DRAINAGE REPOR
SUNRISE TERRACE

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INTRODUCTION AND PROJECT DESCRIPTION

This is a drainage report for Sunrise Terrace Unit 7. .3 acres in southwest Albuquerque to be developed as a residential area. and drainage design are being done in conjunction with an adjacent prop me ownership called Sunrise Terrace West, which is in Bernalillo County he sists of e up 62.6 acres and must be analyzed together due to shared drainage rty ite plan 1 is a vicinity map.

The two developments will be phased such that U Bnder the ion, will be built first. This phase is referred to as "interim." Since the sto acil h sites nd built by this project will serve both developments, drainage features es. Fig ow will be sized for ultimate build-out of both sites. it 7, m d he City n b in and i installe unrise Terrace Units 1

The drainage analysis is based on the "Master Dra Bud Associates, Inc. The and 6 (Master Drainage Plan)," dated March 1995 nd Terrace Units III, IV & analysis is also in compliance with "Master Drainage Ey Plan for es. This report limited W," Revised June 1994, by Ryals Engineering & Co Pl terling r computed as the "fair the total developed runoff to 1.29 cfs per acre. T istrun, Sunri s city of the downstream share" that all developing lots in this area can rele is n tion Ser aci drainage structures is not exceeded. se s mber w the ca a" roughly 6.4 percent

Existing drainage on the property is generally fro aced land. Residential slope. It is bounded on the north, west and sou we opoff flows through the developments or planned residential areas lie t th b t to eat ne Snow Vista Channel. residential areas via streets or storm drains eventu the undeve he

The site is not in a flood hazard zone. It is shown ly d east. F way Panel 33 which is shown on Figure 2. aining to dy on F

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METHODOLOGY

Hydrology was determined using the methods described in the City of Albuquerque Development Process Manual(DPM), Section 22.2, Hydrology. The AHYMO, January 1984 version, computer model was used to calculate the flows. The model created previously in the Master Drainage Plan was revised for this project. The design storm is the 100 year, 24-hour storm. Ten year flows are also shown per DPM requirements.

Street and storm drain hydraulics are calculated as described in the DPM and meet the City's criteria.

DRAINAGE PLAN

EXISTING CONDITIONS

Off-site flow drains to the project from the north and west overland or through small existing arroyos to two existing detention and sediment ponds on the project site. Runoff is directed to the ponds by an earthen channel built in conjunction with Sunrise Terrace Unit 6.

The City of Albuquerque Westside Satellite Center is within the off-site basin boundary flowing to the site, however, it is currently bermed and has full retention of 100 year runoff.

Figure 3 shows the existing and interim condition off-site flow basins.

Runoff in the large pond in the center of the site has a standpipe outlet to a 24-inch storm drain in Connemara Avenue. The storm drain runs east in Connemara to Tanager Drive where it turns to the south to the intersection of Tanager and Andalusian Avenue and connects to the existing 48-inch storm drain in Andalusian Avenue.

Runoff in the smaller pond to the south is also drained by a standpipe to the 48-inch storm drain in Andalusian Avenue. The 48-inch pipe runs east along Andalusian Avenue to eventually tie to the Snow Vista Channel.

Plate 1, in the map pocket, shows the existing ponds and storm drain features.

INTERIM

This condition is defined as existing condition, with the exception of complete construction of Unit 7. In this phase off-site runoff from the north and west will drain the same as in the existing condition. However, an earthen ditch will be built west of Unit 7 to drain Basins 401, 404 and 405 to the existing pond remaining in the center of Unit 7. The existing pond will require some reconfiguration to allow for lot placement. The other small sedimentation pond on the south side of the site will be eliminated and flows to this pond will be re-routed north to the central pond. See Figure 3 for the contributing basins.

[illegible] standpipe in the central pond will remain and function as the pond outlet as [illegible] above for existing conditions. Maximum outflow from the standpipe is 10cfs as designed and built in conjunction with Sunrise Terrace Unit 6.

An emergency spillway will be constructed from the pond spilling to Connemara Avenue. The spillway is sized to carry the full 100 year flow generated by Sunrise Terrace Unit 7 plus Sunrise Terrace West. See Figure 7 for detail. Overflow will drain out of the pond and into Connemara Avenue and eastward on Connemara. The emergency spillway should onlly function in an extreme condition. The 100 year water surface during interim conditions is 5256.9 compared to a spillway elevation of 5258. Under ultimate conditions the 100 year water surface elevation is 5257.3. The spillway will be constructed of soil cement. A HEC 2 analysis was modeled and can be found in the appendix.

The Master Drainage Plan calls for a second pond to be built in Unit 7 on the northeast end of the site, approximately where lots 9, 10 and 11 - Block 5 are located. This report revises that plan and eliminates the second pond. Most of the flow will drain to the central pond by storm drains. A small amount of flow (Basin 173) still drains free discharge to Eucariz Avenue.

Unit 7 will be developed to the City Limit as shown on Plate 1 in the map pocket. On-site Basin 172 will drain to the central pond by way of street drainage and storm drains.

On-site basins 171 and 320 drain into a storm drain to be constructed in 110th Street and, during interim conditions, will free discharge into the 48-inch storm drain in Andalusian. The 110th Street storm drain begins as a 36-inch pipe, then is up sized to a 54-inch pipe south of Connemara Avenue. The line is quite oversized for the interim condition but must be built for ultimate development, which includes flow from Sunrise Terrace West.

Two surge structures will be constructed as part of the 110th Street storm drain. Figure 5 is a detail of the planned structures. The surge structures will be built over the 54-inch storm drain line and will allow the pond to function as a surge pond when ultimate development of the surrounding area is done. Under interim conditions they will not be needed.

Basin 321, within Unit 6, also drains uncontrolled into the 24-inch storm drain in Tanager Drive then into the 48-inch Andalusian storm drain. While this basin is not strictly a part of this project, it is included in the Master Drainage Report as part of the area associated with the Unit 7 pond so it is considered in these calculations.

As shown at Analysis Point 10 on Plate 1, the 100-year design flow during interim condition is well under the allowable flow of 191 cfs as called for in the Master Drainage Plan.

The 110th Street storm drain will be extended west in the future. Only stub outs will be built in Connemara Avenue and Andalusian Avenue as part of this project. Stub outs will

sized to carry the 100 year flow from Sunrise Terrace West plus the controlled discharge from Basins 300 and 310.

Also as part of this project, one half of Eucariz Avenue will be extended west to the City Limit from 106th Street. A 36-inch storm drain will be extended west under a portion of Eucariz Avenue as called for in the Master Drainage Plan. It will extend from the existing 60-inch storm drain at Eucariz Avenue and 106th Street approximately 100 feet. A temporary rundown inlet will be constructed at the upstream end of the storm drain to intercept flow from Basin 402 and street runoff from Eucariz. A ditch will be constructed parallel to Eucariz Avenue to direct flow into the inlet. The ditch has adequate capacity for the interim flows as shown in Calculation D in the Appendix. The rundown inlet is designed to carry sediment along with the flow.

ULTIMATE
Off-site drainage basins in the fully developed condition can be seen in Figure 4.

As called for in the Master Drainage Plan, flow from the City Westside Satellite Center will drain at a maximum controlled discharge rate of 1.29 cfs per acre to a proposed storm drain. As shown in Figure 4 and Plate 1, the storm drain will run south along proposed 114th Street to intercept flow from Basin 310. Again a controlled discharge of 1.29 cfs/acre will limit the flow from Basin 310. The planned 42-inch storm drain then runs through Basin 331 in Connemara Avenue to the pond in Unit 7.

Runoff from Sunrise Terrace West (Basins 331 and 332) will drain to the storm drain free discharge. The controlled rate from these basins will be taken care of by the Unit 7 pond.

Sunrise Terrace West , Unit 7 and Basin 321 of Unit 6 consist of 68.40 acres. Using the "fair share" flow release rate of 1.29 cfs/acre multiplied by 68.40 acres, the fully developed the site can release 88.24 cfs. Basin 321 was not accounted for in the previous AHYMO model so must be accounted for now.

After taking into account all flow that is free discharging to the downstream system and controlled discharge from off-site basins, a maximum outflow of 171 cfs is the maximum release from the pond. Calculation sheet A in the appendix shows this calculation in detail.

The Unit 7 pond is to act as a Surge Pond after ultimate development occurs in the area. Runoff will be collected in 110th Street and Connemara Avenue storm drains. During low flow conditions water will drain out of the 54-inch line in a normal manner. In larger storms the capacity of the 54-inch pipe will be reached and flow will surcharge out of the two surge structures into the pond. Hydraulic grade line calculations in the appendix show the actual flows and how this will work.

Benefits of the surge pond include:

→ low flows will drain quickly through the storm drain

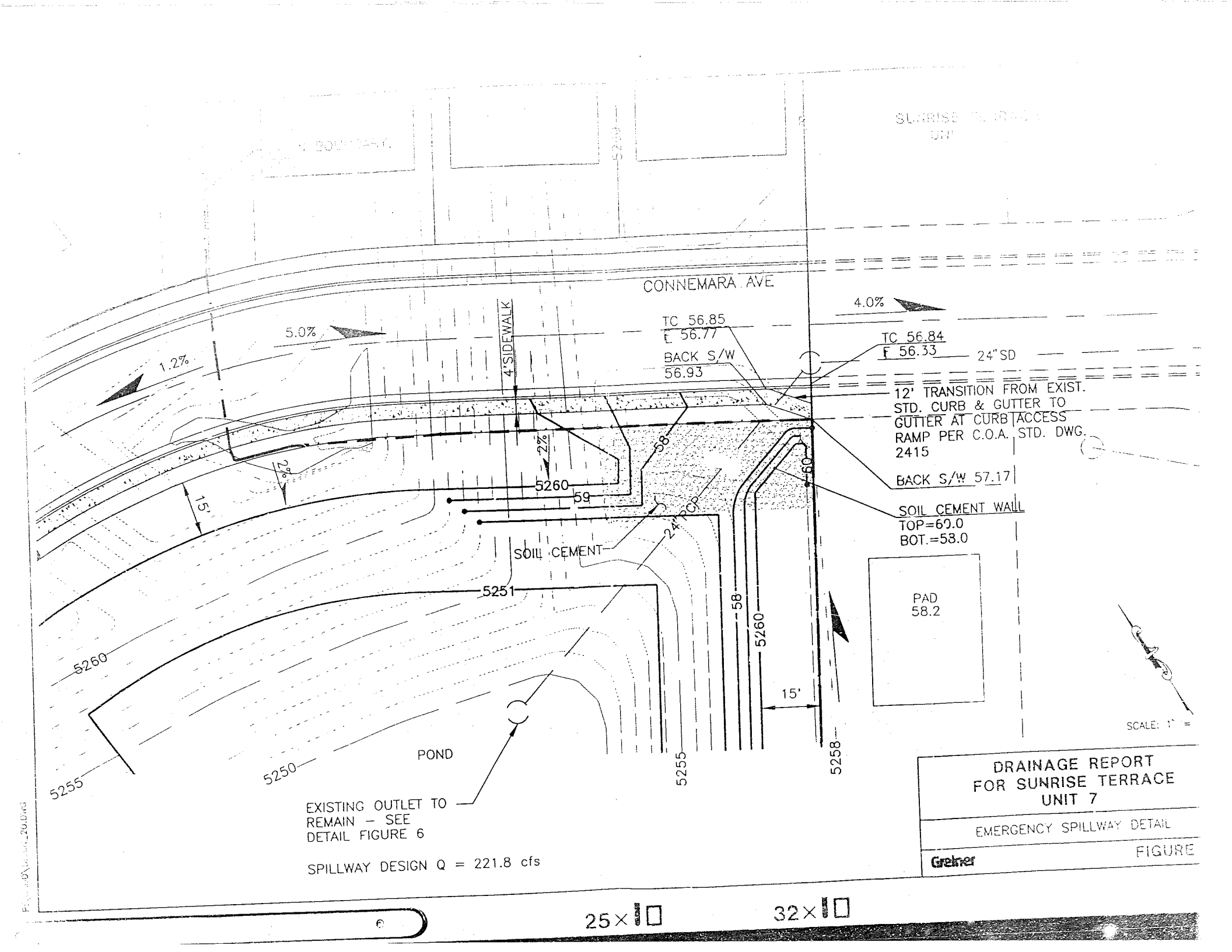
→ the pond can be smaller since it does not store the entire storm volume - the pond only has to store the peak portion of the hydrograph

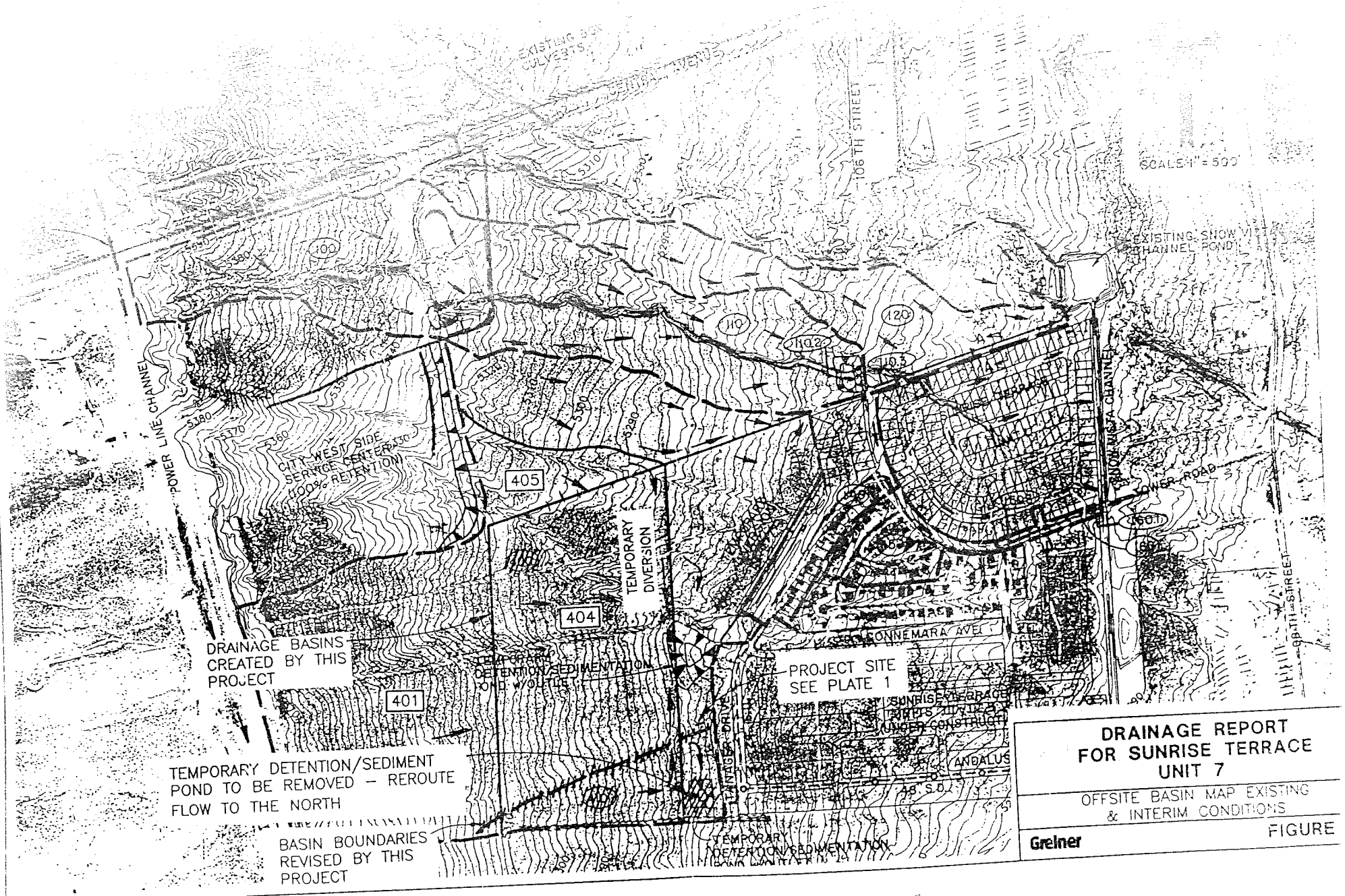
On-site Basin 320 is downstream of the pond inflow and will drain freely out the 110th Street storm drain in smaller storm events. In larger events, this flow will cause the 54-inch pipe to be flowing at capacity and cause surcharge into the pond. Grades on 110th Street will drain north to the pond so any runoff not collected in the storm drain will drain overland in the street to the pond.

On the north side of the site in the Eucariz Avenue Right of Way, the ditch and rundown will remain until off-site Basins 140 and 150 (Figure 4) are developed and the remaining half of Eucariz Avenue is built. The Master Drainage Plan calls for a 36-inch storm drain in Eucariz Avenue to drain developed basins 140 and 150 and a small amount of flow from Unit 7.

CONCLUSION

Sunrise Terrace West will be developed with single family homes in a manner that complies with the Master Drainage Plan for the area as well as City criteria. Phased construction will also comply in a logical way that fits with the existing conditions.


CONNEMARA AVE.
4'SIDEWALK
5.0%
1.2%
4.0%
TC 56.85
F 56.77
BACK S/W
56.93
TC 56.84
F 56.33
24"SD
12' TRANSITION FROM EXIST. STD. CURB & GUTTER TO GUTTER AT CURB ACCESS RAMP PER C.O.A. STD. DWG. 2415
BACK S/W 57.17
SOIL CEMENT WALL
TOP=60.0
BOT.=58.0
PAD
58.2
2%
15'
5260
59
58
60
24" RCP
SOIL CEMENT
5251
5260
5250
5255
POND
15'
5255
5258
EXISTING OUTLET TO REMAIN – SEE DETAIL FIGURE 6
SPILLWAY DESIGN Q = 221.8 cfs
SCALE: 1" =
DRAINAGE REPORT
FOR SUNRISE TERRACE
UNIT 7
EMERGENCY SPILLWAY DETAIL
Gretner
FIGURE

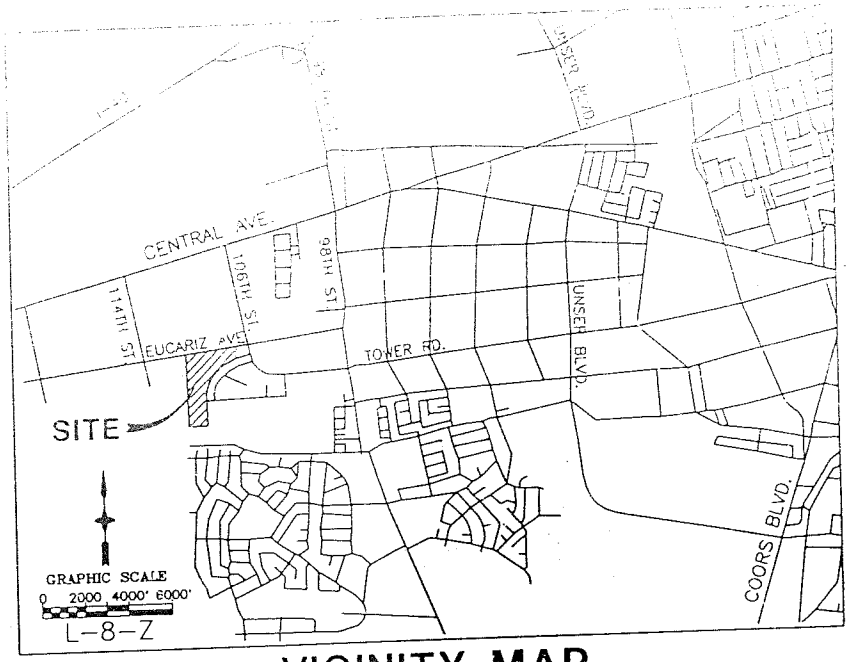


DRAINAGE REPORT FOR SUNRISE TERRACE UNIT 7

OFFSITE BASIN MAP EXISTING & INTERIM CONDITIONS

Greiner

FIGURE



VICINITY MAP

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DRAINAGE REPORT FOR SUNRISE TERRACE UNIT 7
VICINITY MAP
Greiner FIGURE 1