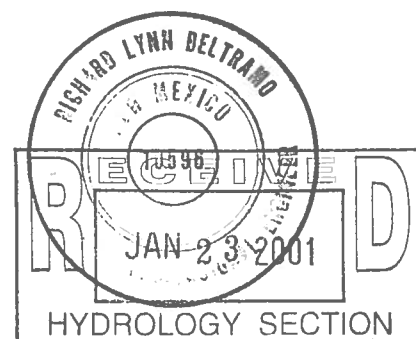


FINAL DRAINAGE STUDY
FOR THE
RIDGEVIEW SUBDIVISION
UNIT 2

JANUARY 23, 2001

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I. INTRODUCTION

This Drainage Study will address the developed storm runoff and the necessary facilities to adequately convey the flow from the properties legally described as Tract 12, Lands of St. Joseph's Healthcare. For this report, it will be known as the Ridgeview Subdivision Unit 2. This tract contains approximately 3.1 acres and is planned to have 14 single-family dwellings. Ridgeview Unit 2 is located south of the Bernalillo/Sandoval County Line, east of Ridgeview Unit 1, and west of Stonebridge Unit 4.

See vicinity map on the preliminary plat for location. (Plate 1)

This study is necessary in order to obtain preliminary plat approval for Ridgeview Subdivision Unit 2. Prior to final plat and building permit approvals of this project, final grading plans and work order construction plans must be approved by the City of Albuquerque (CoA) and the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA).

II. METHODOLOGY

Existing and proposed site hydrological conditions were analyzed for the 100-year, 6-hour storm in accordance with the revised Section 22.2, Hydrology, of the Development Process Manual (DPM) for the City of Albuquerque, dated January 1993. Street capacities were analyzed using Manning's equation, consistent with the revised DPM Section 22.2. All data and calculations supporting this study are located in Appendix B. The new rational method hydrologic procedures identified within the revised DPM Section 22.2 are utilized to determine peak flow rates for design of the storm drainage improvements within the projects. The 100-year, 6-hour storm is used as the design event. The results are included in **Appendix A.**

The storm sewer system internal to the subdivision is analyzed using current DPM methods for gravity flow conditions. Inlet capacity computations, along with all hydraulic computations, are included in **Appendix B.**

III. EXISTING CONDITIONS

A. Topography

The Ridgeview Subdivision will be sited on undeveloped land with slopes ranging from approximately 2% to 10%. Soils are highly absorptive sandy soils with occasional silt lenses. Vegetation is light, consisting of chamisa, weeds and desert grasses. The site is not located within a FEMA floodplain as shown on the FEMA Floodplain Exhibit at the end of this text.

B. Existing Drainage Patterns

The existing drainage from south of Ridgeview Unit 2 is intercepted by the existing Stonebridge Subdivision and conveyed into the Black Arroyo through an approved connection. The drainage from the west of Ridgeview Unit 2 will be intercepted by either Unser Boulevard or Ridgeview Unit 1. Historically, 285 acres of land drained 472 cfs through the Ridgeview Subdivision and ultimately into the Black Arroyo at the northwest corner of the site. Ultimately, this offsite flow will be redirected east through ponds and a storm drain in Black Arroyo Boulevard to the AMAFCA property. The flow will outfall to the Black Arroyo through an energy dissipater and a grade control structure. This drainage solution concept was approved with Ridgeview Unit 1 (DRB#1000821). Two exhibits are included to illustrate this plan. The basins between Unser and Ridgeview Unit 2 will be conveyed through Ridgeview Unit 1 into the pond located north of Ridgeview Unit 2, pond #2.

Pond #2, initially designed in the Ridgeview Unit 1 report, has been modified in two ways in this drainage report. First, Pond #2 has been relocated into Rio Rancho. Even though it is located within Rio Rancho, pond #2 will outfall back into Black Arroyo Boulevard within the City of Albuquerque and will be maintained by the City of Albuquerque. This pond arrangement will require an agreement such as a Memorandum of Understanding between the City of Albuquerque and the City of Rio Rancho. Secondly, pond #2 was resized to retain all of the flow conveyed through

Ridgeview Units 1 and 2. This pond needs to retain all of the flow in the interim condition until the outfall in Black Arroyo Boulevard is built. When the outfall storm drain is built, pond #2 will become a detention pond. The outfall storm drain has been deferred until the regional plan is completed.

IV. LAND TREATMENTS

The minimum lot dimensions are 50' x 100'. The percent impervious was determined using the following formula from Table A-5 of the DPM, Section 22.2.

$$\text{percent "D"} = 7 * \sqrt{(N*N) + (5*N)}$$

where N = units/acre.

V. PROPOSED DEVELOPED CONDITIONS

The proposed development is a single-family, detached-unit residential subdivision with 14 lots on 3.1 acres, producing a density of approximately 4.5 D.U. per acre. Proposed street configurations are shown on the Preliminary Plat. See **Plate 1**.

A. Offsite Flow

Since the lands south of Ridgeview Unit 2 have already been developed as the Stonebridge Subdivision, there is no offsite flow to manage. The flow originating from the south of Ridgeview Unit 2 is intercepted by the Stonebridge Subdivision and conveyed to the Black Arroyo through internal storm drain.

The flow historically draining across the Lands of St. Joseph's Healthcare from the west is planned to be intercepted by Ridgeview Unit 1. However, there is not a financial guarantee in place to date. In the unlikely event that Ridgeview Unit 1 is not built as planned, Pond #1 to the south of Ridgeview Unit 1 would be built with Unit 2. This pond would protect Ridgeview Unit 2 from the offsite flow to the south-west. The offsite flow would then be conveyed to the onsite storm drain system and into the master drainage solution.

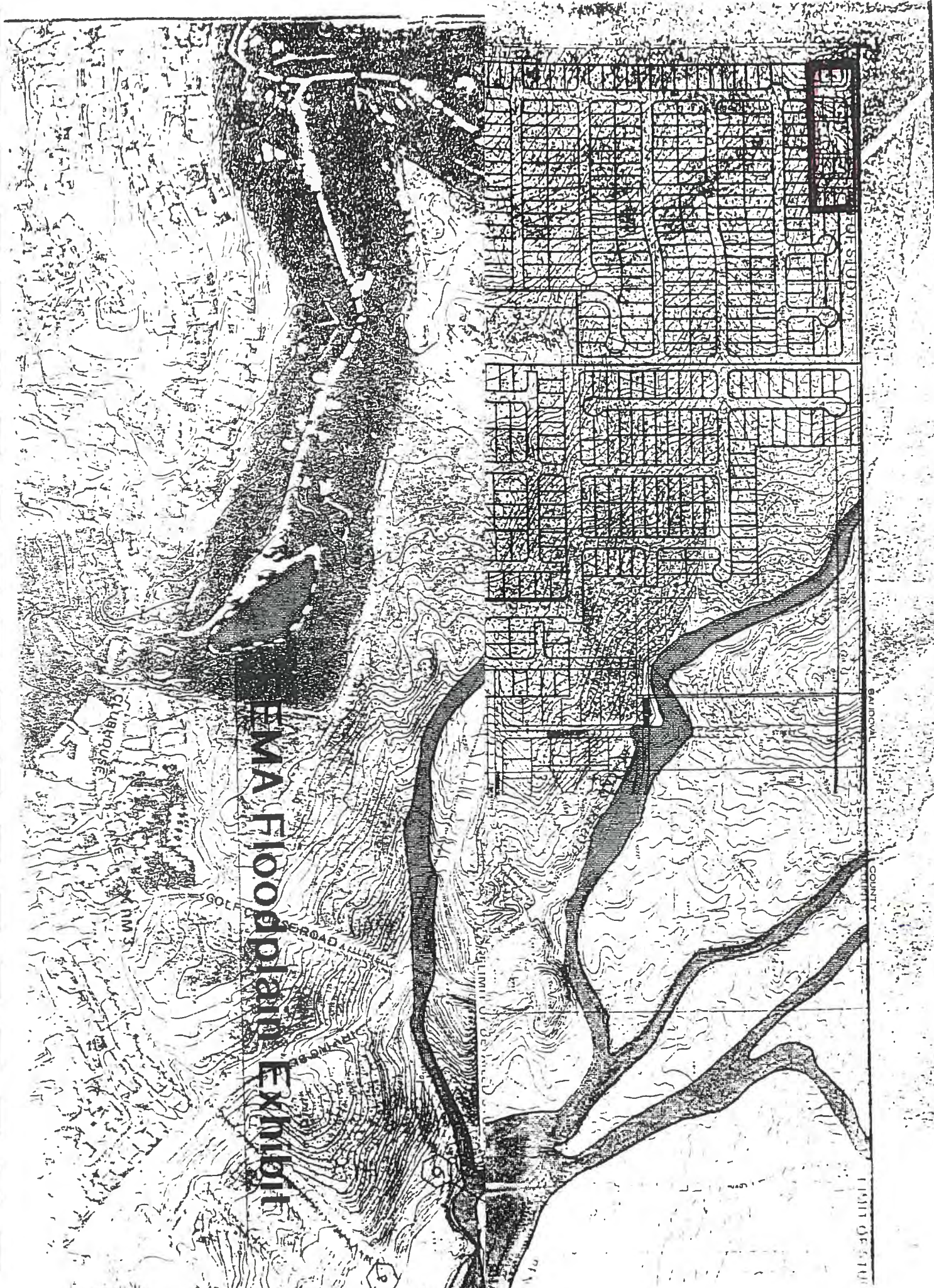
B. Onsite Flow

The proposed basins are illustrated on the Proposed Conditions Basin Map, **Plate 3**. Most of the flow generated by Ridgeview Unit 2 drains north to Black Arroyo Boulevard. The flow continues east in Black Arroyo Boulevard to the eastern boundary of the site. It then enters the storm drain system proposed in Ridgeview Unit 1. In the interim, this flow would be retained in pond #2. In the ultimate solution, the storm drain will convey the flow to the AMAFCA property and the Black Arroyo. Black Arroyo Boulevard has enough capacity to convey this runoff within the curb to the inlets. See appendix B for the street flow calculations.

One small basin, Basin 1, drains south into Stonebridge Unit 3A. Stonebridge was designed to accept 15.6 cfs and Ridgeview Unit 1 only discharges 8.0 cfs. The remaining 7.6 cfs is adequate to accommodate the 3.25 cfs produced by Basin 1. An AHYMO analysis, shown in **Appendix A**, was performed to determine the flows created by this subdivision and to model the pond.

VI. CONCLUSION

This report includes a detailed study of the proposed runoff. Attached are the preliminary plat, proposed conditions basin map, and grading plan. This drainage plan maintains the overall drainage pattern of the area and allows for safe management of storm runoff in our proposed as well as adaptable improvements for future development.



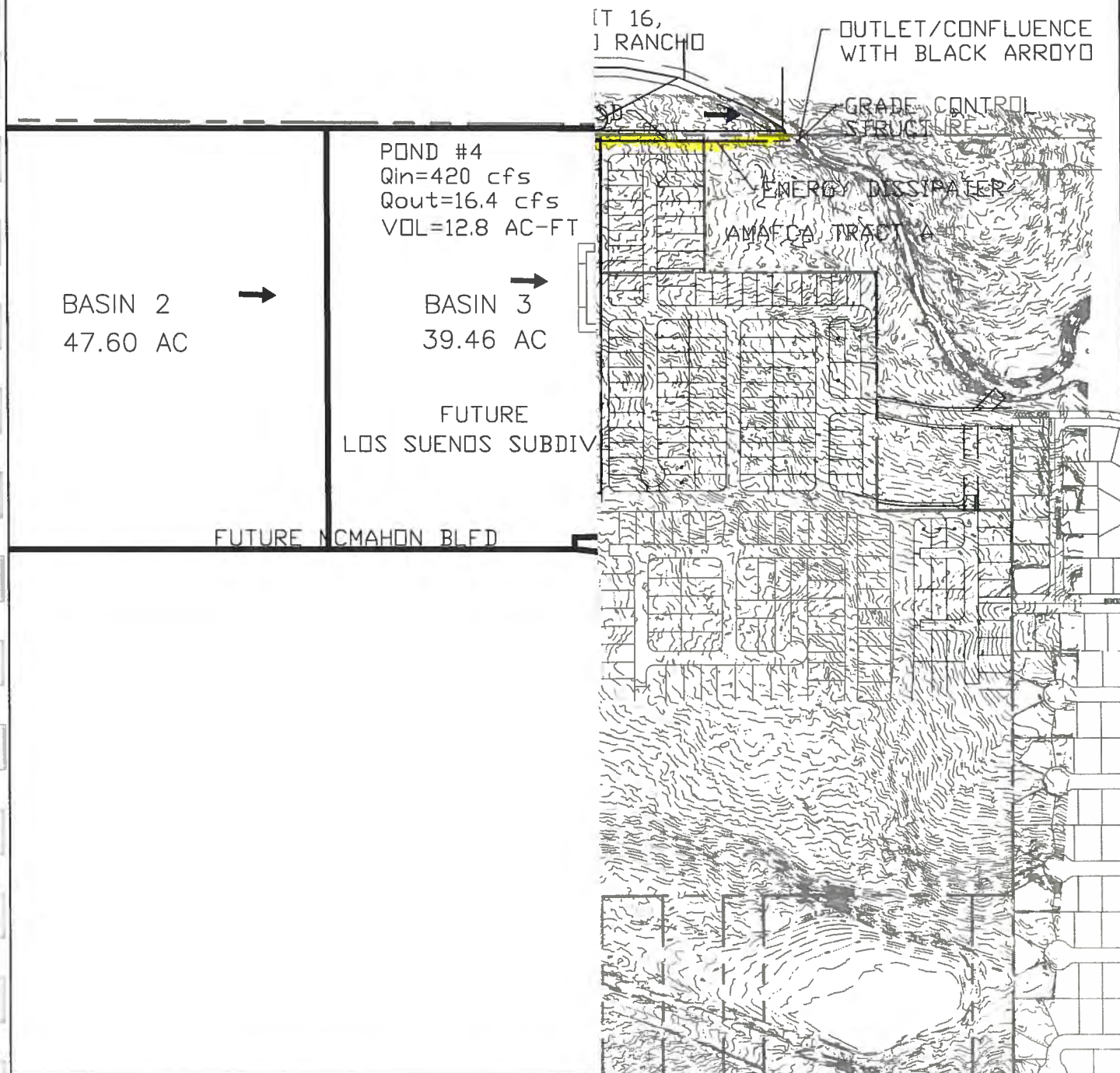
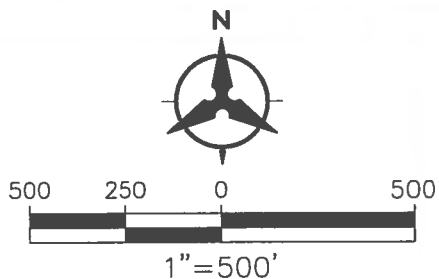
EMA Floodplain Exhibit

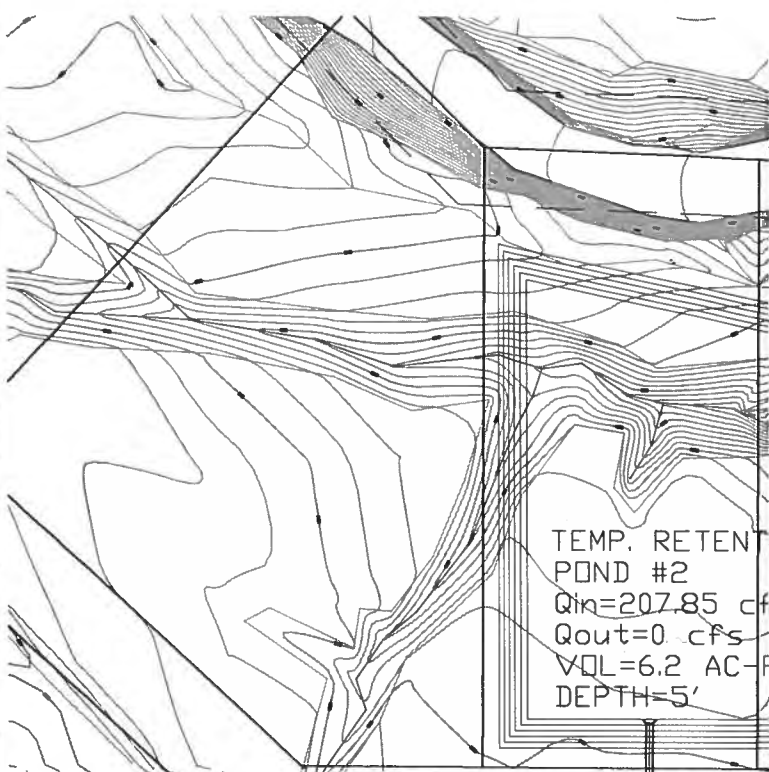
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MASTER DRAINAGE PLAN SUMMARY

Developed flow from Basins 1, 2, and 3 enters p
 Pond #4 releases 16 cfs and retains the 2-yr +
 Developed flow from Basins 4, 5, 9, and 13 and +
 Ponds #2, #3, and #4 retain the 2 year volume
 Pond #3 releases 18.5 cfs into a 24" storm drai
 Flow in 24" storm drain combines with flow from
 Pond #2 is located on the Lands of St. Joseph'
 Combined flow discharges into a 42" pipe in Black ID #2
 Flow outfalls through an energy dissipater into: IMATE
 at AMAFCA's boundary and discharges into: 193 cfs
 t=85 cfs





VISION
ALL

