

# **CANDIDATE ASSESSMENT REPORT DURANGO REGIONAL CONVEYANCE CHANNEL**

## **Executive Summary**

*Prepared for:*



**FLOOD CONTROL DISTRICT  
OF MARICOPA COUNTY  
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PHOENIX, ARIZONA 85009**

**Contract FCD 2004C027**

*Prepared by*



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## 1 INTRODUCTION

This Executive Summary Report describes the results of the Durango Regional Conveyance Channel (DRCC) Candidate Assessment Report (CAR) for the proposed DRCC located in the Cities of Avondale and Phoenix, Arizona. The purpose of the CAR was to update and revise the Durango Area Drainage Master Plan, for the portion of the DRCC alignment west of 75<sup>th</sup> Avenue.

The DRCC alignment is located between Lower Buckeye Road and Southern Avenue, and between 75<sup>th</sup> Avenue in Phoenix and the Agua Fria River in Avondale. 107<sup>th</sup> Avenue is the boundary between Phoenix and Avondale at the DRCC/BFC alignment. Also included in the CAR was the proposed Sunland Channel, which would run from 99<sup>th</sup> Avenue to a convergence with the DRCC along an alignment parallel to and north of Southern Avenue.

Since preparation of the Durango Area Drainage Master Plan (ADMP), development has occurred along the proposed DRCC alignment within the City of Phoenix between 75<sup>th</sup> Avenue and 107<sup>th</sup> Avenue. This development has used the area within the proposed DRCC alignment for retention according to normal requirements by the City of Phoenix. As development occurs in the City of Phoenix, there is a concern that DRCC alignment discharges at 107<sup>th</sup> Avenue could be increased over those of existing conditions, possibly resulting in increased DRCC flow and associated costs within the City of Avondale.

## 2 PLAN FORMULATION/EVALUATION OF ALTERNATIVES

Eight DRCC design alternatives were developed. Table ES.1 provides a brief description. The eight alternatives were evaluated in terms of hydrology (peak discharges), conceptual design, and cost. Table E.2 provides a summary of the costs of each alternative. The Sunland Channel is addressed separately.

**Table ES.1. DRCC Alternatives.**

Alternative	Basic Description
1	Construct the DRCC as proposed in the ADMP. Require all future development to install standard flood retention basins.
2	Construct the DRCC as proposed in the ADMP, but allow first-flush retention rather than standard retention for development adjacent to the channel.
3	Construct the DRCC in Avondale only. Require all future development to install standard flood retention basins.
4	Construct the DRCC in Avondale only, but allow first-flush retention rather than standard retention for development adjacent to the channel.
5	Same as Alternative 2, but with the 95 <sup>th</sup> Avenue Detention Basin, recommended in the ADMP, removed.
6	Construct the DRCC in Avondale only. Construct 100-year culverts for flood access at 83rd, 91st, and 107th Avenues in Phoenix.
7	Same as Alternative 6, but with 10-year culverts.
8	Same as Alternative 1. Construct a 2-year storm drain in 99th Avenue from the Southern Pacific Railroad to the Gila River.

**Table ES.2 DRCC Alternatives Cost Summary**

ALTERNATIVE	DRCC COST IN AVONDALE	DRCC COST IN PHOENIX	DRCC TOTAL COST
1. Future 100-Year, 2-Hour retention, Full DRCC	\$ 30,542,026	\$ 33,249,609	\$ 63,791,635
2. Future First Flush Retention Full DRCC	\$ 38,121,750	\$ 35,600,080	\$ 73,721,830
3. Future 100-Year, 2-Hour retention Avondale DRCC	\$ 28,320,808	\$ -	\$ 28,320,808
4. Future First Flush Retention Avondale DRCC	\$ 33,238,109	\$ -	\$ 33,238,109
5. Removed 95th Avenue Basin, First Flush Retention	\$ 39,083,288	\$ 23,884,959	\$ 62,968,247
6. 100-Year Phoenix Culverts, 100-Year 2-Hour Retention in Avondale	\$ 38,311,021	\$ -	\$ 38,311,021
7. 10-Year Phoenix Culverts, 100-Year 2-Hour Retention in Avondale	\$ 32,360,002	\$ -	\$ 32,360,002
8. 99th Avenue Storm Drain.	\$ 27,471,851	\$ 43,789,517	\$ 71,261,316

### 3 RECOMMENDED PLAN

Based on the evaluation of alternatives and determinations by the City of Avondale and City of Phoenix, the recommended DRCC consists of:

- Constructing the DRCC channel in Avondale only.
- Requiring first flush retention rather than standard retention for future development in Avondale adjacent to the DRCC alignment.
- Requiring standard retention for development adjacent to the channel in Phoenix. This retention should be located adjacent to and/or within the original DRCC proposed alignment .
- Limit the 100-year discharge at 107<sup>th</sup> Avenue to approximately 1,300 cfs. This will be accomplished with a basin located at approximately 95<sup>th</sup> Avenue on the south side of the retention/drainage (former DRCC alignment) corridor in Phoenix.

Figure ES.1 provides a conceptual plan view and cross section for the recommended plan, which consists of an earthen channel with culverts at roadway crossings. There would be a detention basin at the end of the channel, as recommended in the ADMP, and a detention basin at the 95<sup>th</sup> Avenue alignment. Culverts would be constructed for 100-year access at major roadway crossings along the alignment in Phoenix. The cost of this system (not including the Sunland Channel) would be approximately \$53,000,000, of which \$41,000,000 would be in Avondale and \$12,000,000 would be in Phoenix. The plan includes aesthetic landscaping and right of way for a regional multi-use trail. These would utilize the existing retention basin/channel system in Phoenix, which would remain.

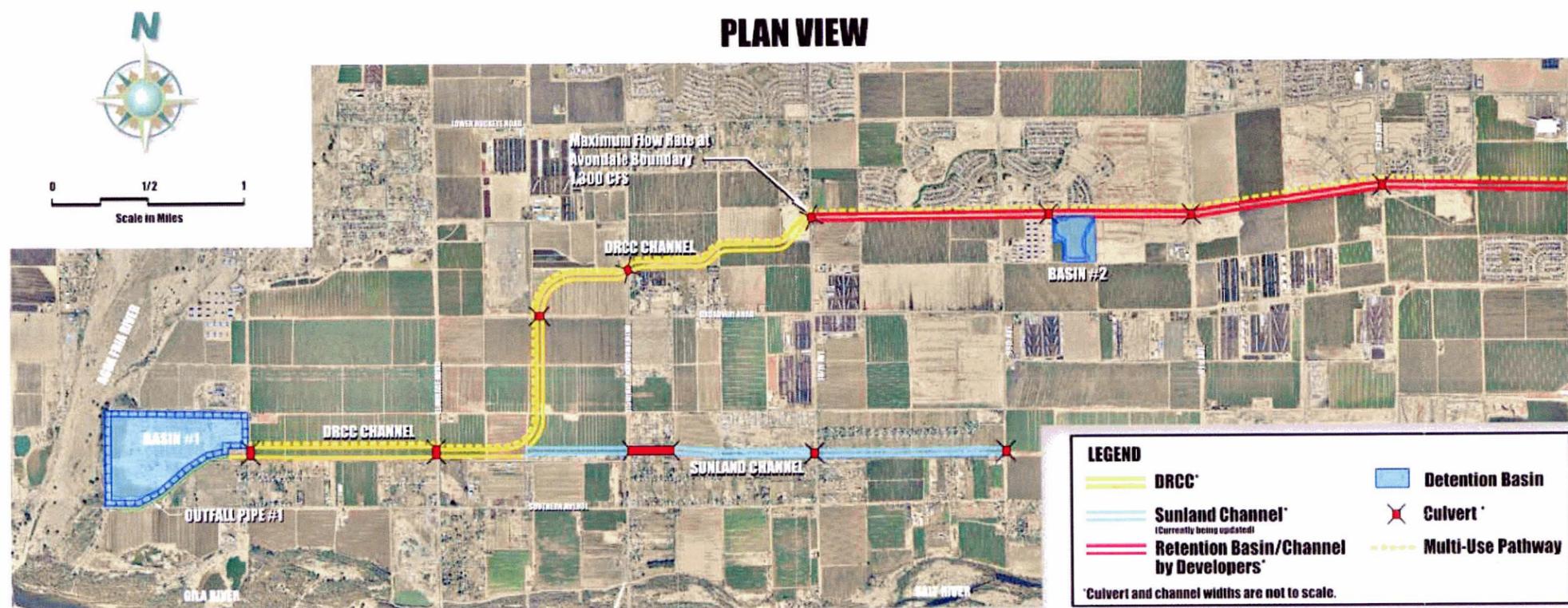
### 5 SUNLAND CHANNEL

Although not specifically included as part of the alternatives analysis, the recommended plan includes the Sunland Channel, which would run from 99<sup>th</sup> Avenue to the DRCC along the alignment shown in the attached exhibit. The preliminary design for the Sunland Channel consists of an earthen trapezoidal channel similar to the DRCC. The Sunland Channel is the subject of a separate Candidate Assessment Report.

# DURANGO REGIONAL CONVEYANCE CHANNEL

Figure ES.1

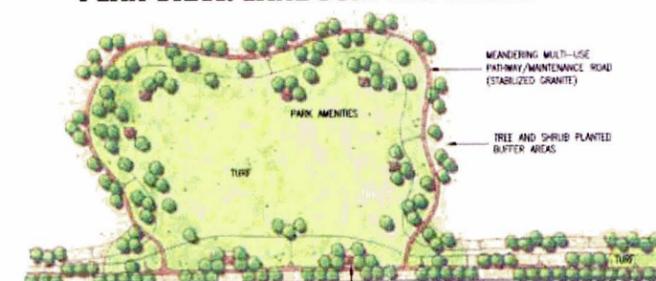
## PLAN VIEW



### TYPICAL DETENTION/RETENTION BASIN CROSS-SECTION/LANDSCAPING THEME



### TYPICAL DETENTION/RETENTION BASIN PLAN VIEW/LANDSCAPING THEME



### TYPICAL CHANNEL CROSS-SECTION

