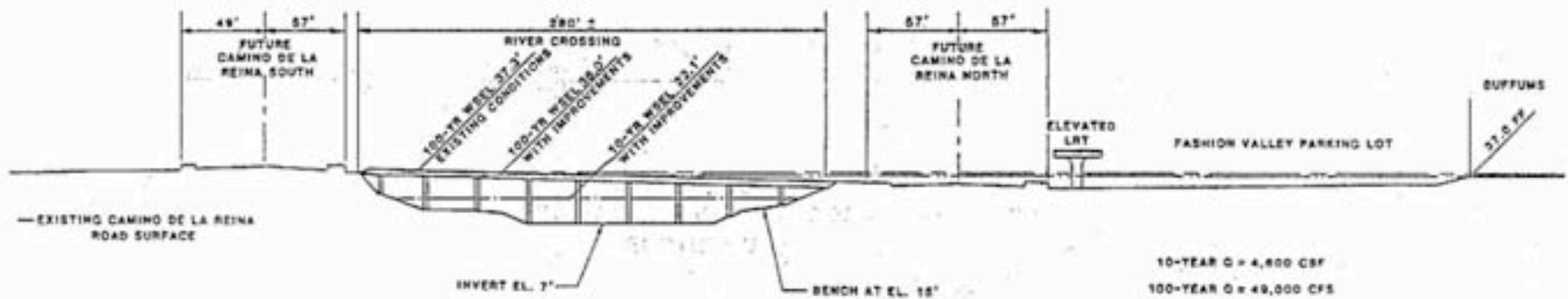
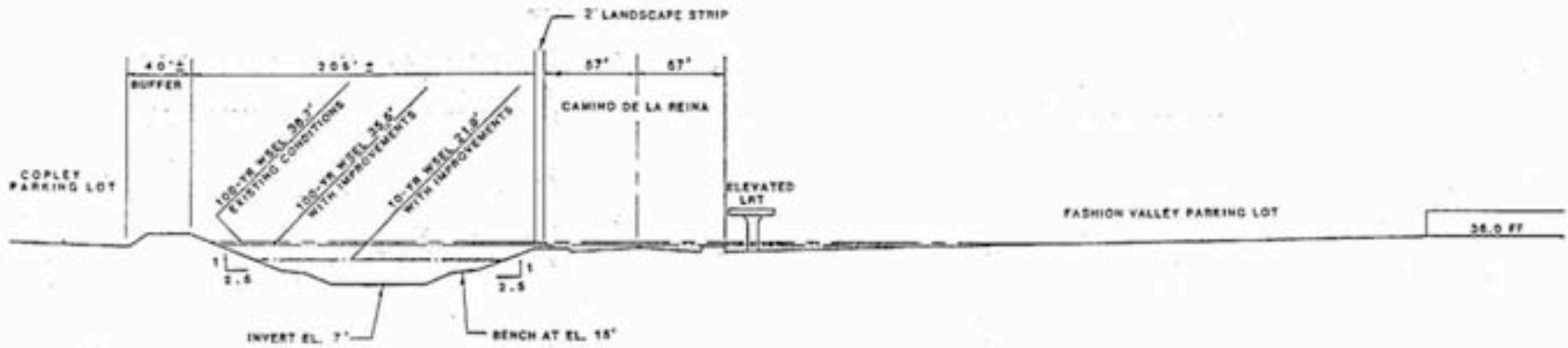
## Town and Country Hotel Flood Control Improvements Sections A-A, B-B

Atlas Specific Plan

**9**

FIGURE

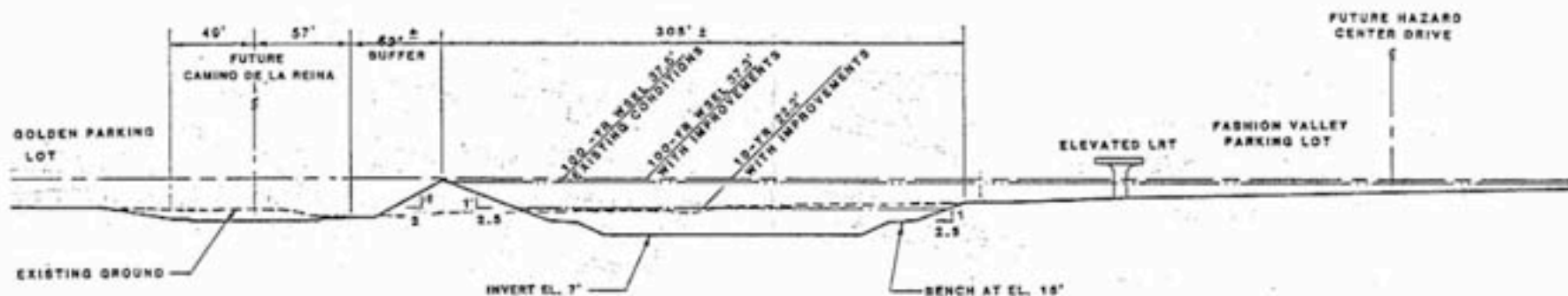




# Town and Country Hotel Flood Control Improvements Sections C-C, D-D

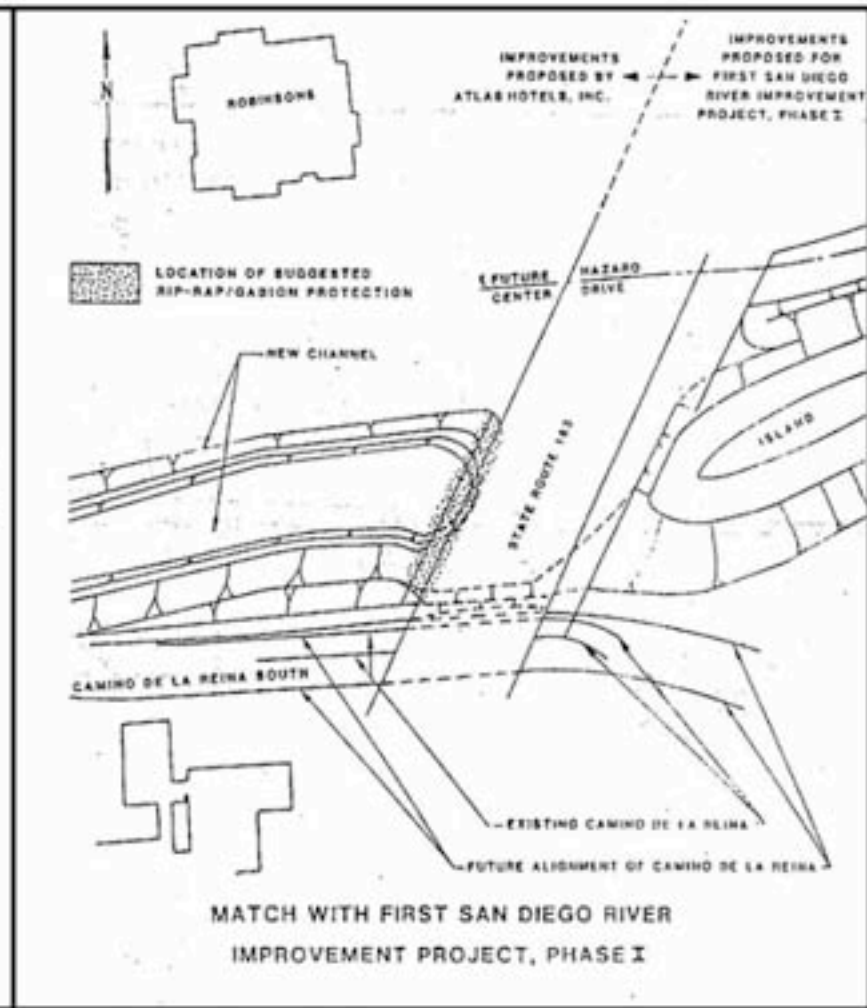
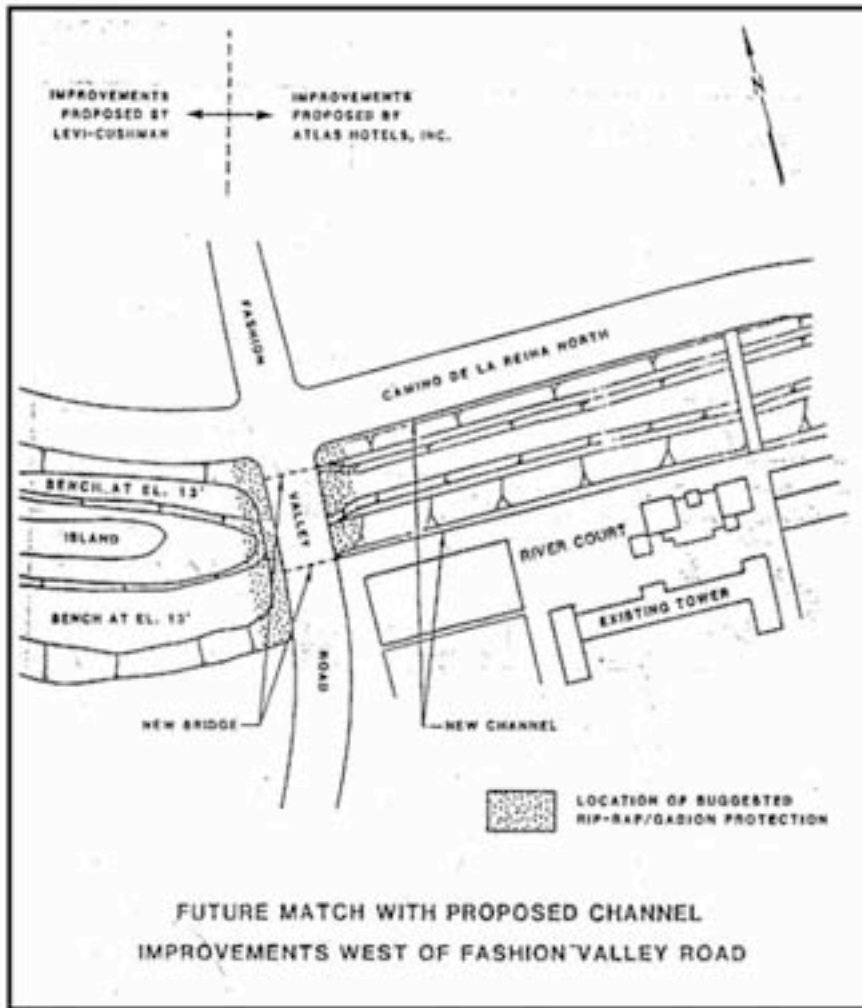






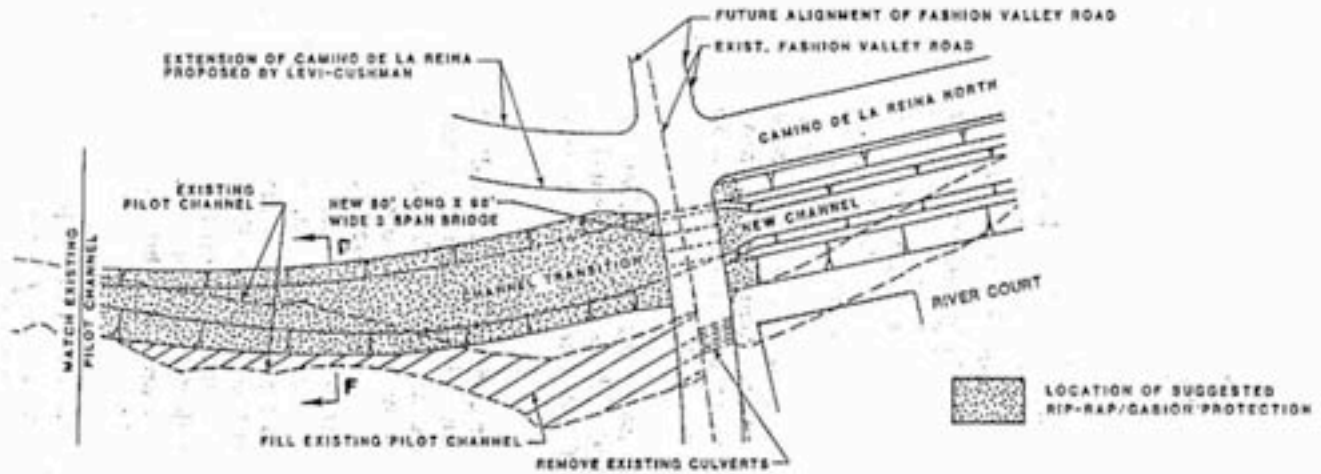
SECTION E-E  
 100' WEST OF STATE ROUTE 163  
 ( CROSS SECTION NO. 297.90 )



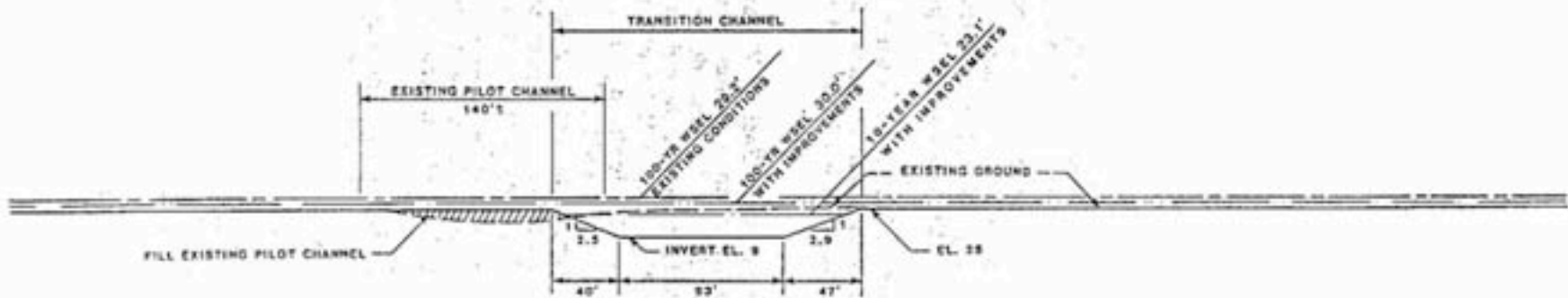


**Town and Country Hotel**  
**Match with Proposed Channel Improvements and FSDRIP**  
 Atlas Specific Plan





TRANSITION TO EXISTING CONDITIONS WEST OF FASHION VALLEY ROAD



SECTION F-F  
400' WEST OF FASHION VALLEY ROAD LOOKING WEST  
(CITY CROSS SECTION NO. 27593)

Town and Country Hotel

Transition to Existing Conditions, Section F-F

Atlas Specific Plan

13

FIGURE



## Town and Country - Relationship to Fashion Valley

Flooding of the Fashion Valley Shopping Center is a major concern in the study area. As shown on the profile view (Figure 7), the 100-year 49,000 cfs flood currently inundates Penneys, the Broadway, and Buffums. The limits of flooding shown on Figure 6 for the 49,000 cfs flood also show that virtually the entire Fashion Valley Shopping Center would be inundated under existing conditions. In general, the flooding which would occur with the proposed Atlas improvements would be similar to that occurring under existing conditions. The floodway boundary would extend to the southern boundary of existing structures at the shopping center and the floodplain would extend northerly almost to Friars Road. The depth of flooding during the 100-year storm would, however, be approximately 1/2 to 2 feet less than that occurring under existing conditions. This represents an improvement in flood protection for the Fashion Valley Shopping Center. The improvement of the Fashion Valley Road crossing to accommodate the 10-year flood will also improve access to Fashion Valley since the present crossing is frequently flooded when it rains. Another important improvement to Fashion Valley will be the 10-year crossing of the San Diego River provided by Camino de la Reina. Access to the shopping center parking lot can be provided from Camino de la Reina which is protected from a 10-year storm. No access to Fashion Valley from the south currently exists which is protected from a 10-year storm.

The LRT track and an LRT station will be located on the north side of the channel. In order to protect these facilities from the 100-year flood and to provide vertical clearance over Fashion Valley Road and SR-163, the LRT will need to be elevated in this area.

A pedestrian linkage to the Fashion Valley Shopping Center and LRT station will be provided with construction of a new footbridge across the river, ending on the south side of the future Camino de la Reina. This footbridge will be located approximately 220 feet east of the existing footbridge to provide a more direct link with the LRT station, and will be elevated to allow the 100-year flood to pass safely underneath. The footbridge shall be of sufficient height to pass debris during the 100-year flood and shall have a minimum of 2 feet of free board. An at-grade pedestrian crossing across Camino de la Reina will be provided between the footbridge and LRT station at a signalized intersection at Camino de la Reina and a Fashion Valley Shopping Center parking access road. In the event that a signalized intersection is infeasible, a grade separated pedestrian crossing will be provided over Camino de la Reina to the LRT station as approved by the City Planning Director and City Engineer.

Fashion Valley representatives are currently studying alternatives to the Atlas proposed flood control improvements at Fashion Valley Road to further reduce the existing flooding potential on the Fashion Valley Shopping Center property. Atlas Hotels, Inc. will continue to cooperate in this effort. Should an alternative solution be developed which further reduces the flooding potential on the Fashion Valley Shopping Center property, Atlas Hotels, Inc. will incorporate that solution into subsequent detailed engineering design provided that: the alternative solution meets the approval of all City, State and Federal agencies having jurisdiction prior to the time the river improvements are implemented; the solution does not limit the development of the Atlas properties as provided in this specific plan; and all additional costs resulting from the alternative solution shall be borne by Fashion Valley.



The only improvements which would affect parking at the Fashion Valley Shopping Center are the construction of Camino de la Reina, Hazard Center Drive and potentially the LRT station and line. A half-width of Camino de la Reina would be located on the Fashion Valley property. The remainder of the roadway would be located on Atlas property. Both Camino de la Reina and Hazard Center Drive are circulation element roads which would be constructed with or without the Town and Country site project. No features of the proposed flood control improvements at the Town and Country site would result in the loss of parking at the Fashion Valley shopping center.

It is estimated that between 250-300 parking spaces at Fashion Valley would be lost due to the construction of Camino de la Reina. An additional 350-400 spaces would be lost as a result of construction of Hazard Center Drive. An additional approximately 250 spaces would be isolated between Hazard Center Drive and the river when Hazard Center Drive is constructed. However, these spaces would still be available. In addition, parking spaces could be lost at Fashion Valley in conjunction with construction of the LRT station and track. The number of spaces which could be lost as a result of this construction cannot be determined at this time since both the station design and precise track alignment are unknown.

#### Town and Country - Relationship to Copley and Golden Properties

Currently, the Copley property will be inundated from the 49,000 cfs flood as shown in Figure 6. With the flood control improvements proposed by the Atlas Specific Plan, the Copley property will have 100-year flood protection. This represents significant improvement in flood protection for the Copley property. In order for the proposed flood control improvements to be effective, continuity of the barrier on the south side of the river channel must be maintained. This will mean constructing an earthen levee approximately 7 feet high along the northerly edge of the Union-Tribune (Copley) parking lot, connecting the berm with the southwesterly abutment of the proposed Camino de la Reina bridge. The construction of such a levee would mean the Union-Tribune would lose the use of approximately the northern 50 feet of its property, but with no loss in parking. In light of the flood control protection afforded by a levee, this would be an advantageous trade-off. The only alteration to the Golden property will be associated with the widening of Camino de la Reina. This widening will result in the loss of approximately 27 parking spaces on the Golden property. No alterations to the Golden Property would result from implementation of the Atlas Specific Plan flood control improvements. Additionally, like Copley, Golden would benefit by receiving 100-year flood protection.

#### Town and Country - Relationship to SR-163 and FSDRIP

Figure 7 shows the profile of the 100-year flood under the SR-163 bridge under existing conditions and with implementation of the Atlas Specific Plan. With implementation of the specific plan, the elevation of the floodwaters under SR-163 will be approximately the same as that occurring under the existing condition. The proposed improvements will conform with the FSDRIP improvements upstream and contain the 100-year flood entirely beneath the SR-163 bridge.

In order to provide a smooth transition from the FSDRIP improvements and to direct the flow along the new channel, the existing pilot channel will be widened downstream of the SR-163 bridge. The northern bank of this widened pilot channel will parallel the southern edge of the Fashion Valley parking lot. The southern bank will consist of a levee/buffer area north of Camino de la Reina which will join with the levee proposed in the FSDRIP improvements to protect Camino de la Reina under SR-163 in a 100-year flood. The 10-foot wide shared pedestrian/bicycle path will connect easterly under SR-163 to the FSDRIP pedestrian/bicycle improvements.

Both the proposed FSDRIP improvements upstream of SR-163 and the Atlas proposed improvements include a lowering of the channel bottom, but neither includes a lowering of the channel bottom under the SR-163 bridge. This creates a "high spot" in the channel under SR-163 which serves to slow the flow upstream of the bridge, but means that in the area downstream of SR-163, the channel is susceptible to erosion during moderate floods. For example, with a 10-year flood the water will drop about 13 feet. As flood flows increase, the water level downstream of SR-163 rises to drown out the fall. Velocities at this location remain erosive until after the 10-year (future condition) discharge is surpassed. This area immediately downstream of SR-163 would require slope protection to guard against erosion.

#### Town and Country - Camino de la Reina

The alignment and profile of the Camino de la Reina bridge across the San Diego River was also evaluated by Boyle Engineering. Camino de la Reina west of SR-163 is proposed to be widened by adding 2 lanes to the south of the existing roadway to accommodate two lanes of traffic in each direction. In addition, the future roadway will be lowered under SR-163 to allow 15 feet minimum clearance. Provisions for these improvements are shown in the proposed FSDRIP plans. As part of the Atlas Specific Plan, the alignment and future grade have been matched with that proposed by FSDRIP. Traveling west from SR-163, Camino de la Reina will pass under SR-163, continue west to Avenida del Rio and then proceed north across the river. The river crossing will be perpendicular to the river. After crossing the river channel the roadway would continue west, parallel the northern bank of the new channel and connect with Fashion Valley Road. The distance between SR-163 and Fashion Valley Road is extremely short to accommodate the necessary changes in elevation and direction. Geometric constraints for horizontal and vertical curves, sight distance, super-elevation, and vertical clearance under SR-163 limit the elevation possible for the Camino de la Reina bridge over the new channel; however, the proposed alignment will allow a 10-year flood to pass under the bridge.

The proposed Camino de la Reina alignment also accommodates a connection of Hazard Center Drive from the east. The alignment and future grade of Hazard Center Drive have been matched with that proposed by Hazard Center.

Minor road improvements will also be required to raise the north-south portion of the street east of the Copley property, presently named Camino de la Reina, to match the proposed Camino de la Reina roadway as it rises to cross the river.

As discussed previously, a levee will parallel Camino de la Reina on the south bank of the channel between the Camino de la Reina bridge and SR-163. This levee will match with the levee proposed by FSDRIP to protect Camino de la Reina in a 100-year flood. This area currently floods frequently, closing the road for short periods of time. Under existing conditions flows would reach Hotel Circle North with a 20-year flood. This flooding will be eliminated with construction of the proposed improvements.

#### Town and Country - Transition to Levi-Cushman

Other flood control improvements associated with implementation of the Atlas Specific Plan involve upgrading of Fashion Valley Road and transition to the Levi-Cushman property. The objectives of the Atlas Specific Plan in this regard are to improve Fashion Valley Road to the level of a 10-year crossing and to have floodwaters from the Town and Country site enter the Levi-Cushman property in a manner which is not detrimental to the downstream property. As described previously, the 49,000 cfs flood currently crosses Fashion Valley Road and enters the Levi-Cushman property flowing over an area approximately 2000 feet wide from Hotel Circle North to a point about 600 feet south of Friars Road. The proposed south bank improvements match the Levi-Cushman improvements which will contain the 100-year flow on the south. This will reduce the width of the flow entering the Levi-Cushman property to approximately 1000 feet. This benefits the downstream property as it no longer has to face flooding along a 2000 foot-plus line but rather one less than 1000 feet wide. Without this management of the flow, it would be much more costly for Levi-Cushman to collect and direct the floodwaters through their property as they plan to do in their own specific plan.

As currently constructed, Fashion Valley Road is not protected against the 10-year storm. With specific plan implementation, the existing culverts at Fashion Valley Road will be removed and replaced with a bridge to accommodate the 10-year flow. The channel area immediately upstream would be protected from scouring by riprap because of the extra turbulence which could be experienced. At some point between the 10-year and 25-year storms, Fashion Valley Road will be overtopped. Fashion Valley Road will act as a drop structure for the 100-year flood. As the water flows over the roadway and down the western embankment it reaches erosive velocities. In order to protect the western embankment and the area immediately downstream for the ultimate condition, rip-rap protection similar to what currently exists should be installed along the embankment and for approximately 80 feet downstream. The exact nature and configuration of the protection would depend upon the timing of the development of the Levi-Cushman property. Fashion Valley representatives are currently studying alternatives to the Atlas proposed flood control improvements at Fashion Valley Road to further reduce the existing flooding potential on the Fashion Valley Shopping Center property. Atlas Hotels, Inc. will continue to cooperate in this effort. Should an alternative solution be developed which further reduces the flooding potential on the Fashion Valley Shopping Center property, Atlas Hotels, Inc. will incorporate that solution into subsequent detailed engineering design provided that: the alternative solution meets the approval of all City, State and Federal agencies having jurisdiction prior to the time the river improvements are implemented; the solution does not limit the development of the Atlas properties as provided in this specific plan; and all additional costs resulting from the alternative solution shall be borne by Fashion Valley.



The 10-foot wide shared pedestrian/bicycle path will connect westerly to an undercrossing at Fashion Valley Road to connect with the Levi-Cushman pedestrian/bicycle improvements. The precise alignment and configuration will be coordinated with Levi-Cushman.

Downstream from Fashion Valley Road, on the Levi-Cushman property, a short transition of approximately 1,000 feet (see Figure 13) will bring the new channel alignment back to the existing pilot channel until such time as permanent channel improvements are constructed. The transition channel would only be constructed by Atlas if the Atlas flood control improvements are implemented prior to implementation of the Levi-Cushman flood control improvements. The Atlas Specific Plan recognizes and allows for the changes in the configuration of the channel on the Levi-Cushman property proposed as part of the Levi-Cushman Specific Plan.

As discussed at the beginning of the Flood Management Program, particular attention was given to the coordination aspects between FSDRIP, Atlas Hotels, Inc., Levi-Cushman, and Warner Ranch. Figure 12 illustrates the continuity of the Atlas improvements with the improvements proposed by Levi-Cushman west of Fashion Valley Road and FSDRIP east of SR-163.

#### Town and Country - Flow Velocities

One item of concern with regard to the flood control improvements for the Town and Country site involves potential high velocity of the floodwaters. Between SR-163 and Fashion Valley Road, existing condition channel velocities typically range between four and eight feet per second, with lower velocities at Fashion Valley Road where the flow is slowed by the obstruction created by the road embankment. With the proposed improvements, the 100-year flood will create channel velocities of 4 to 7 feet per second. In the channel reach between Fashion Valley Road and SR-163 channel velocities in a 50-year storm (27,000 cfs) range from 3 to 6 feet per second, velocities in a 25-year storm (11,000 cfs) range from 2 to 5 feet per second, while channel velocities for the 10-year storm (4,600 cfs) are typically less than 4 feet per second.

For storms in excess of 10-year recurrence interval, the Fashion Valley parking lot will also be utilized to convey flow. The velocities in the parking lot tend to be about the same or higher than in the channel. Although the velocity of flow in the parking lot may exceed 7 feet per second in storms greater than 50-year, this is not a concern because the paved parking surface is not susceptible to erosion.

To further minimize both channel velocities and their negative effects, several elements have been incorporated into the design of the channel and banks. First, by creating a wetland habitat with deep pool areas for open water, the velocities are reduced because of the greater flow area provided and by flattening the slope. Second, by including benches and varying the side slopes, the resistance of the channel is slightly increased due to the irregularity of the channel, further slowing the flow. Third, the planting of thick vegetation for the habitat on the banks serves to anchor the soil with a tangle of roots, thereby improving the soil's resistance to erosion, along with creating more flow resistance. Finally, to protect the Fashion Valley Road crossing, SR-163, the pedestrian/bicycle bridge and the Camino de la Reina bridge from undermining, riprap or some other City approved method of erosion protection will be installed in all locations where velocities exceed 7 feet per second. Locations of proposed rip-rap are illustrated in Figures 8, 12 and 13.



## Hanaeli Tower and Hanalei Hotel Sites - Flood Management Program

As part of the Hanalei flood management program, a new 49,000 cfs floodplain and a new 49,000 cfs floodway for existing conditions were defined for the study area between the Morena Boulevard Bridge and Fashion Valley Road. The 49,000 cfs floodway was developed by reducing the existing floodplain's conveyance by equal amounts on each side of the river until a maximum 1 foot rise in the water surface elevation was obtained in accordance with federal criteria. Figure 14 shows the new 49,000 cfs floodplain and floodway limits relative to the existing 36,000 cfs floodway. The 49,000 cfs floodway limits are also shown on Figure 14 both with completion of the proposed improvements by Levi-Cushman and Warner Ranch and without those improvements.

The boundary of the existing conditions 49,000 cfs floodway at the Hanalei Tower and Hanalei Hotel sites is similar to that for the 36,000 cfs floodway as illustrated in Figure 14. All construction at the Hanalei Hotel site and Hanalei Tower will be located outside this 49,000 cfs floodway. It is anticipated that construction at these sites will follow the channelization improvements proposed for Levi-Cushman and Warner Ranch. These improvements will widen the existing pilot channel to contain the 100-year flood and relocate the floodway line further to the north.

No features of the Atlas Plan will preclude developing a new configuration of the floodway proposed by the Levi-Cushman and Warner Ranch Specific Plans. Atlas is working closely with the applicant for the Levi-Cushman and Warner Ranch Specific Plan to develop mutually agreeable flood control solutions.

Additional flood protection will be provided at both the Hanalei Hotel and Hanalei Tower sites by elevating all new construction 2 feet above the level of the 49,000 cfs flood. Since no improvements are proposed by the Atlas Specific Plan in the vicinity of the Hanalei sites which would alter the configuration of the existing floodway, Atlas will not be responsible for any flood control improvements in this area. As in the past, Atlas Hotels, Inc. is willing to work closely with Levi-Cushman to develop mutually agreeable flood control solutions.

## D. REVEGETATION PLAN AND MANAGEMENT PROGRAM

### Introduction

Recognizing the importance of the adjacent wetlands to the Atlas project, the following revegetation plan has been prepared. This section describes the revegetation plans for the Town and Country site, Hanalei Tower, and Hanalei Hotel sites. The revegetation plan complies with the guidelines and criteria outlined in the San Diego River Wetlands Management Plan, with the exception of meeting the percentage criteria for freshwater marsh habitat as identified in that plan. Complete listings of plants and animals observed on the property are included in the appendix to the EIR which accompanies this Specific Plan.

The purpose of the Revegetation Plan is to outline an effective means of compensating for loss of biologically valuable wetland habitats of the San Diego



River associated with development of the Atlas Specific Plan area. This Revegetation Plan is guided in its preparation by the San Diego River Wetlands Management Plan, prepared by the City of San Diego Environmental Quality Division. The Wetlands Management Plan is an element of the Mission Valley Community Plan, and its purpose is to allow for continued development of the Mission Valley area, while at the same time permitting no net loss of wetland habitat within the floodway zone. The Wetlands Management Plan is comprehensive in that if its requirements are met, requirements of state and federal agencies responsible for wetlands preservation and enhancement should also be met.

Revegetation of wetland habitats within San Diego County is a relatively new phenomenon, and no "proven" methods have been established; however, considerable research and in-the-field work has been done elsewhere in southern California. This work, by Dr. Bertin W. Anderson and John Disano of the Colorado River Laboratory, is of much help in outlining specifics such as planting depths, spacing, irrigation, etc.. Much of the logic for wetlands habitat revegetation is a result of observing man-made and natural disturbances within floodplains, and the effects these phenomena have on the vegetation. A revegetation effort is currently under way east of the Atlas Specific Plan area and is beginning to yield some useful information.

#### Purpose

Specifically, the purpose of the revegetation plan is to present in detail specifications for establishment and maintenance of biologically viable riparian woodland, freshwater marsh, and open water habitats. Wetland habitats will be created from uplands, and degraded wetlands will be replaced with newly created wetland habitats. The newly-created wetlands must be of high use to native wildlife species; wildlife preservation is one of the chief reasons why wetlands are being preserved along the San Diego River. In order to achieve high wildlife usage of the wetlands, the revegetation effort must be properly planned, executed, maintained and monitored.

#### Status of Existing Habitats

This Revegetation Plan addresses the biological resources of three Atlas Hotels sites in Mission Valley, San Diego, California. Riparian resources of the San Diego River will be altered in each case. This revegetation plan focuses on the following areas: existing conditions, expected project impacts on riparian resources, and revegetation guidelines to mitigate impacts.

The area surveyed for this revegetation plan includes the riparian habitats of the San Diego River which front the Hanalei Hotel and Hanalei Tower sites, and similar habitats in the vicinity of the Town and Country Hotel site (from Fashion Valley Road east to SR-163). The sites were surveyed by Eric N. Wier and Harold A. Wier, biologists.

Three native plant communities occur over the sites: riparian woodland, freshwater marsh and open water. An additional native category, floodplain, was mapped. Several non-native or disturbed areas are present, such as lawn, eucalyptus grove, pavement, exotic landscaping and bare soil.

Riparian Woodland is characterized by an overstory of riparian trees such as Fremont cottonwood (Populus fremontii), arroyo willow (Salix lasiolepis) and black willow (Salix gooddingii). Understory plants are absent in many places, but where present include natives such as green sedge (Cyperus eragrostis), sandbar willow (Salix hindsiana) and mule fat (Baccharis glutinosa), and woods such as giant reed (Arundo donax) and castor bean (Ricinus communis). The height of trees ranges from about 2.5 meters to over 12 meters. Riparian woodland covers approximately 1.6 acres at Hanalei Hotel and Hanalei Tower sites and 2.8 acres at the Town and Country site.

The existing riparian corridor is very restricted, and pressure from human usage and general disturbance is very high. The proximity of major highways and roads, and busy commercial areas such as Fashion Valley currently have a significant adverse effect on habitat quality. However, wildlife usage remains moderately high. One contributing factor to the relatively high usage is the greenbelt surrounding the river along most of its length from Morena Boulevard east to Fashion Valley Road. The golf courses comprise most of this greenbelt, together with weedy areas and scattered native and exotic trees. Whether natural or not, the greenbelt provides forage, cover and nesting opportunities for many species. Many animals utilize both the greenbelt buffers and the riparian habitats. If the golf courses and other open space areas were eliminated, use of the riparian habitats would probably decrease. Certain species would suffer more than others, such as ash-throated flycatcher and blue grosbeak.

Freshwater marsh is characterized on-site by dense stands of California bulrush (Scirpus californicus) and Cattail (Typha spp.). This plant community occurs within the river, or on its banks, and in most cases, the plants have their "feet in water." These plants range in height from about 1.5 to 3 meters. Freshwater marsh occurs only at the Town and Country site, and covers 1.1 acres.

A fourth wetland category was mapped, and is termed "floodplain." This is a somewhat transitional type as a result of disturbance from natural causes such as flooding. On-site it is characterized by an absence of a significant amount of vegetation, and the presence of gravel or sand bars. This habitat type covers about 0.6 acre east of the Town and Country site and west of SR-163.

Other non-native cover types occur in the project area, including eucalyptus groves dominated by blue gum (Eucalyptus globulus), disturbed areas, and areas landscaped with lawn and trees. In total, these non-native types cover about 7 acres in the project area.

### Flora

The recorded flora for the sites totals 72 species, 21 of which are native (29%), 51 of which are non-native (71%). The native flora is typical of lowland riparian habitats in coastal southern California. The San Diego River habitats in this area are highly disturbed and impinged-upon by human uses on all sides. This partially accounts for the high number of non-native species recorded. Also, floodplains tend to support many exotic species due to the frequent natural disturbance as a result of flooding.



No plant species considered rare, endangered or threatened by federal or state agencies was detected or is expected on the sites. The lower San Diego River floodplain is not known for its sensitive plant habitat; a few species could reasonably be expected, including Palmer's ericameria (Ericameria palmeri), San Diego sagewort (Artemisia palmeri), and San Diego ambrosia (Ambrosia pumila). These species were looked for and not found in the surveyed area.

### Zoology

(Amphibians and Reptiles). One amphibian, bullfrog (Rana catesbeiana), and one reptile, great basin fence lizard (Sceloporus occidentalis longipes), were observed. Several other species are expected, including garden slender salamander (Batrachoseps major), pacific treefrog (Hyla regilla), San Diego alligator lizard (Gerrhonotus multicarinatus webbi), and gopher snake (Pituophis melanoleucus). A more intensive survey for this group of animals would produce a greater variety of species.

### Birds

Fifty-four species and about 375 individuals were detected on the sites. Most of these species were associated with riparian habitats, and breeding behavior was noted in many. A higher species total is expected for this stretch of the San Diego River, with the addition of many winter and summer visitors and transients. Over 100 species have recently been recorded for the freshwater portion of the San Diego River in Mission Valley (Nasland Engineering, 1981-1983).

Of special note is the presence of a possible nest burrow of a belted kingfisher, a very uncommon nesting species in San Diego County. Nesting activity was not confirmed, as a bird was seen exiting the hole only once and was not observed in the area again. This species requires vertical or nearly vertical soil or soft rock banks for nesting. This habitat occurs in only one location in the project area, south of the Fashion Valley parking lot.

### Mammals

A total of 4 species was detected by means of direct observation and indirect evidence: brush rabbit (Sylvilagus bachmani) was common in the non-riparian areas; Botta's pocket gopher (Thomomys bottae) was in evidence in some areas; California ground squirrel (Spermophilus beecheyi) was uncommon; coyote (Canis latrans) scat was found in one location; and black rat (Rattus-rattus) was observed along the river bank. Numerous other mammals are expected, including several species of bats and mice, opossum, striped skunk, long-tailed weasel and grey fox.

No animals currently considered rare, threatened or endangered by federal or state authorities were detected or are expected on-site.

### Analysis of Significance

The most significant biological resources associated with the sites are, of course, the San Diego River riparian habitats. It can be effectively argued that these habitats are of lower quality than on much of the rest of the river. This fact does

not diminish the importance of the river and the semi-developed land around it as existing, functional habitat and as potentially high-quality habitat. The San Diego River riparian corridor must be considered as an entire system, not as sections of significant and insignificant habitat which could be alternately developed and preserved.

The presence of a nesting Belted Kingfisher on-site may be considered significant. Due to the lack of evidence for nesting activity, however, the observation is only of interest at this time.

### Expected Biological Impacts

Development of the sites is expected to have direct and indirect biological impacts. All wetland vegetation will probably be temporarily destroyed as a result of river course alteration. Approximately 4.73 acres of riparian woodland, 1.41 acres of freshwater marsh and 1.78 acres of open water habitat would be impacted between SR-163 and Fashion Valley Road and adjacent to the Hanalei sites. Approximately 0.45 acres of riparian woodland habitat would not be disturbed at the Hanalei Hotel site; however, the elimination of related habitat due to site development may not ensure the viability of the undisturbed riparian woodland habitat. For this reason, this undisturbed riparian woodland habitat has not been credited to the impacted habitat at the Hanalei sites. In addition, the proposed Via las Cumbres (at Hanalei) and Camino de la Reina (at Town and Country) bridges will have a "shading effect" on the vegetation below. Habitat value will be reduced to an unknown degree, but to be conservative, 100% reduction in quality has been assumed for purposes of determining the mitigation requirements in the revegetation plan. The actual amount of disturbance will depend on factors such as the height of the bridge above the river and the type and extent of abutments and supports used in the bridge design. A high bridge with a small amount of disruption within the river channel will probably have a minimal long-term impact on biological resources.

Any increase in lighting associated with walkways, bicycle paths, and visual landscaping effects will likely have a detrimental impact on wildlife usage of the river corridor. The degree to which lighting impacts wildlife activity depends on its brightness, angle, duration, and frequency per unit of distance. Lighting proposed adjacent to the river corridor will be reviewed by EQD.

Direct impacts during construction will severely disrupt wildlife activities along the river. The greatest disturbance will result from removal of vegetation and rechannelization of the river. Secondary impacts will result from noise, dust and soil compaction.

### Mitigation Measures

Several measures can be taken to mitigate the effects of the proposed development. The most basic and effective of these is compensation for lost acreage through habitat restoration. This type of mitigation is required as a result of the San Diego River Wetlands Management Plan in the form of a comprehensive revegetation plan. Such a revegetation plan has been prepared for the Atlas properties and is described below.

Construction impacts are not easily mitigated, but certain general guidelines can be followed to minimize the effects of potentially harmful activities:

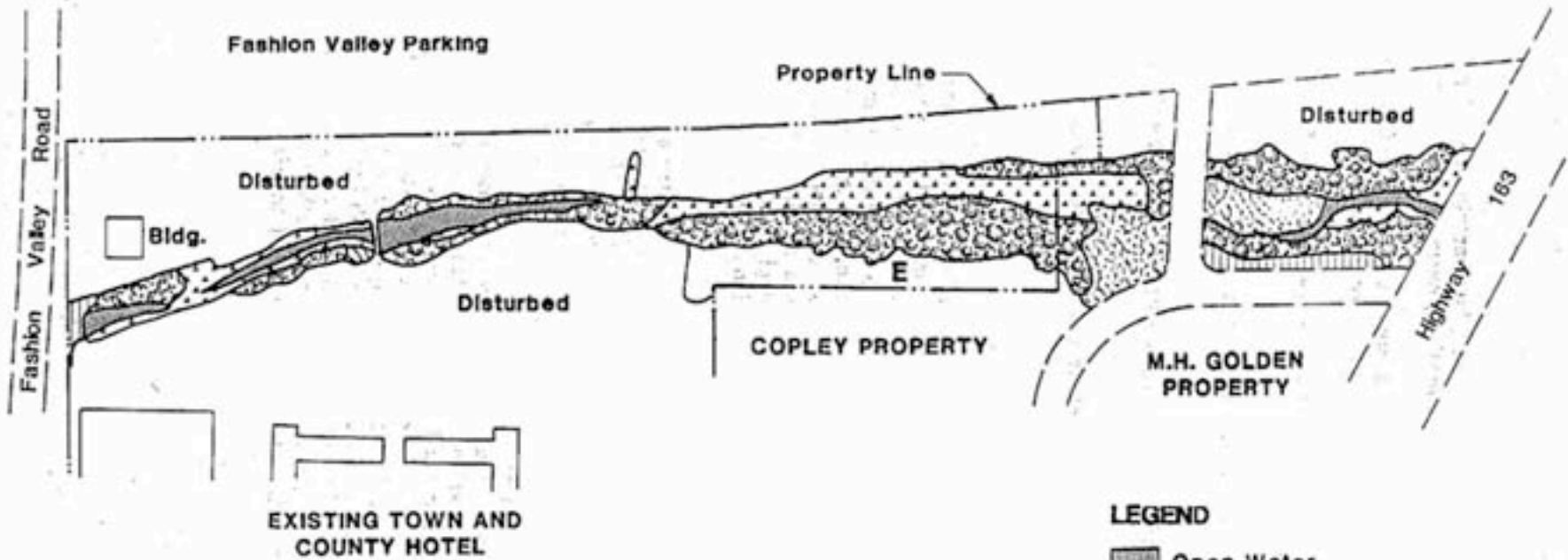
1. Remove vegetation during the late summer, when birds have completed nesting, and before migrant populations arrive in the area.
2. Preserve as much existing native riparian vegetation as possible, especially large willows and cottonwoods.
3. Keep to a minimum the time between vegetation removal and wetland habitat replanting.
4. Plant vegetation for restoration as soon as possible after finish grading is complete.
5. Provide certain areas for dense plant vegetation to hinder public access or disturbance to wildlife habitats.

#### Compensation Concept

The primary objective of the Atlas Revegetation Plan is to compensate for all on-site and off-site impacts to wetland resources on an acre-for-acre basis. Off-site impacts associated with development of the Town and Country site include the upstream area between SR-163 (the western limit of the FSDRIP improvement) and the eastern boundary of the Town and Country site, and the area west of Fashion Valley Road which would contain the transition channel on the Levi-Cushman property if the Atlas flood control improvements are implemented prior to the implementation of the Levi-Cushman flood control improvements. Off-site impacts associated with development of the Hanalei sites include disturbance associated with development of Via Las Cumbres.

Existing and proposed habitats at both the Town and Country and Hanalei sites are illustrated in Figures 15 and 16. Existing and proposed habitats at the Levi-Cushman transition area are illustrated in Figures 17 and 18. Existing habitats at the Hanalei sites are illustrated in Figure 19. Table 7 summarizes the acreages of existing habitats on both sites. Table 7 also summarizes the acreages of wetlands expected to be disturbed and created in conjunction with implementation of the Atlas Specific Plan. As shown on Table 7, compensation for wetlands disturbance would be provided on greater than an acre-for-acre basis for the open water, freshwater marsh and riparian woodland habitat vegetation categories. Compensation for habitats disturbed at the Hanalei sites can be provided at the Town and Country and Camino de la Reina (off-site) revegetation areas. Revegetation to be provided at the Town and Country site will mitigate all impacts to open water, riparian woodland, and freshwater marsh habitats within the Atlas Specific Plan area. It should be noted that the impact on habitats resulting from Via Las Cumbres has been eliminated from the calculations in Table 7 due to the current realignment of the proposed road to the east of the Hanalei sites.

NO SCALE



**LEGEND**

-  Open Water
-  Riparian Woodland
-  Freshwater Marsh
-  Floodplain
-  Arundo Donax
-  Eucalyptus
-  Concrete

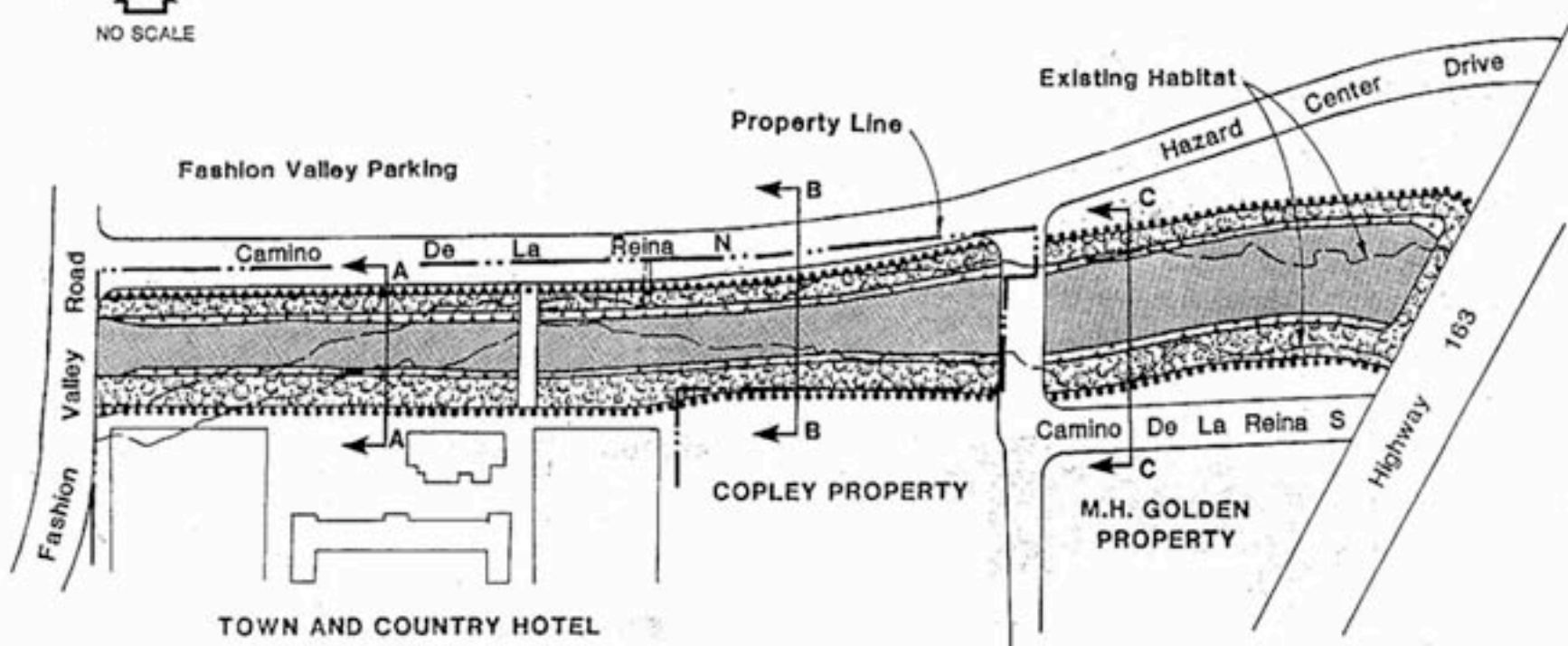
**Town and Country Hotel  
Existing Habitats**  
Atlas Specific Plan







NO SCALE



TOWN AND COUNTRY HOTEL

LEGEND

- ..... Top of Channel Bank
- Riparian Woodland
- Freshwater Marsh
- Open Water

Town and Country Hotel  
Proposed Habitats

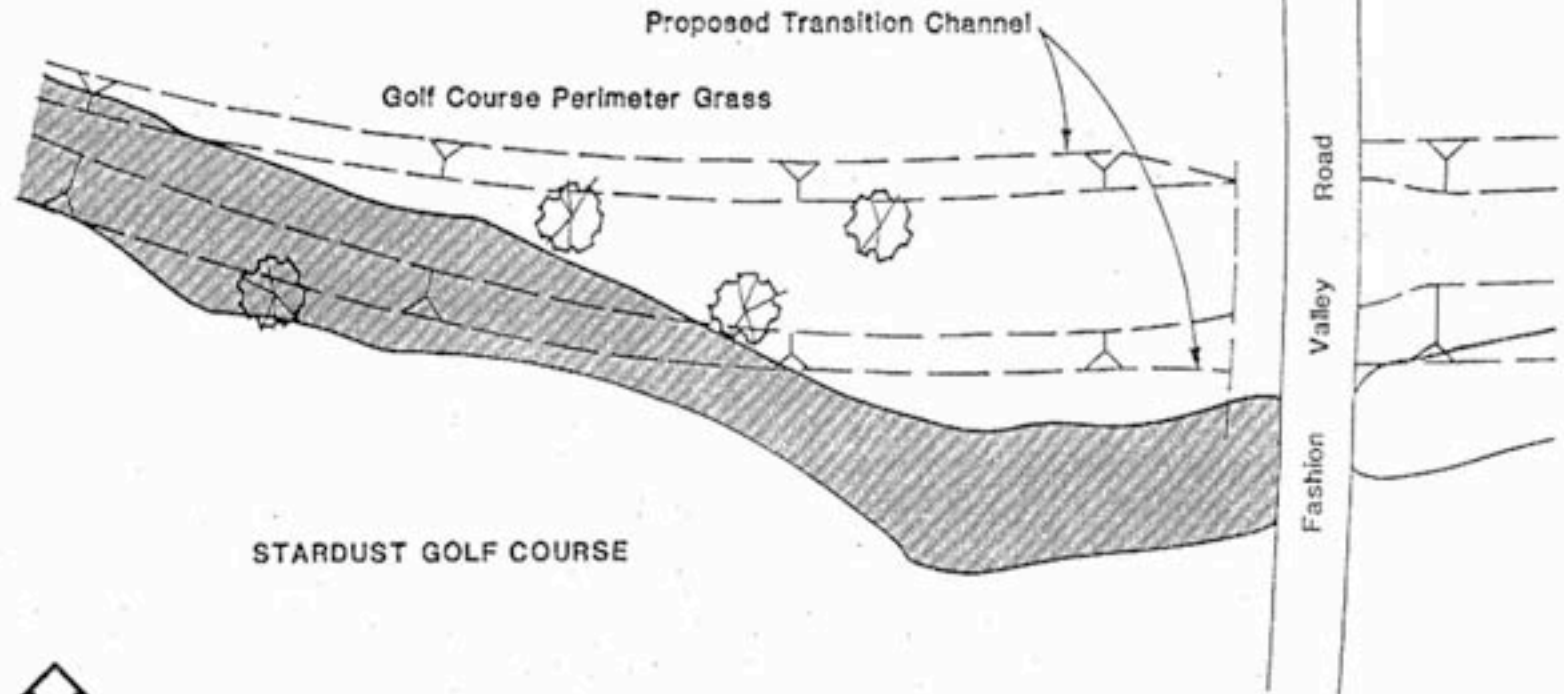
Atlas Specific Plan

16

FIGURE





STARDUST GOLF COURSE



STARDUST GOLF COURSE

NO SCALE

LEGEND

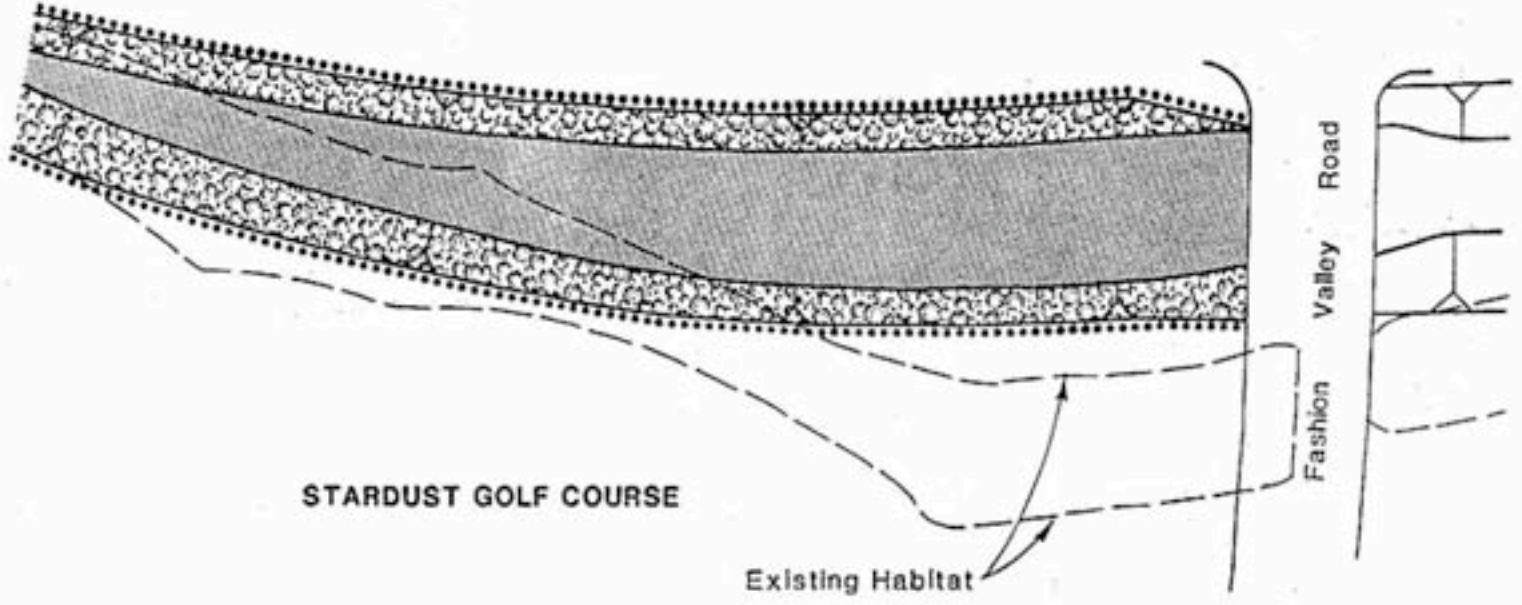
-  Open Water
-  Riparian Woodland Tree

Levi-Cushman Transition Channel  
Existing Habitat

Atlas Specific Plan



STARDUST GOLF COURSE





STARDUST GOLF COURSE

Existing Habitat

Road  
Valley  
Fashion

  
NO SCALE

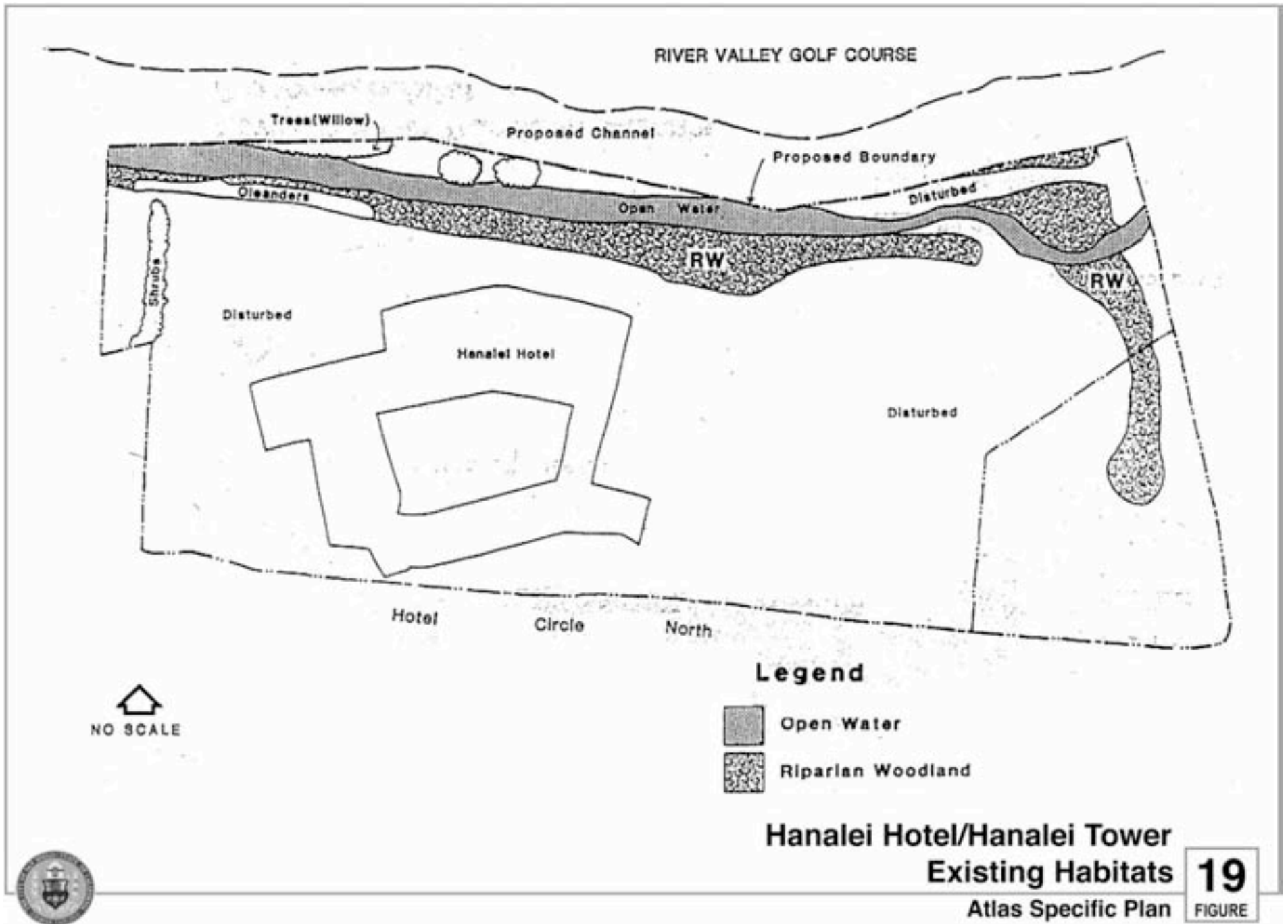
LEGEND

- ..... Top of River Channel Bank
-  Riparian Woodland
-  Open Water

Levi-Cushman Transition Channel  
Proposed Habitat

Atlas Specific Plan





**Hanalei Hotel/Hanalei Tower  
Existing Habitats**  
Atlas Specific Plan





TABLE 7  
ATLAS REVEGETATION PLAN  
ACREAGE SUMMARY

Habitat Type	EXISTING CONDITIONS				IMPACT				MITIGATION					
	Atlas Specific Plan		Atlas Specific Plan		Atlas Specific Plan		Atlas Specific Plan		Town and Country		Camino de la Reina (off-site)		% Of Habitat Type	
	Town and Country	Camino de la Reina (off-site)	Hanslet Sites	Total	Town and Country	Camino de la Reina (off-site)	Hanslet Sites	Total	Create	Destroy	Create	Destroy	Total	% Of Habitat Type
Open Water	0.45	0.13	1.2	1.78	0.45	0.13	1.2	1.78	2.00 <sup>2</sup>	2.01 <sup>2</sup>	2.01 <sup>2</sup>	2.01 <sup>2</sup>	5.12	92
Freshwater Marsh	1.11	0.30	---	1.41	1.11	0.30	---	1.41	1.22	0.16	0.16	0.16	1.68	14
Riparian Woodland	2.81	0.32	1.6	4.73	2.81	0.32	1.6	4.73	2.37 <sup>3</sup>	1.56 <sup>3</sup>	1.56 <sup>3</sup>	1.56 <sup>3</sup>	3.13	92
Floodplain	---	0.59	---	0.59	---	0.59	---	0.59	---	---	---	---	---	---
Total Wetland	4.37	1.36	2.8	8.51	4.37	1.36	2.8	8.51	7.88	4.05	4.05	4.05	11.93	100

Note: Acreages are approximate.

1. Includes 0.45 acres of existing riparian woodland habitat which would not be disturbed by the proposed development but whose long-term viability is questionable, given anticipated relocation of the floodway boundary at the Hanslet sites.
2. Includes mitigation for 1.2 acres of open water to be disturbed at the Hanslet Sites.
3. Includes mitigation for 1.6 acres of riparian woodland to be disturbed at the Hanslet Sites.
4. San Diego River Wetlands Management Plan.

The Levi-Cushman transition channel is treated separately in the revegetation plan due to the uncertainty associated with its construction. The transition channel would only be required if flood control improvements proposed at the Town and Country site are implemented prior to implementation of flood control improvements on the Levi-Cushman property. In such circumstance, a revegetation plan would be implemented for the transition channel with compensation based on the acreage calculations presented in Table 8. As shown in Table 8, compensation would be provided on greater than an acre-for-acre basis. The Levi-Cushman transition channel, and associated revegetation efforts, are regarded as temporary and would be removed in conjunction with implementation of flood control and revegetation plans planned for the Levi-Cushman Specific Plan area.

### Slope Protection

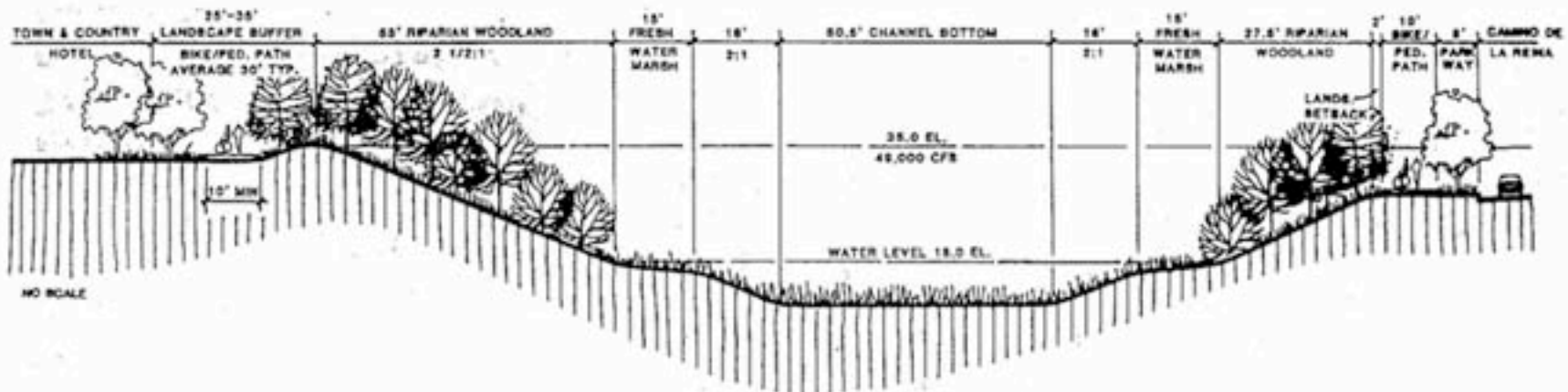
An important consideration in the development of a revegetation plan for the Town and Country site is the relationship between the revegetated areas and flood protection devices. Minimal erosion protection will be required in certain locations in order to protect Fashion Valley Road, the downstream end of SR-163, the pedestrian/bicycle bridge between Town and Country and the Fashion Valley Shopping Center, and the Camino de la Reina Bridge from erosion. Erosion protection in these areas will include rip-rap or some other erosion protection material subject to the approval of the City of San Diego. The proposed locations for erosion protection are illustrated in Figures 9, 12, and 13.

### Treatment of Habitat Types

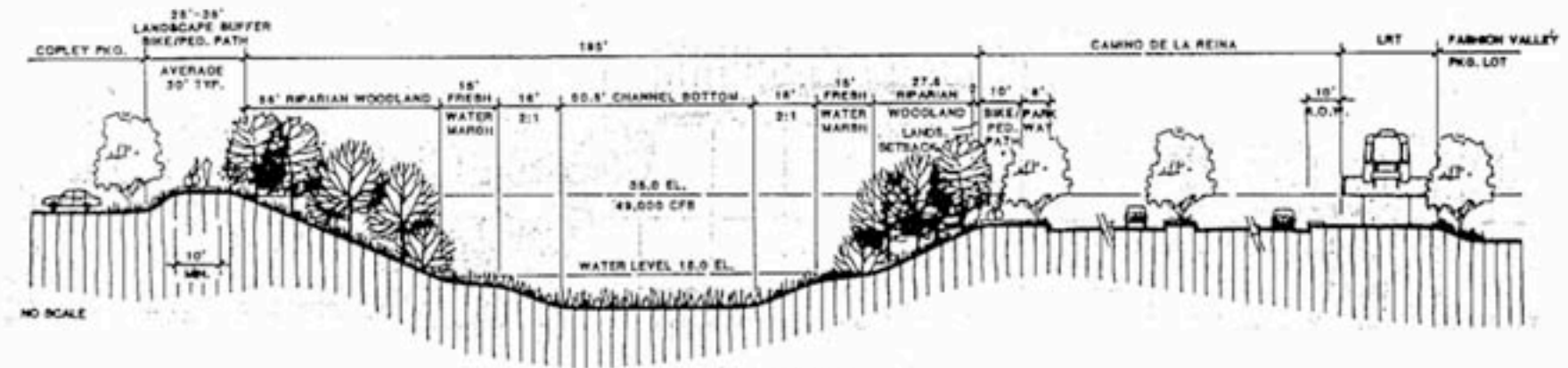
Three section drawings of the proposed Town and Country revegetation plan are illustrated in Figures 20 and 21. The proposed revegetation plan at the Town and Country is illustrated in Figure 16. The proposed revegetation plan for the Levi-Cushman transition area is illustrated in Figure 18.

#### o Buffer Planting

The Wetlands Management Plan calls for the location of buffers an average of 20 feet wide outside of the floodway on both sides of the river. According to this definition, only the buffer areas located on the south side of the river channel could be considered to be true buffers. The landscaped areas on the north side of the river channel are located within the floodway due to the continued use of the Fashion Valley parking lot as an overbank area. Since the San Diego River Wetlands Management Plan requires that buffers be located outside the floodway, these landscaped areas cannot be termed buffers and have thus been termed landscaped setback area in this specific plan. On the south side of the river channel, the proposed buffer in the vicinity of the Golden and Copley properties would be located along the top of and on the backside of the levee and would be an average of 30 feet in width. The proposed buffer along the Town and Country site would be located between the top of the channel and the proposed development and would be an average of 30 feet in width. The landscaped setback on the north side of the river between Fashion Valley Road and the proposed bridge between Camino



Section A-A

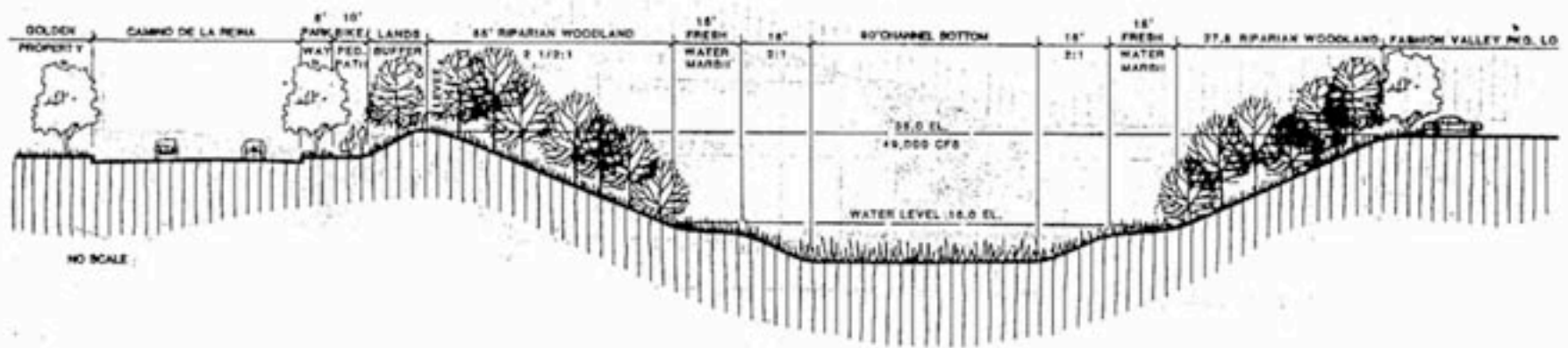


Section B-B

Town and Country Hotel  
Proposed Revegetation Sections A-A, B-B

Atlas Specific Plan





Section C-C

Town and Country Hotel  
 Proposed Revegetation Section C-C  
 Atlas Specific Plan

**21**  
 FIGURE





Table 8  
Revegetation Summary  
Levi-Cushman Transition Channel

<u>Habitat Type</u>	<u>Existing Conditions</u>	<u>Impact</u>	<u>Mitigation</u>
Open Water	1.4	1.4	1.7
Freshwater Marsh	0	0	0
Riparian Woodland	0	0	1.42
TOTALS	1.4	1.4	3.12

de la Reina North/Hazard Center Road and Camino de la Reina South would be 2 feet wide outside of the Camino de la Reina right-of-way, which is proposed to be expanded to include an 8-foot wide parkway and 10-foot wide sidewalk. The placement of landscaped areas along the north side of the channel would occur within the floodway and are thus not considered buffers by the Wetlands Management Plan.

The landscape plantings in the buffer areas and the landscape setback area will screen the wildlife habitat areas in the wetlands from the adjacent human activities associated with the planned development. The plantings will also provide valuable habitat edge and additional opportunities for non-wetland wildlife, thereby increasing the overall species diversity within the affected area. A 10-foot wide pedestrian/bicycle path will occur along the south side of the river channel and may be located within the buffer. The buffer areas and landscape setback areas will provide a visual transition between the manicured and ordered plant groupings associated with a maintained landscape and less orderly planting of other naturalistic wetland habitat. Finally, visual access to the wetland areas will be maintained from the buffer areas although physical access will be prohibited. The urban design section of this specific plan contains specific criteria for the development of the river corridor.

All plant material used in the buffer areas and landscape setback areas will be native. Suggested trees and shrubs include white alder, western sycamore, Fremont cottonwood, and coast live oak. The trees should be spaced to allow for an open canopy at final maturity. The shrub understory should be densely planted in order to provide a high degree of cover for wildlife, denser screening from adjacent human activities, and an effective barrier to human access to habitat areas.

o Riparian Woodlands

Riparian woodlands will be a tree-dominated plant association between the buffer plantings and the freshwater marsh areas. There will be two basic types of riparian

woodland; the cottonwood association or a drier habitat located away from the water's edge from the top of the 2½:1 channel bank to the middle of the 2½:1 channel bank, and the willow association or a wetter habitat located from the middle of the 2½:1 channel bank to the lower edge of the 2½:1 channel bank. Trees of varying stature will be planted. Of the planted, 1-gallon tree stock, 40 percent will be black willow and 35 percent shall be a combination of at least two of the following: arroyo willow, red willow or polished willow. The remaining 25 percent of the trees will be white alder and Fremont cottonwood. The willows should be planted 10 feet apart, the alder and cottonwoods 15 feet apart. Shrubs should be planted 3 feet apart and extend only 5 feet into the tree plantings.

o Freshwater Marsh

This plant association will begin at the water's edge where it occurs (see Figure 16). Basically freshwater marsh will occur along continuous, gently sloped banks on both the north and south sides of the river channel and would average 15 feet in width on both sides. The plant material may be collected locally, using whole plants and rhizomes of cattail, bulrush, and others. One stem will be planted approximately every 5 feet, but not in an exactly linear arrangement. Dense planting is not necessary as this plant community will invade on its own.

o Open Water

Open water areas will not be planted.

Distribution of Habitat Types

The San Diego River Wetlands Management Plan identifies the following criteria for distribution of habitat types within the wetlands corridor:

Open Water	20-40%
Freshwater Marsh	25-35%
Riparian Woodland	35-45%

As shown in Table 7, the distribution of habitat types within the Atlas Specific Plan Revegetation Plan is 43% open water, 14% freshwater marsh and 43% riparian woodland. The revegetation plan does not, therefore, meet the distribution percentage criteria for freshwater marsh habitat as identified in the San Diego River Wetlands Management Plan. It does, however, replace the freshwater marsh habitat on greater than an acre-for-acre basis.

Selection of Plant Material

The plants recommended for use in the revegetation plan are listed in Table 8. Some of the plant species suggested for use in revegetation are not readily available at nurseries. It is suggested that several sources be considered when arranging for plant stock. Most preferable are local sources such as Mission Valley. Many species, such as arroyo willow, become established readily from suitable cuttings. Rooted cuttings should be healthy, pest-free, and properly fertilized. Of high importance is the purity of the plant material collected in the local area. Great care must be taken not to introduce invasive weeds such as giant reed (Arundo donax), castor bean (Ricinus communis), pampas grass (Cortaderia spp.)

and tamarisk (*Tamarix* spp.), with containerized stock. These plants deteriorate the quality of riparian habitats and spread rapidly once introduced by seed or stolons. Use of 1-gallon stock is highly encouraged, as larger individuals have a lower survival rate, slower growth, and a lower chance of developing an adequate (deep) root system.

#### Site Preparation

Site preparation is necessary prior to revegetation of wetland plant communities. Included in these site preparations will be state-of-the-art techniques such as:

1. Regrading of upland areas such that the finish grade is near the average water table level. This will allow for the conversion of upland plant communities to wetland plant communities.
2. Removal of weed species through both mechanical means, such as hoeing or discing, and the application of approved herbicides compatible with the wetland plant and animal communities.
3. When planting trees and shrubs from containers in compacted soils or soils less permeable than sand, holes must be augered to permanently moist soil.
4. Conduct soils analysis for soil layering, soil density, and salinity. The consulting biologist shall review soil conditions prior to grading to ensure that optimal soils are present in revegetation areas.
5. Backfill holes with loose soil material amended with appropriate nutrients, as determined by soil analysis.
6. Mass deep tillage of the soil may be an alternative to augering of individual plant holes. The consulting biologist shall determine the appropriate technique for various areas. The time between soil preparation and planting must be minimized to prevent drying and hardening of the prepared soil.

Table 9

Selected Plants for Use in Revegetation

1. Trees for Riparian Woodland

Platanus racemosa Western Sycamore 2,3  
Populus fremontii Fremont Cottonwood 1,2,3  
Quercus agrifolia Coast Live Oak 2  
Salix gooddingii Black Willow 1,2,3  
Salix hindsiana Sandbar Willow 1,2,3  
Salix laevagata Polished Willow 1,2,3  
Salix lasiandra Red Willow 1,2,3  
Salix lasiolepis Arroyo Willow 1,2,3

2. Shrubs for Riparian Woodland

Amorpha fruticosa False Indigo bush 2  
Artemisia douglasiana Western Mugwort 2,4  
Artemisia palmeri Palmer Sagebrush 2,4  
Baccharis glutinosa Mule Fat 3,4  
Clematis lasiantha (vine) Pipestem Clematis 2  
Hymenoclea monogyra Cheesebush 4  
Iva hayesiana San Diego Poverty Weed 2  
Rosa californica California Rose 2,3  
Rubus ursinus California Blackberry 2,3  
Salix hindsiana Sandbar Willow 1,2,3  
Solanum douglasii White Nightshade 2  
Vitis girdiana (vine) Desert Grape 2

3. Perennials for Freshwater Marsh

Alisma trivale Common Water Plantain  
Anemopsis californica Yerba Monsa 3  
Carex spissa San Diego Sedge 3  
Juncus acutus Spiny Rush 3  
Mimulus cardinalis Scarlet Monkey Flower 3  
Phragmites communis Common Reed  
Psoralea macrostachya Leather Root 3  
Scirpus acutus Hard-stem Bulrush 3  
Scirpus americanus Three-Square 3  
Scirpus californicus California Bulrush 3  
Scirpus olneyi Olney's Bulrush 3  
Scirpus robustus Pacific Coast Bulrush 2,3  
Sparganium eurycarpum Broad-fruited Bur-reed 4  
Typha spp. Cattail 3

4. Annuals and Herbaceous Perennials for Riparian Woodland, Buffer and Landscape Setback Plantings

Camissonia cheiranthifolia ssp. suffruticosa\* Primrose  
Eremocarpus setigerus Doveweed  
Eriogonum parvifolium (s) Buckwheat





## Maintenance

### o Irrigation

A temporary irrigation system will be necessary to establish plant material in the riparian woodland and buffer areas. Depending upon the time of year the freshwater marshes may also require some supplemental watering. A drip irrigation system approved by the consulting biologist should be used in the riparian woodland and buffer areas so that deep penetration of the root system is encouraged and permanent (non-irrigated) establishment is more likely. Plants should be tested for establishment after an appropriate period of months by withholding water to a test block in each habitat. If wilting or other drought-related stress occurs, irrigation must be resumed until such time as all the plant stock is self-sufficient. The time it takes for various plant species to become established will vary.

### o Weed Control

Noxious and invasive weeds such as giant reed and castor bean must not be allowed to invade the revegetation site, as their presence will adversely affect habitat quality and aesthetic appearance. These weeds should be treated with an environmentally safe herbicide suitable for use in wetland habitats. The biological consultant should be consulted in this matter.

### o Replacement

During the first five years, all trees and shrubs lost to vandalism, disease, underwatering, flooding, etc., shall be replaced in-kind or with a suitable replacement (with approval of the biological consultant). Replacement applies only to newly created or enhanced wetlands, not to existing habitat, unless revegetation elsewhere has affected existing habitat.

### o Routine Maintenance

Routine maintenance will be conducted at the project site. It will consist of three elements: 1) Bio/landscaping; 2) Hydraulic efficiency; and 3) Aesthetic.

The Bio/landscaping aspect will relate directly to the monitoring and management of the riverine vegetation. Specifically, routine irrigation, replacement of any dead plants (unless the biologist indicates otherwise), vegetation removal to establish intended patchiness, soil preparation, control of pest species, weed removal, or measures taken to correct human intrusion problems, such as new fencing, signing or buffer plantings. Irrigation will be maintained at a level specified by a certified landscape architect or the biological consultant to ensure success of the revegetation effort. This may require a system of valves of differential emitters.

The hydraulic efficiency of the new channel must be maintained to ensure the 100-year flood flow of 49,000 cfs. If maintenance dredging is necessary, it should be confined to the open water areas of the channel and initiated by the decision of the City's Engineering and Development Department and the Army Corps of Engineers. No dredging shall occur without prior approval of appropriate agencies.

Aesthetic maintenance will consist mostly of trash clean-up and repair of walkways and will be key to the Revegetation Plan with regard to attractive, practical vegetation. Dead plants will be removed (if indicated by the biologist) and new ones replanted.

The overall maintenance aspect of this plan can be carried out rather routinely each year as needed but should be managed carefully to avoid "manicurization" of the habitat areas, but at the same time, meet the visual needs of the adjacent developments.

### Implementation

Performance of the management plan will be secured by the applicant in a manner satisfactory to the reviewing agencies.

According to the San Diego River Wetlands Management Plan, mitigation of impacts to wetland resources should occur at the time those impacts take place. Impacts to wetland resources within the Atlas property holdings along the San Diego River may take place at several different times. This is especially true when the proposed road improvements, Light Rail Transit (LRT) line and other developments north of the river are considered. Implementation of the revegetation plan will, however, take place in conjunction with construction of the Town and Country site flood control improvements. The described improvements will be constructed at Atlas cost and expense concurrently with the development of Phase Two of the Town and Country site provided, however, that if Atlas proposes development in the 100-year floodway as a part of Phase One of the development of the Town and Country site, the river improvements and revegetation plan will be implemented concurrently with Phase One. Atlas Hotels, Inc. will bond for the river channel improvements including the revegetation plan, or provide other assurance of funding acceptable to the City, prior to the issuance of building permits for the Town and Country Phase One development. Atlas may seek to establish one or more assessment districts for the purpose of financing the construction of the river improvements, including the revegetation plan and other public amenities adjacent to the river, and the City shall assist Atlas in establishing such assessment districts.

### Monitoring of the Revegetation Program

The success of the revegetation plan will be monitored by a biological consultant. The establishment of mature vegetation and restoration of habitat value will require a number of years and the monitoring program is designed to assess the progress of the vegetation effort and enable any necessary modifications to be made in a timely manner. A generalized discussion of the basic components of the monitoring methodology is provided. The following factors will be evaluated:

- o Foliage density and diversity
- o Foliage patchiness
- o Plant growth rate and mortality (species-specific)
- o Water flow and surface elevation

- o Habitat density and diversity
- o The period of monitoring will be five growing seasons, beginning with the first spring after revegetation.
- o Documentation will consist of color aerial photography; habitat mapping, and vegetation sampling. Through the first 2 years after revegetation, field visits should be monthly and reports to EQD should be quarterly. In the 3rd, 4th, and 5th years, the visits should be bi-monthly (6 per year), and reports should be bi-annual (2 per year).
  1. Aerial photography at 1" = 200' scale, flown by a professional service, with a 9" x 9" format. One set of stereo pairs will be taken in the late spring or early summer of each year.
  2. Habitat mapping on 1" = 200' scale, from the aerial photographs and field visits. Prepare habitat maps monthly. Censusing will be done according to seasons on the basis of phenology and the timing of nesting and migration; censusing will take place on at least five different days distributed throughout each season of sampling.
  3. Vegetation sampling. The purpose will be to document growth and survival. Field measurements to assess the progress of the vegetation development will be made on a semi-annual basis in May or June and again in August or September until the vegetation has stabilized as determined by the biological consultant, at which time measurements may be reduced to annually.
    - a. Measure growth of tree species — height, canopy diameters, and trunk diameter. Sample size should be sufficiently large to be statistically significant (eliminate large standard deviations).
    - b. Survivorship of planted stock by direct count within permanent plots. Plot size will be representative and selected to yield a sufficiently large sample size. This may require counts of all planted specimens. Stratify according to habitat, soil differences, water level differences, and other if necessary.
    - c. Document results with color slides (for the project file) and prints (for the quarterly reports).
  4. Landforms. Describe the stability or failure of original and constructed landforms, as well as soil limitations to plant growth.
  5. Irrigation system. Describe the functioning of this system.
  6. Weed control. Describe the growth of pest plants.
- o Reporting will be done quarterly to EQD using a standard scientific format. Discuss revegetation progress, failures, and success of corrective actions that were recommended in earlier reports.



- o **Recommendations:** In each quarterly report, identify specific corrective actions which should be undertaken. In the final report, identify specific corrective actions which remain to be undertaken in order to complete successful revegetation. Reports will contain a sufficient amount of data to support conclusions and recommendations but will emphasize analysis and conclusions.
- o **Biological Consultant Selection:** The consultant or consultant team will be selected by Atlas Hotels, Inc. but must be approved by the City's Environmental Quality Division. It is preferable for the same consultant to be retained for the duration of the monitoring period.

#### Assurance of Mitigation, Maintenance, and Monitoring

In order for the revegetation effort to be effective, the City of San Diego, the owner, landscape architect, a landscape contractor and a biological consultant must be involved with each other for a period of five years. Atlas Hotels will be responsible for implementing the revegetation plan and maintaining and monitoring the revegetation plan for a period of five years, with the City serving as a review agency. Regular and consistent monitoring of the revegetated areas, and semi-annual reports quantifying the relative success of the plantings and wildlife use will also be required. This work will be conducted by a qualified biologist. The biological consultant will also approve the type and quality of plant stock prior to planting. It is very important that the biological consultant and the landscape contractor be genuinely committed to seeing the revegetation work through to its successful completion. The completion of this program will be in accordance with the requirements of the Wetlands Management Plan. After the five year period, Atlas Hotels, Inc. will participate in a maintenance district to be formed to provide future maintenance of the channel and wetland habitats in perpetuity.

#### E. RIVER ORIENTATION AND PROPOSED OPEN SPACE USES

Several features have been incorporated into the design of the Town and Country and Hanalei Hotel sites to encourage river orientation and definition of the river corridor as natural and useable open space. In order to essentially shift the orientation of the Town and Country site from Hotel Circle North to the river, a pedestrian promenade, plaza, and other public uses including a restaurant and lounge with outdoor dining have been incorporated into the design of the Town and Country site adjacent to the river. The existing pedestrian bridge across the pilot channel will be reconstructed as a pedestrian/bicycle bridge to provide access to Fashion Valley and the LRT station. Pedestrian links are provided throughout the Town and Country site to the river and the pedestrian sidewalks within streetscape areas to encourage use and enjoyment of the pedestrian plaza.

A pedestrian plaza has also been incorporated into the design of the Hanalei Hotel site to provide river orientation. A meandering pedestrian/bicycle pathway will be developed adjacent to the river and may be located within the 30-foot to 50-foot buffer area. The pedestrian/bicycle pathway will provide a link to the adjacent Hanalei Tower site.

Open space uses of the river corridor will consist primarily of opportunities for walking and riding bicycles along the river. The pedestrian plazas will offer opportunities for sitting and enjoying views of the river.

Specific criteria for the development of the river corridor are contained in the Urban Design element of this specific plan.