

October 16, 1998

Fred Aguirre, P.E.
City Hydrologist
Hydrology Division/PWD
City of Albuquerque
600 2nd Street NW - 2nd Floor
Albuquerque, NM 87102

Re: Addendum To Drainage Report For The Tuscany West Subdivision, Units I & II
(Reference File A11/D1A)

Dear Fred:

This letter report modifies the master drainage report for Tuscany West subdivision, incorporating more current design information related to McMahon Blvd. More specifically, the approved master drainage report called for storm water in McMahon Blvd. to be conveyed, via surface flow in McMahon Blvd., east to Bandelier Drive. Detailed design analysis of McMahon showed that conveying storm water in this manner is not feasible and that other alternatives must be considered. This letter report serves as an addendum to the approved drainage report and recommends revisions related to McMahon Blvd. drainage management.

Analysis Methodology

Analysis is based on the original report entitled, "*Drainage Report for The Tuscany West Subdivision, Units 1 & 2*" (City drainage file A11/D1A, approval letter dated 1/24/97), hereafter referred to as the Drainage Master Plan, or DMP. Guidelines and methodologies provided in the DMP, existing basin parameters and hydrologic analysis provided by the DPM are utilized as much as is practicable. No AHYMO analysis is provided nor is necessary for this amendment.

Site Description

Currently McMahon Blvd. is built from Golf Course Road to Bandelier Drive. A temporary section of pavement is constructed and serves as access for the Elderly Care facility (see exhibit provided). From the Elderly Care facility west to Unser Blvd., McMahon is unimproved. Most recently, a temporary pavement section for Unser Blvd. was constructed and is operational.

McMahon Blvd. predominately slopes west to east and straddles the basin divide between the Calabacillas Arroyo and the Black's Arroyo. The ridgeline, which also runs east-west, crosses McMahon Blvd. at approximately Tuscany Drive. Areas south of McMahon predominately flow south to the Calabacillas Arroyo, and areas north of McMahon predominately flow north to the Black's Arroyo.

Existing DPM Design

The existing DPM shows portions of Unser Blvd. contributing storm water runoff to McMahon Blvd., basin 101 (see Plate 2, DMP). The DMP also called for basin "A" storm runoff to outfall to Unser Blvd. and not to McMahon. Basin 105 and basins 100 and 100.1 (McMahon north and south ROW) outfall to Analysis Point #1 (AP#1), at Tuscany Drive. Per the DMP, total runoff to AP#1 is 70 cfs during the 100-year storm event. The DMP calls for approximately 30 cfs to be intercepted by the proposed Tuscany Drive storm drain and the remaining runoff (40 cfs) to continue east within McMahon Blvd. via surface flow to Bandelier Drive and points beyond.

Design of McMahon Blvd. to the intent of the DMP would require a constant grade from Unser Blvd. east to Bandelier Drive. Several options were considered by the DMP; however, no detailed roadway design or profiles were provided from Unser Blvd. to Tuscany Drive. Analysis of McMahon Blvd. from Bandelier Drive, east to Golf course was available. A minimum grade of 0.5% from Unser Blvd. west, to the future intersection of Tuscany Drive places the vertical elevation of the roadway below existing pavement in McMahon to the east. In order to continue the minimum grade, existing portions of McMahon Blvd. would have to be removed and lowered as much as 15' in elevation. To accomplish this grade change, significant earthwork would be required, removal and replacement of existing paving is required, relocation of 2 high-pressure gas mains would be required, relocation of water, sanitary sewer, electric service, communications and other utilities would be required. In addition, reconstruction of entrance drives to the Elder Care facility would be required; however, would not be feasible to accomplish without excessive street grades. In summary, maintaining a minimum 0.5% straight grade from Unser Blvd. to Bandelier Drive is not feasible.

Alternatives Considered

The issue addressed by this addendum is the ultimate design profile of McMahon Blvd. As an alternative, this report proposes to create a low point in McMahon just west of the intersection with Tuscany Drive (see exhibit attached). By placing the vertical grade low point at this location, approximately 40 cfs must be conveyed to an acceptable outfall or must be intercepted before reaching the low point. 40 cfs is the flow rate in excess of the capacity of the Tuscany Drive storm drain.

Alternatives considered are as follows: a) construct a detention pond, surge pond or retention pond which contains storm water runoff in excess of the Tuscany Drive storm drain capacity; b) reduce runoff generation by restricting runoff to the McMahon ROW such that the 30 cfs capacity is maintained; and c) modify the DMP to eliminate contributing areas; d) re-analyze, redesign, and reconstruct the Tuscany Drive storm drain such that it has sufficient capacity for the storm water generated.

Recommendations

This report recommends the following amendments:

- 1) It is recommended that basin 101, Unser Blvd., be redirected south verses east. This is the same outfall direction as basin "A". The predominate and existing slope is to the north. Removal of the basin 101 reduces runoff by approximately 12 cfs.
- 2) It is recommended that the north half right-of-way of McMahon Blvd. outfall to storm drains which discharge to the Black's Arroyo. This is also the historic direction of flow for this area. Therefore, Basins 100.1 and portions of basin 185.1 will be removed from the Tuscany storm drain system. Those

properties, which are north of and adjacent to McMahon Blvd., shall be responsible for constructing the north half of McMahon Blvd. and the associated storm drains.

- 3) Basins, which are adjacent to and south of McMahon Blvd. and currently are shown to free discharge storm water to McMahon right-of-way are dependent on the downstream capacity of the storm drain system. The requirement to place a low point in McMahon Blvd. causes a reduction in available downstream capacity and therefore a reduction in the discharge rate allowed to those contributing basins. Therefore, Basin 105 shall be restricted to an allowable discharge rate of 24.0 cfs. Basin 105 has the option to reanalyze the Tuscany Storm drain hydraulic capacity and the contributing basin hydrology to determine if additional outfall capacity is available. It is noted that no hydrograph routing is accommodated in the AHYMO analysis provided by the DMP. Such routing may reduce peak flows to an extent that free discharge is available to basin 105.
- 4) The revised design concept for McMahon Blvd., per this study, shall consists of a low point in McMahon Blvd. approximately 200 ft. west of Tuscany Drive. McMahon Blvd. will connect to Unser Blvd. with a water block east of the intersection, then continue east at a minimum grade of 0.5% to the low point. From the low point, McMahon will slope up to the east and the existing pavement grades at the Elderly Care facility. Design grades, typical sections and vertical design parameters will meet City DPM criteria for arterial pavement.
- 5) Due to the low point in McMahon Blvd. and the accompanying high point, Basins 185.1 and 185.0 are now bisected resulting in 4 basins. The four basins are 185.1e (east), 185.1w (west) 185.0e, and 185.0w. Basins 185.1w and 185.0w both drain west to the low point sump. Basins 185.1e and 185.0e continue to drain east per the DMP. Note, basin 185.1w also is removed from the Tuscany West study.
- 6) Developments adjacent to McMahon Blvd. are responsible for the "half" street section and therefore are responsible for associated storm drain improvements. Temporary ponds or storm drain structures will be designed to accept existing run-off flow rates and volumes in the interim condition.
- 7) Basin 115 is required to extend the Tuscany Drive storm drain to McMahon Blvd. Construction of the sump condition catch basins would occur west of and beyond the McMahon pavement improvements required for basin 115. Therefore, interim improvements shall include constructing a temporary detention pond in the McMahon right-of-way and stubbing a storm drain pipe west (approximately 36" RC pipe) into the interim pond. Other, future developments are responsible for connecting to the storm drain and extending west to the low point identified by this report. Basin 115 will design the Tuscany storm drain to accept the design flow of 46.6 cfs (39.7 cfs plus an additional 6.9 cfs) so as to allow basin 105 the future option of free discharge, should downstream capacity be available.

Conclusions

The recommended changes to the master drainage report provides the most options to all properties affected, allows for future amendments and distributes the impact of storm drain infrastructure in an appropriate manner. Properties adjacent to McMahon Blvd. are responsible the adjacent frontage half of McMahon Blvd. and are also responsible for associated storm drain improvements. Requiring these properties to be responsible for McMahon drainage improvements is merely recognizing existing requirements of development. Development on the north side of McMahon will most probably convey storm water runoff to the historic direction of flow, the Black's Ranch Arroyo.

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Please process this amendment to the Tuscany West Subdivision, Units I & II Drainage Management Plan. Site specific drainage reports are currently being prepared and submitted based on the recommendations of this letter addendum.

Sincerely,
Bohannan Huston


Rick L. Beltramo, P.E.
Community Development
and Planning Group

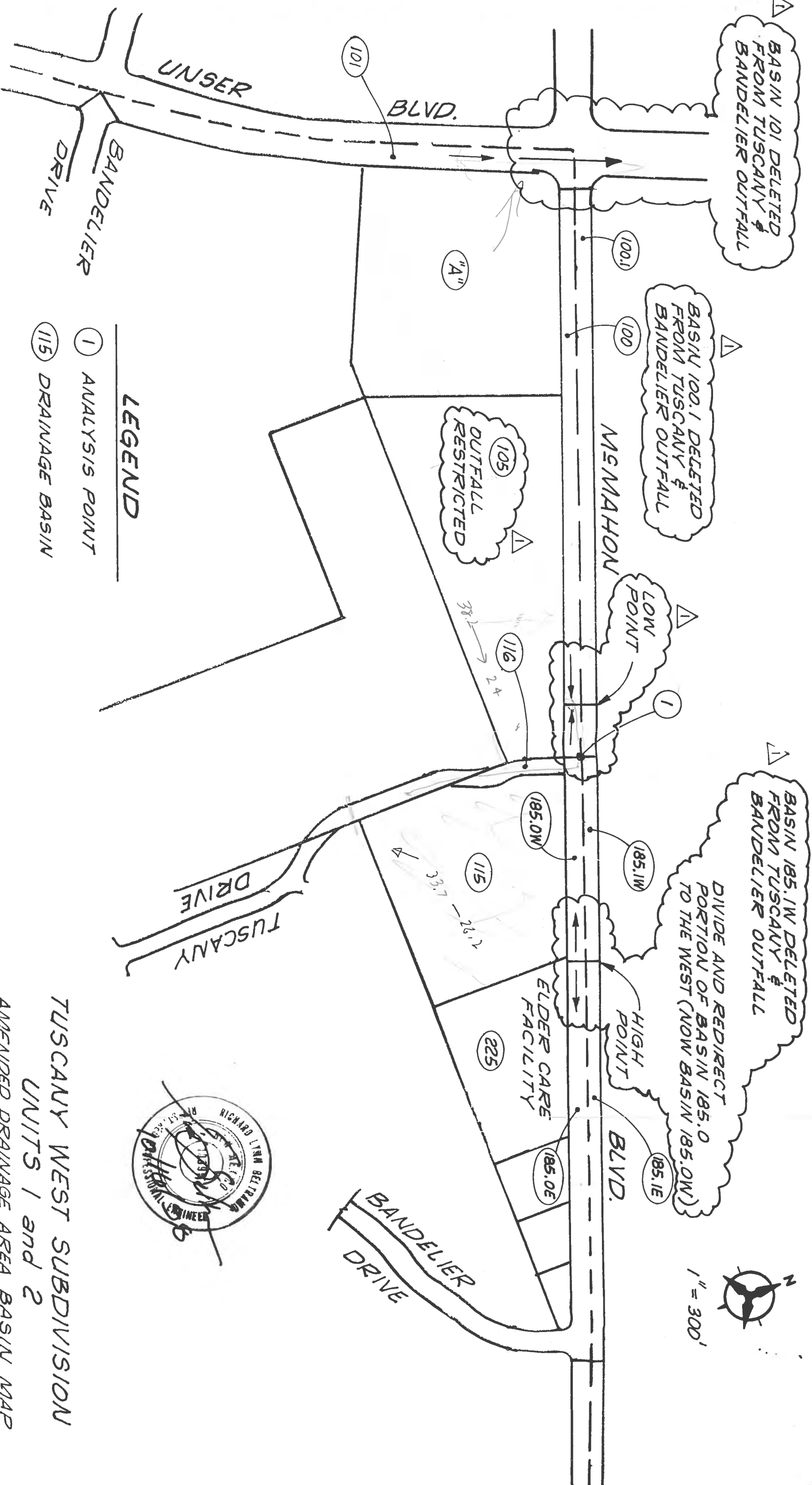


RLB/am

cc: Norm Gregory, Centex Homes
Bruce Stidworthy, Bohannan-Huston Inc.

Addendum To Drainage Report For The Tuscany West Subdivision, Units I & II HYDROLOGIC SUMMARY TABLE October 16, 1998			
Basin	Existing DMP Flow (cfs)	Amended DMP Flow (cfs)	Comments
101	12.5	0	Outfall amended to take runoff generated in Unser Blvd. north to Black's Arroyo vs. McMahon.
100.1	9.3	0	Outfall amended to take north ½ ROW out of DMP.
100.0	9.5	9.5	McMahon Blvd. south right-of-way.
→ 105.0	38.2	24.0	Restrict runoff to flow rate of available D.S. capacity of Tuscany Dr. storm drain. *
185.0W	-0-	4.0	Portions of basin 185.0 redirected to the low point (Basin 185.0w = 185a Tuscany Ridge Unit 2 drainage report).
Total @ AP#1	69.7	37.5	
Diversion East	- 40.0	-0-	Diversion east in McMahon via surface flow.
→ 115	33.7	26.2	Runoff from this basin reduced 7.5 cfs. *
Total @ Tuscany Dr. S.D.	63.7	63.7	Available capacity of storm drain per DMP = 63.7 cfs

* SEE CLARIFICATION
 LETTER DATED 12-8-98



AMENDED OCT. 15, 1998
LOW POINT ADDED TO
McMAHON PROFILE
CONTRIBUTING BASINS
DELETED.

TUSCANY WEST SUBDIVISION UNITS 1 and 2 AMENDED DRAINAGE AREA BASIN MAP



Bohannon Huston

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ENGINEERS PLANNERS PHOTOGRAMMETRISTS SURVEYORS SOFTWARE DEVELOPERS