

ROSE CREEK WATERSHED

HYDROLOGIC, HYDRAULIC, SEDIMENT TRANSPORT, AND GEOMORPHIC ANALYSES

TASK 2 – STREAM NETWORK FIELD ASSESSMENT

BACKGROUND

The Rose Creek Watershed (RCW) consists of three planning basins, Rose Canyon, San Clemente Canyon, and Lower Rose Creek, which all flow into the northeast corner of Mission Bay (Figure 1). The Hydrologic, Hydraulic, Sediment Transport, and Geomorphic Analyses (RCW Analysis) is being conducted to build upon the previously completed RCW Opportunities Assessment (Assessment) and associated technical memorandums. A stream network field assessment was performed under Task 2 of the RCW Analysis to observe and document the existing condition of the stream network. The purpose of the stream network field assessment was to determine if significant changes have occurred in the RCW since the Assessment. This information is needed to select the proper model parameters (e.g., roughness and bridge constriction factors) to more accurately represent the baseline conditions of the stream network.

SITE VISIT SUMMARY

Two site visits were conducted during the spring of 2006. The first site visit was conducted on April 25, 2006. The day was overcast with a high of 64°F. Winds were about 7 mph (NW) and visibility at 10 miles. Field observations were made along the headwaters of Rose and San Clemente Creeks within MCAS Miramar. The second site visit was conducted on May 31, 2006. The morning was partly cloudy, clearing by the afternoon and a high of 77°F. Winds were 5 mph (West) and visibility at 9 miles. During the second site visit, field observations were made along Rose and San Clemente Creeks west of Interstate 805.

Site photos are summarized by location – Upper Rose Creek, San Clemente Creek, and Lower Rose Creek (below confluence). Figure 2 shows the locations of the site photos. Site photos along Upper Rose Creek are shown in Figures 3a – 3l. Site photos along San Clemente Creek are shown in Figures 4a – 4h. Site photos of Lower Rose Creek are shown in Figures 5a – 5h. A brief description of each photo is provided next to the photo.

COMPARISONS

Field observations were also compared to observations presented in the Assessment Hydrologic Modifications Technical Memorandum (see Figures 6 – 8). Comparisons were made at various locations that showed stream erosion, depositional areas, and concrete

structures. Photos from the Assessment are shown in black and white to the left of the photos taken for this effort.

Erosion areas along Rose Creek are compared in Figure 6. In general, these erosion areas have not undergone additional erosion since the Assessment and the emergence of vegetation suggest a more stable period. Figure 6 compares streambank erosion along Rose Creek upstream from Interstate 805. The eroded streambank appears to be stable with vegetation being re-established. Erosion at the bottom of a concrete bank observed from the previous Assessment was still apparent, as shown in Figure 6b, and vegetation has started to establish. Localized erosion of the streambed along Rose Creek is compared in Figure 6c.

Deposition areas at two structures along Rose Creek are shown in Figure 7. Figure 7a compares depositions below an old railroad bridge. A decrease in deposition at the old railroad bridge was observed during the April 25, 2006 site visit. Deposition in a concrete deflection structure along Lower Rose Creek is compared in Figure 7b, which shows increased deposition and vegetation since the Assessment.

Four hydromodification locations along Lower Rose Creek are compared in Figure 8. The concrete channel below the confluence is compared in Figure 8a. Conditions within the channel have been maintained since the Assessment. The concrete flow training vanes above Mission Bay Drive are compared in Figure 8b. Deposition has continued and vegetation has emerged. Lower Rose Creek above and below Grand Avenue, shown in Figures 8c and 8d, shows no substantial changes since the Assessment.

SUMMARY

Overall, the site visit confirmed that there have been no substantial changes since the Assessment. The heavy vegetation observed in portions of the concrete-lined sections, especially along Upper Rose Creek between Genesee Avenue and the confluence, may reduce the hydraulic efficiency of the overall stream system. Although localized erosion was observed near structures (e.g., storm drains and foot bridges) primarily located along tributaries, the creek beds appeared stable indicating that observed erosion features are likely due to localized scour as opposed to general erosion associated with watershed sediment losses or increased storm flows.

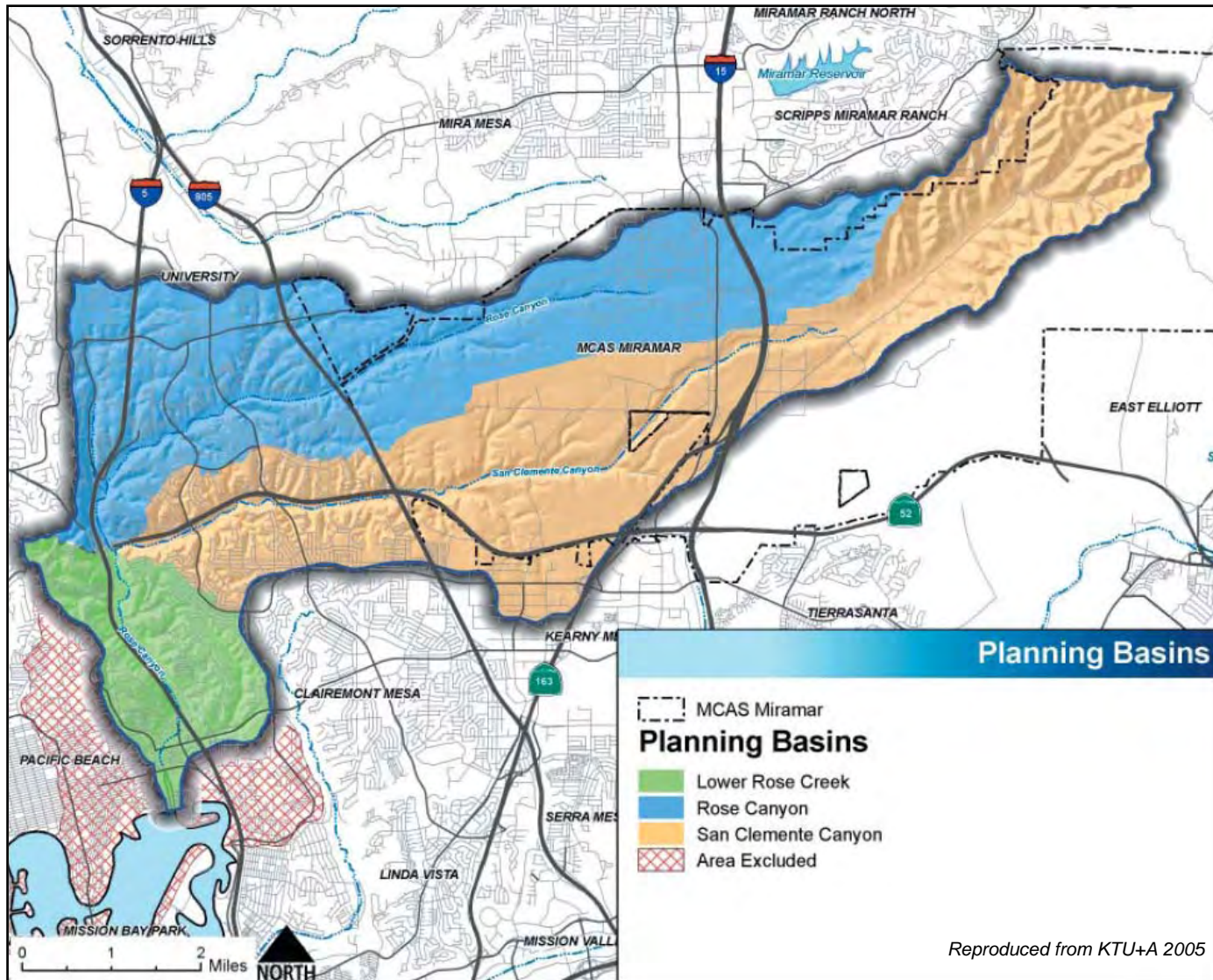
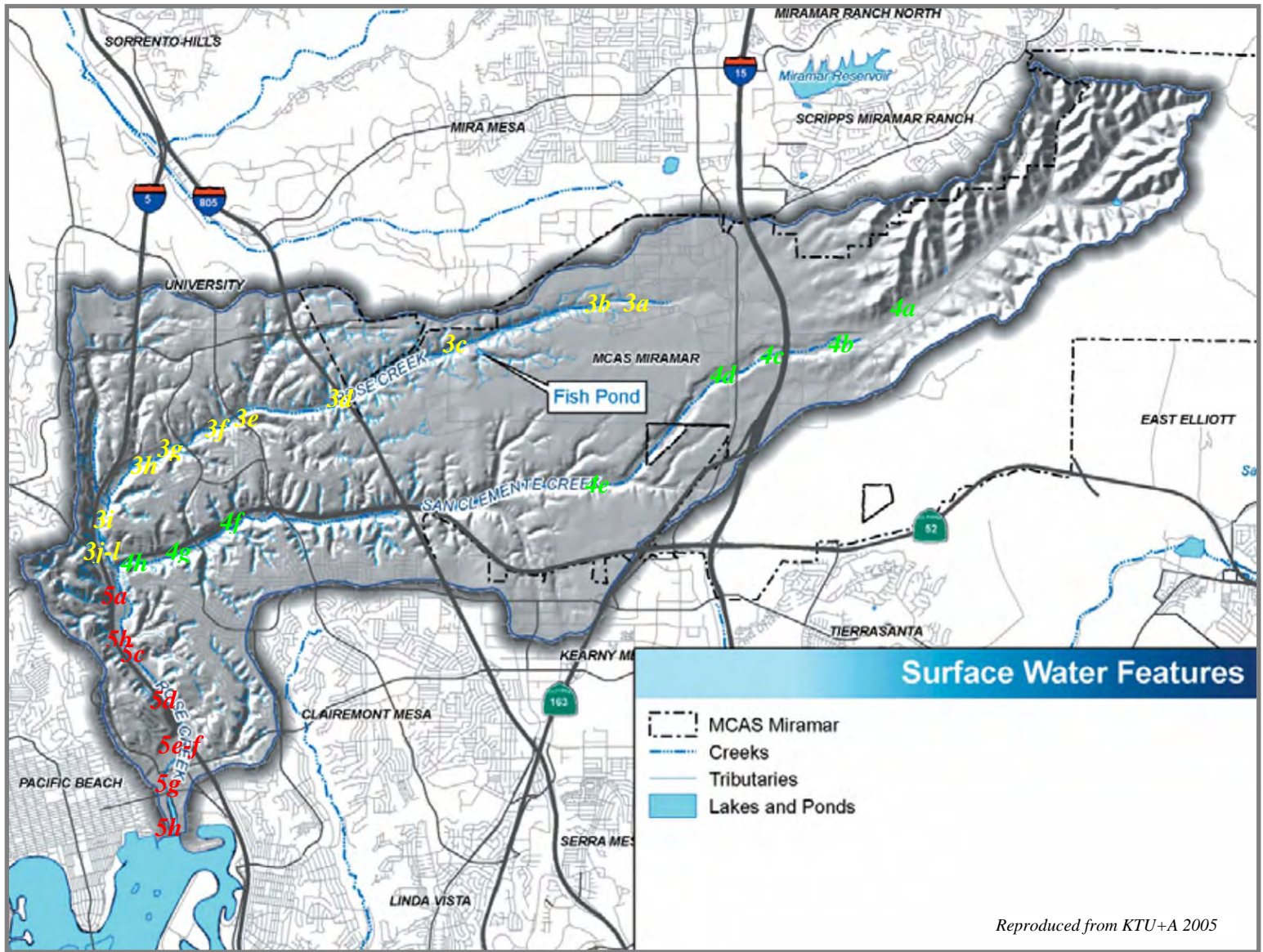


Figure 1 – Rose Creek Watershed



Reproduced from KTU+A 2005

Figure 2 – Site Photo Locations

Upper Rose Creek



Photo: Figure 3a **Date:** April 25, 2006
Location: Upper Rose Creek at Obregon Ave
View: South, downstream
Flow: Ponded water
Description: Within MCAS Miramar, the creek passes through culverts beneath streets crossing the creek.



Photo: Figure 3b **Date:** April 25, 2006
Location: Upper Rose Creek along MCAS Miramar
View: Northwest, downstream
Flow: Dry
Description: The floodplain of Rose Creek within MCAS Miramar. This portion of Rose Creek has stretches of undeveloped land. The creek itself is shallow and narrow with a wide, vegetated floodplain.



Photo: Figure 3c **Date:** April 25, 2006
Location: Upper Rose Creek downstream of Miramar Fish Pond
View: West, downstream
Flow: Dry
Description: Further downstream, the creek bed is comprised of rounded cobbles and is vegetated with grasses and brush. The photo also shows no water during dry weather.



Photo: Figure 3d **Date:** April 25, 2006
Location: Upper Rose Creek at Interstate 805
View: Beneath bridge
Flow: Ponded water
Description: Rose Creek exits MCAS Miramar near Interstate 805 as shown in Figure 3d. The creek bed also has cobbles. Occasional ponds of water were observed near bridges.



Photo: Figure 3e **Date:** April 25, 2006
Location: Upper Rose Creek at Genesee Ave
View: Downstream
Flow: Trickle
Description: A triple box culvert diverts flows beneath Genesee Avenue.



Photo: Figure 3f **Date:** April 25, 2006
Location: Upper Rose Creek downstream Genesee Ave
View: Downstream
Flow: Trickle
Description: Vegetation increases downstream of Interstate 805 and becomes dense near Genesee Ave. Occasional, localized areas of erosion were also observed primarily along tributaries.



Photo: Figure 3g **Date:** May 31, 2006
Location: Upper Rose Creek below Regents Road
View: Downstream
Flow: Trickle
Description: Creek downstream of Regents Road.



Photo: Figure 3h **Date:** May 31, 2006
Location: Upper Rose Creek below Regents Road
View: North, upstream
Flow: Trickle
Description: The vegetation within the creek floodplain also becomes denser compared to the headwaters.



Photo: Figure 3i **Date:** May 31, 2006
Location: Upper Rose Creek along Interstate 5
View: South, downstream
Flow: Trickle
Description: Concrete lines the creek banks. In this stretch, the creek flows parallel to the railroad and Interstate 5. Reeds have grown within the channelized creek.



Photo: Figure 3j **Date:** May 31, 2006
Location: Upper Rose Creek at tributary confluence
View: Northwest
Flow: Trickle
Description: Rose Creek is a concrete-lined channel beneath the Interstate 5 and State Highway 52 interchanges.



Photo: Figure 3k **Date:** May 31, 2006
Location: Upper Rose Creek beneath Interstate 5 and State Highway 52 Interchange
View: South, downstream
Flow: Trickle
Description: Concrete channel continues parallel to the railroad track and terminates upstream of confluence. The Interchange bridge columns are not located within the channel.



Photo: Figure 3l **Date:** May 31, 2006
Location: Upper Rose Creek above confluence with San Clemente Creek
View: South, downstream
Flow: Trickle
Description: Heavy vegetation reappears downstream from the concrete channel towards the confluence with San Clemente Creek.

San Clemente Creek



Photo: Figure 4a **Date:** April 25, 2006
Location: San Clemente Creek headwaters
View: Southwest, downstream
Flow: Dry
Description: The headwaters of San Clemente Creek are similar to Upper Rose Creek with wide undeveloped lands within MCAS Miramar.



Photo: Figure 4b **Date:** April 25, 2006
Location: San Clemente Creek east of Second San Diego Aqueduct
View: West, downstream
Flow: Dry
Description: The upper portion of San Clemente Creek is vegetated primarily with grasses. There is no flow during dry weather.



Photo: Figure 4c **Date:** April 25, 2006
Location: San Clemente Creek at Interstate-15
View: West, downstream
Flow: Dry
Description: Culvert under Interstate 15.



Photo: Figure 4d **Date:** April 25, 2006
Location: San Clemente Creek at Kearny Villa Rd
View: West, downstream
Flow: Trickle
Description: Kearny Villa Bridge. The bridge is not obstructed by vegetation.



Photo: Figure 4e **Date:** April 25, 2006
Location: San Clemente Creek at Convoy Street
View: Upstream
Flow: Trickle
Description: The culvert at Convoy Street near the landfill. The photo also shows the vegetation increasing farther downstream.



Photo: Figure 4f **Date:** May 31, 2006
Location: San Clemente Creek west of Genesee
View: West, downstream
Flow: Trickle
Description: Below Genesee Ave, the creek is densely lined with trees. The creek bed is comprised primarily of cobbles.



Photo: Figure 4g **Date:** May 31, 2006
Location: San Clemente Creek along State Highway 52 between Interstate 5 and Regents Road
View: East, upstream
Flow: Trickle
Description: The heavy vegetation continues down stream along State Highway 52 towards the confluence with Rose Creek.



Photo: Figure 4h **Date:** May 31, 2006
Location: San Clemente Creek upstream from confluence with Rose Creek
View: West, downstream
Flow: Trickle
Description: The confluence with Rose Creek south of the Interstate 5 and State Highway 52 interchange is heavily vegetated.

Lower Rose Creek



Photo: Figure 5a **Date:** May 31, 2006

Location: Lower Rose Creek along railroad bridge downstream from confluence

View: Downstream

Flow: Trickle

Description: Lower Rose Creek continues downstream from the confluence along railroad tracks and Santa Fe Avenue. The creek is heavily vegetated with trees from the confluence.



Photo: Figure 5b **Date:** May 31, 2006

Location: Lower Rose Creek at railroad bridge near Jutland Drive

View: North, upstream

Flow: Trickle

Description: Flows from Rose Creek make a 90 degree turn from the railroad bridge to a concrete channel. Water ponds beneath the railroad bridge due to the height of the concrete channel.



Photo: Figure 5c **Date:** May 31, 2006

Location: Lower Rose Creek along Interstate 5

View: South, downstream

Flow: Trickle

Description: The concrete channel continues along Santa Fe Avenue. The creek channel has less vegetation compared to the natural portions of Rose Creek.



Photo: Figure 5d **Date:** May 31, 2006

Location: Lower Rose Creek near Interstate 5

View: Upstream

Flow: Trickle

Description: A concrete weir structure is located near the Interstate 5 crossing. This area is filled with vegetation.



Photo: Figure 5e **Date:** May 31, 2006
Location: Lower Rose Creek between
Interstate 5 and Mission Bay Drive
View: Upstream towards Interstate 5 Bridge
Flow: Trickle
Description: Between Interstate 5 and Mission
Bay Drive, the creek is a wide concrete
channel with some vegetation.



Photo: Figure 5f **Date:** May 31, 2006
Location: Lower Rose Creek at Mission Bay
Drive
View: Downstream
Flow: Trickle
Description: Concrete flow training vanes
upstream from Mission Bay Drive.



Photo: Figure 5g **Date:** May 31, 2006
Location: Lower Rose Creek upstream from
Grand Ave
View: Upstream towards Garnet Ave
Flow: Tidal
Description: The creek is tidally influenced up
to Garnet Ave. This portion of Lower Rose
Creek has riprap sides with salt marsh
vegetation.



Photo: Figure 5h **Date:** May 31, 2006
Location: Lower Rose Creek at Mission Bay
View: Upstream
Flow: Tidal
Description: The mouth of Rose Creek in
Mission Bay.



a) Streambank Erosion along Rose Creek above Interstate 805



b) Streambed Erosion below Concrete Bank along Rose Creek near Interstate 805



c) Streambed Erosion along Rose Creek

Figure 6 – Comparison of Erosion Areas along Rose Creek



a) Deposition along Rose Creek beneath old Railroad Bridge



b) Deposition along Lower Rose Creek at Railroad Bridge

Figure 7 – Comparison of Depositional Areas along Rose Creek



a) Concrete Channel along Rose Creek



b) Riprap Protection above Grand Ave



c) Concrete Flow Training Vanes above Mission Bay Drive



d) Streambank and bed protection below Grand Ave Bridge

Figure 8 – Comparison of Hydromodifications along Rose Creek