



Public Works / Engineering Department

July 14<sup>th</sup>, 2017

## **PV Wash Improvement Area**

### **Alternative 3**

Flood Control District of Maricopa County

CIP Prioritization Procure Submittal



July 14<sup>th</sup>, 2017

Planning and Project Management Division  
Flood Control District of Maricopa County  
2801 West Durango Street  
Phoenix, AZ 85268

Attn: Don Rerick, P.E., Division Manager

**Paradise Valley Wash Drainage Improvement Area**  
**Alternative 3 – Phase 1 and Phase 2**  
(64<sup>th</sup> Street to eastern Town Limits along Lincoln Drive)

**Project Description**

The Paradise Valley Wash Drainage Improvement Area is three square miles and is bound by the Indian Bend Wash to the east and encompasses the valley between the southern slopes of Mummy Mountain and the northern slopes of Camelback Mountain (see Figure 1: Project Location Map). The area's primary conveyance corridor is the Paradise Valley Wash which runs west to east and roughly parallels Lincoln Drive. This Drainage Improvement Area is identified in the Flood Control District's on-going Lower Indian Bend Wash (LIBW) Area Drainage Master Study (ADMS). The existing hydrologic and hydraulic conditions analysis confirmed that the properties adjacent to the wash, while not in a mapped floodplain or floodway, are susceptible to flooding.

In addition to the on-going LIBW ADMS, there is a 120-acre parcel of land under development by Five Star Development for the Ritz Carlton project which will include a resort hotel, single-family residences, condominiums, and commercial development. As part of the Development Agreement for the resort, the Town is responsible for the reconstruction of several roadways within the Drainage Improvement Area which include Lincoln Drive between the eastern town limits and Mockingbird Lane, Mockingbird Lane between Lincoln Drive and Indian Bend Road, and Indian Bend Road between Mockingbird Lane and the eastern town limits. All three identified sections of roadway are identified in the LIBW ADMS for stormwater improvements. The Town wishes to incorporate the stormwater improvements identified in this area during the construction of the roadways to be fiscally responsible.

The proposed project is split into two phases:

Phase One includes a proposed 48" storm drain designed to intercept and convey the 10-year, 6-hour discharge on Mockingbird Lane north of Indian Bend Road from the Mummy Mountain Wash. The storm drain then heads west along Indian Bend Road, with several branches collecting ancillary flows from the north of Indian Bend Road, and discharging into the wash on the Ritz Carlton property, eventually crossing Scottsdale Road in an existing box culvert which connects to the McCormick-Stillman Railroad Park.

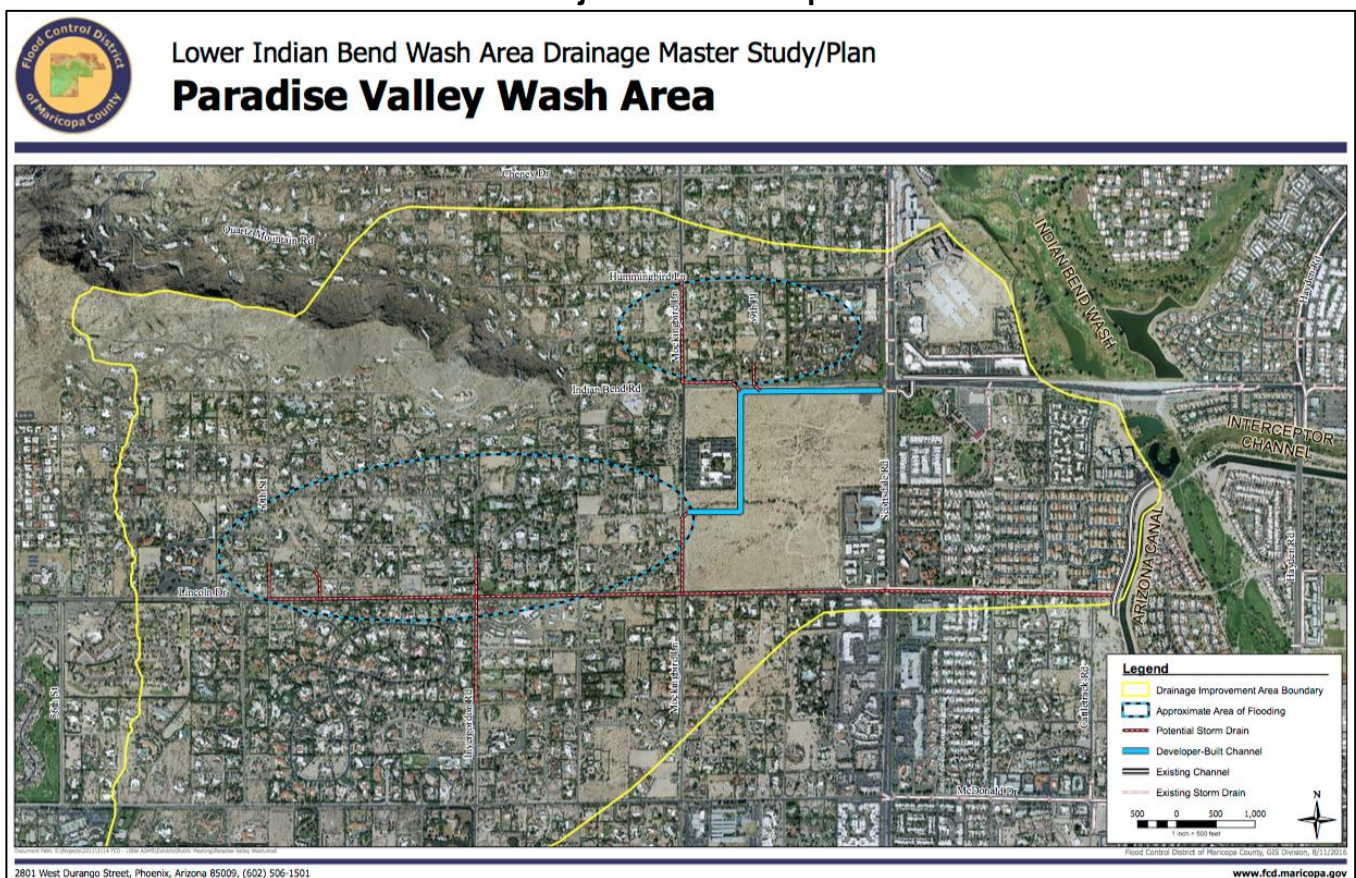
Also part of Phase One is a 60" storm drain in Mockingbird Lane, diverting flows from the proposed storm drain in Lincoln Drive north into the Paradise Valley Wash crossing on Mockingbird Lane. This piece also includes a 48" storm drain from the intersection at Mockingbird Lane and Lincoln Drive east to an existing 90" storm drain in Lincoln Drive at the town limits.

Phase One has been separated as a priority due to the on-going Ritz Carlton Development and the proposed roadway improvements in this area and the Town is requesting design in FY18 and construction in FY19.

Phase Two includes a 60" storm drain in Lincoln Drive, with laterals north of Lincoln Drive at 60<sup>th</sup> Street, 61<sup>st</sup> Street, and Invergordon Road to intercept ancillary flows. A 30" storm drain is proposed south of Lincoln Drive in Invergordon Road to convey flows from the north face of Camelback Mountain. This project is proposed to start design in FY19 and construction in FY20.

The Town currently has a design engineer under contract for the roadway design, TY Lin International, which is the same firm which did the alternatives analysis for the FCD's LIBW ADMS. The Town is willing and able to be the lead fiscal, design, and construction agent for this project and is ready to begin design immediately, please see the attached (Appendix A) signed Letter of Intent (LOI).

**Figure 1:  
Project Location Map**



## **1. Funding Commitment and Agency Priority**

This project is the Town's number one priority for the District's current year Prioritization Procedure and is one of two flood control projects the Town is submitting for the District's CIP Prioritization. This project is the Town's top priority and first project submitted to the District during the past decade.

As such, this project and Town funding is identified in the Town's adopted FY2018-2022 Capital Improvement Plan (Appendix B) and is ready to enter into an Intergovernmental Agreement. The project identified in the adopted CIP, FCD Cheney Improvements Alternative 1 can be reprioritized while the funding identified will remain to fund this project. No project schedule for implementation, including anticipated milestones and deliverables has been developed at this point.

### Total Project Cost:

The project design and construction is anticipated to cost \$11,770,000, as shown in the attached cost estimate (Appendix C). No new land or easement acquisition is anticipated to be needed for this project.

Phase One costs are anticipated to be \$5,500,000 while Phase Two costs are anticipated to be \$6,270,000.

## **2. Flood Control / Drainage Master Plan Element**

The Flood Control District's on-going Lower Indian Bend Wash Area Drainage Master Study has identified the proposed project as a preferred alternative. The preferred alternative, Paradise Valley Wash Alternative 3 has is attached (Appendix D).

## **3. Flooding Threat**

The Paradise Valley Wash Drainage Improvement Area is three square miles and is bound by the Indian Bend Wash to the east and encompasses the valley between the southern slopes of Mummy Mountain and the northern slopes of Camelback Mountain (see Figure 1: Project Location Map). The areas primary conveyance corridor is the Paradise Valley Wash which runs west to east and roughly parallels Lincoln Drive.

The area protected by the proposed storm drain includes up to 52 structures which are subject to probable flooding as identified in the preliminary FLO-2D analysis for the Paradise Valley Wash FHA (see Appendix E). None of these structures are currently in a mapped floodway or floodplain and no documented flooding events or complaints are known to exist. The analysis indicates a max discharge of 465 cfs at Mockingbird Lane and the Paradise Valley Wash and 210 cfs at Mockingbird Lane and Hummingbird Lane for a 100-year 6-hour storm event.

#### **4. Level of Protection**

This project will protect homes, government buildings, and roadways from potential flooding at the 10-year, 6-hour storm event.

#### **5. Area Protected**

The area protected by the proposed improvements includes low density residential development. In addition to single family homes, there are public buildings including Town Hall, Police Department, Fire Department, the Municipal Court and a school. Development has occurred in the area since the early 1940's. While all of the above listed uses will benefit from the improvements, no of them are located into a delineated floodway or floodplain. The preliminary FLO-2D analysis for the Paradise Valley Wash FHA indicates there are as many as 52 structures subject to probable flooding.

In addition to structural benefits, several roadways will benefit from the improvements. They include Lincoln Drive, Invergordon Road, 60<sup>th</sup> Street, 61<sup>st</sup> Street, Invergordon Road, Mockingbird Lane, and Indian Bend Road. All of the existing roadways carry 100% of the stormwater flows in the area and the proposed improvements would make them passable during 10 year storm events which will indirectly benefit a large percentage of the population who travel in the area, approximately 20,000 ADT, as well as provide for emergency access.

#### **6. Ancillary Benefits**

Ancillary benefits include the addition of inlet structures which will improve water quality leaving the Town of Paradise Valley. Additionally, the project presents opportunities for the implementation of low impact development methods that are currently being considered for adoption within the Town's Storm Drainage Design Manual.

#### **7. Level of Partner Participation**

The Town proposes to be the lead design and construction agent and anticipates funding 50% of the design and construction cost of this project. The project and funds have been identified in the Town's adopted FY2018-22 Capital Improvement Plan. The Town currently owns all of the necessary land and easements anticipated for this project.

#### **8. Operations and Maintenance Costs to the District**

The Town will be financially responsible for all future operation and maintenance for this project, after the initial contractor warranty period. There will be no on-going operation and maintenance costs borne by the District.

## **Appendices**

- A. Signed Letter of Intent
- B. Town of Paradise Valley Adopted Capital Improvement Plan
- C. Cost Estimate
- D. Selected Pages from the Lower Indian Bend Wash Area Drainage Master Study
- E. Paradise Valley Wash FHA

Don Rerick  
Flood Control District of Maricopa County  
July 14<sup>th</sup>, 2017

**APPENDIX A**  
**SIGNED LETTER OF INTENT**



# Flood Control Capital Project Letter of Intent

**Project Name:** Paradise Valley Wash Drainage Improvement Area Alternative 3 - Phases 1 and 2  
**Name of Submitting Agency:** Town of Paradise Valley

**1. General**

A. Project Area: Lincoln Drive between 60th Street and Town Limits, Mockingbird Lane between Lincoln Drive and Hummingbird Lane, and Indian Bend Road between Mockingbird Lane and Town Limits

B. Summary Project Description: 10-year, 6-hour storm drainage improvements in public right-of-way.

C. Estimated Project Cost: \$11,770,000

**2. Proposed Lead Agency by Task** (For each task, indicate "District", City/Agency name, or "Not Applicable")

A. Design: Town of Paradise Valley  
 B. Rights-of-Way Acquisition: Town of Paradise Valley  
 C. Construction: Town of Paradise Valley  
 D. Operations and Maintenance: Town of Paradise Valley

**3. Proposed Cost Share**

	District	City/Agency	Other	Total
A. Percentage	50%	50%	0%	0
B. Dollars	\$5,885,000	\$5,885,000	0	0

**4. Estimated Availability of City/Agency Funding (Dollars)**

	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY2022/23	Later FYs
	\$2,750,000	\$3,135,000				

**5. Master Plan/Study Applicable to Submitted Project**

A. Title (if applicable): Lower Indian Bend Wash Area Drainage Master Study

B. Adopted by City/Agency?  Adopted  Not Adopted  Pending  Not Applicable

**6. Agency Approval** (City Engineer, Public Works Director, or Agency Manager)

Kevin Burke July 14th, 2017  
 Signature Date

Kevin Burke Town Manager  
 Printed Name Title

**Submittals must adhere to the CIP Prioritization Procedure guidelines - in particular:** (1) Explicitly and quantitatively address the evaluation criteria identified by the CIP Prioritization Procedure, giving particular attention to quantifying flood control benefits; (2) include maps and other graphic attachments demonstrating the conceptual components of the project; (3) provide eight copies of each project submittal (accompanied by corresponding signed letters of intent); (4) if a non-District study generated the project, provide one copy of the study.



Don Rerick  
Flood Control District of Maricopa County  
July 14<sup>th</sup>, 2017

## **APPENDIX B**

# **TOWN OF PARADISE VALLEY ADOPTED CAPITAL IMPROVEMENT PLAN**

Town of Paradise Valley, Arizona

*Capital Improvement Plan*

2018 thru 2022

**PROJECTS BY DEPARTMENT**

Department	Project #	2018	2019	2020	2021	2022	Total
<b>Facility Improvement</b>							
Town Hall Remodel	2017-01	210,000	775,000	775,000			1,760,000
Police and PW Dept Backup Power	2017-02	300,000					300,000
Town Hall Chiller Replacement	2019-02			100,000			100,000
Police Department Remodel	2019-10	110,000	300,000	590,000			1,000,000
Public Works Remodel	2020-08	50,000	400,000				450,000
Town Hall Backup Power	2021-04				200,000		200,000
<b>Facility Improvement Total</b>		<b>670,000</b>	<b>1,475,000</b>	<b>1,465,000</b>	<b>200,000</b>		<b>3,810,000</b>
<b>Master Plans/Studies</b>							
Watershed Studies	2016-06		450,000				450,000
Iconic Visually Significant Corridors, etc.	2016-08	43,000					43,000
<b>Master Plans/Studies Total</b>		<b>43,000</b>	<b>450,000</b>				<b>493,000</b>
<b>Sidewalks</b>							
Lincoln Drive Sidewalks	2017-05	440,000	75,000	120,000			635,000
56th St. Sidewalks (Mockingbird to Doubletree)	2018-06	100,000					100,000
N. Tatum Rd. Sidewalks (Doubletree-Mountain View)	2020-06			150,000			150,000
32nd St. Sidewalks (Stanford to Lincoln)	2021-02				300,000	2,850,000	3,150,000
<b>Sidewalks Total</b>		<b>540,000</b>	<b>75,000</b>	<b>270,000</b>	<b>300,000</b>	<b>2,850,000</b>	<b>4,035,000</b>
<b>SRP Undergrounding</b>							
SRP 44th Street & Keim Conversion	2016-01	1,224,385					1,224,385
SRP Denton Lane Conversion	2020-01			50,000	527,100		577,100
SRP 40th Street & Lincoln Drive Conversion	2022-01					300,000	300,000
<b>SRP Undergrounding Total</b>		<b>1,224,385</b>		<b>50,000</b>	<b>527,100</b>	<b>300,000</b>	<b>2,101,485</b>
<b>Stormwater</b>							
52nd Street Stormwater Improvements	2018-20	100,000					100,000
FCD LIBW Cheney Improvements Alt 1	2019-12		1,500,000	6,000,000			7,500,000
FCD LIBW Invergordon Improvements Alt 1	2021-05				1,300,000	5,200,000	6,500,000
<b>Stormwater Total</b>		<b>100,000</b>	<b>1,500,000</b>	<b>6,000,000</b>	<b>1,300,000</b>	<b>5,200,000</b>	<b>14,100,000</b>
<b>Streets</b>							
Lincoln Dr. (Limits to Mockingbird) - Ritz Related	2016-14.1	2,941,750					2,941,750
Indian Bend (Limits to Mockingbird) - Ritz Related	2016-14.2	1,700,000					1,700,000
Mockingbird Lane Medians - Ritz Related	2016-14.3	5,320,000					5,320,000
Mockingbird Lane Improvements (S. of Lincoln Rd.)	2018-03	200,000					200,000
Doubletree (64th St. to Scottsdale)	2018-04	300,000	3,000,000				3,300,000
Pedestrian / Bicycle Improvements	2018-07	100,000	100,000	100,000	100,000	100,000	500,000
McDonald Drive Wash Culvert Extension	2018-10	205,000					205,000
Lincoln@64th St. (Invergordon) Intersect. Realign	2019-03		150,000				150,000

<b>Department</b>	<b>Project #</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>Total</b>
64th St. Medians (McDonald to Chaparral Rd.)	2019-04			270,000	2,430,000		2,700,000
Denton Lane Cul De Sac	2019-05			150,000			150,000
Highlands Drive Cul De Sac	2019-06		250,000				250,000
45th Street Curbs (McDonald to Valley Vista)	2020-02			100,000			100,000
Tatum Boulevard Retaining Walls	2020-03			400,000			400,000
Mockingbird Lane (56th St. to Invergordon Rd.)	2020-04				300,000	3,000,000	3,300,000
Mountain View Road Improvements (Tatum - 52nd St.)	2020-05			100,000	1,000,000		1,100,000
<b>Streets Total</b>		<b>10,766,750</b>	<b>3,500,000</b>	<b>1,120,000</b>	<b>3,830,000</b>	<b>3,100,000</b>	<b>22,316,750</b>
<b>Technology</b>							
Public Safety Communications Tower	2013-02	850,000					850,000
Network Switch Upgrade	2016-10	12,000					12,000
Implement Town-Wide Geographic Info. System (GIS)	2017-04	125,000					125,000
Telecommunications System Update	2018-01		320,000				320,000
CAD Enterprise Upgrade	2018-08	221,000					221,000
Town Hall Complex Fiber Connections	2022-05	150,000					150,000
<b>Technology Total</b>		<b>1,358,000</b>	<b>320,000</b>				<b>1,678,000</b>
<b>Traffic Signals</b>							
Traffic Signal (Video Detection) Upgrades	2018-05	250,000					250,000
<b>Traffic Signals Total</b>		<b>250,000</b>					<b>250,000</b>
<b>Wastewater</b>							
Sewer System Assesment	2017-06	234,200	234,200	234,200	234,200		936,800
<b>Wastewater Total</b>		<b>234,200</b>	<b>234,200</b>	<b>234,200</b>	<b>234,200</b>		<b>936,800</b>
<b>GRAND TOTAL</b>		<b>15,186,335</b>	<b>7,554,200</b>	<b>9,139,200</b>	<b>6,391,300</b>	<b>11,450,000</b>	<b>49,721,035</b>

Don Rerick  
Flood Control District of Maricopa County  
July 14<sup>th</sup>, 2017

## **APPENDIX C**

### **COST ESTIMATE**

# Paradise Valley Wash Storm Drain Alternative 3

## Cost Estimate



3030 N. Central Ave., Suite 1530, Phoenix, Arizona 85012

Description	Unit	Quantity	Unit Cost	Total Cost
STORM DRAIN CATCH BASIN (cost includes removals, new inlet, connector pipe & pavement replacement)	EA	62	\$22,300	\$1,382,600
30" STORM DRAIN PIPE (cost includes trenching, new pipe and pavement replacement)	LF	1350	\$223	\$301,050
38"x60" STORM DRAIN PIPE (cost includes trenching, new pipe and pavement replacement)	LF	1010	\$390	\$393,900
48" STORM DRAIN PIPE (cost includes trenching, new pipe and pavement replacement)	LF	3470	\$278	\$964,660
54" STORM DRAIN PIPE (cost includes trenching, new pipe and pavement replacement)	LF	3430	\$301	\$1,032,430
60" STORM DRAIN PIPE (cost includes trenching, new pipe and pavement replacement)	LF	4665	\$325	\$1,516,125
66" STORM DRAIN PIPE (cost includes trenching, new pipe and pavement replacement)	LF	680	\$355	\$241,400
STORM DRAIN MANHOLE (quantity based on number of catch basins and length of storm drain pipe)	EA	25	\$8,000	\$200,000

**Sub-Total = \$6,032,165**

Utility Relocation, Surveying, Mobilization and Traffic Control (30%) = \$1,809,650

**Construction Sub-Total = \$7,841,815**

Contingency (20%) = \$1,568,363

**Total = \$9,410,177**

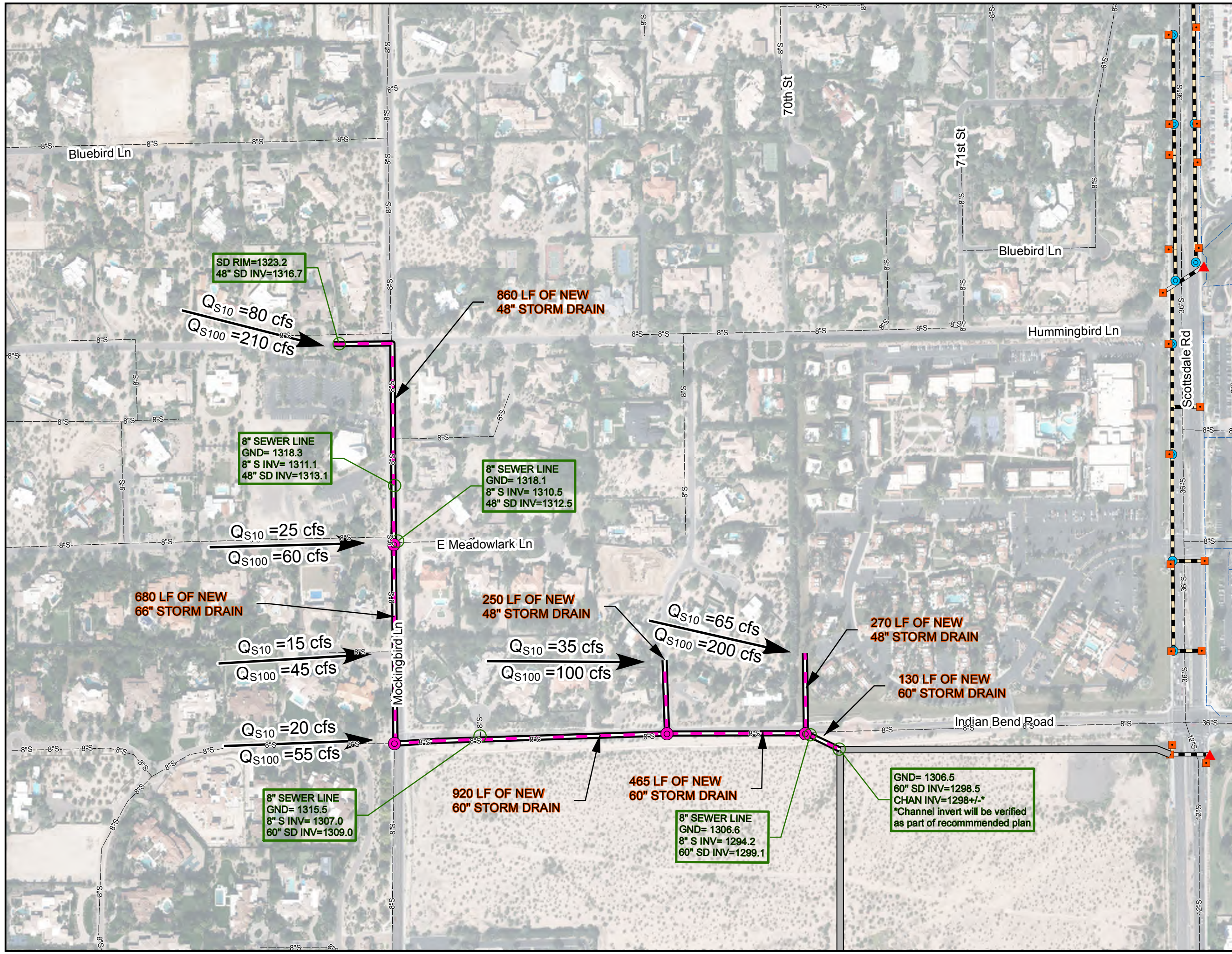
Design, Plan Review, Permitting, Staff Salary, CPM Admin. & Public Art (25%) = \$2,352,544.35

**Grand Total = \$11,770,000**

Don Rerick  
Flood Control District of Maricopa County  
July 14<sup>th</sup>, 2017

## **APPENDIX D**

### **SELECTED PAGES FROM THE LOWER INDIAN BEND WASH AREA DRAINAGE MASTER STUDY**



**LEGEND**

**Proposed Flooding Mitigation**

- Storm Drain
- Channel by Others

**Peak Discharge Summary**

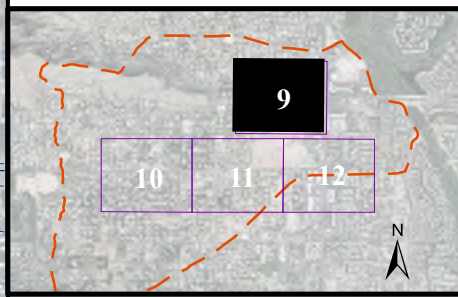
- Existing Surface Flow

**Existing Storm Drain**

- Inlet
- Manhole
- Outfall
- Box Culverts
- DIA: 27" and Smaller

**Existing Infrastructure**

- Sewer Lines
- Water Lines



**KEY MAP**

N

0 150 300

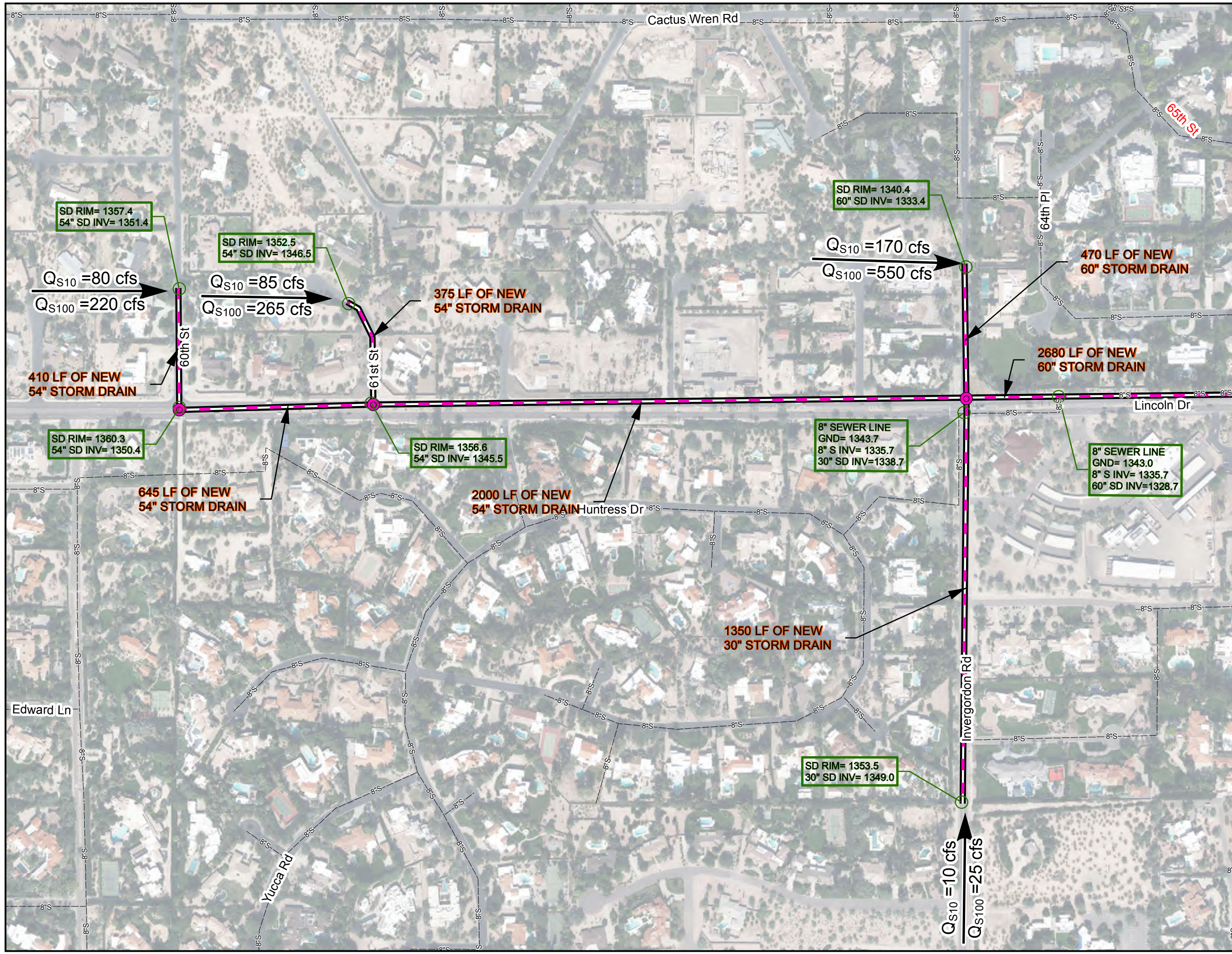
1 inch = 300 feet

**Gavan & Barker**  
Civil Engineering & Landscape Architecture  
300 North Central Avenue, Suite 1000  
Phoenix, AZ 85012 Phone 602.255.0211

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engineers | planners | scientists

**LOWER INDIAN BEND WASH ADMS**  
**Paradise Valley Wash**  
**Alternative 3 - 1**

	By	Date
Prepared	Cole Cooper	1/18/2017
Checked	Reynold Kraft	1/18/2017



**LEGEND**

**Proposed Flooding Mitigation**

— Storm Drain

**Peak Discharge Summary**

→ Existing Surface Flow

**Existing Infrastructure**

- - - Sewer Lines



**KEY MAP**

N

0 150 300

1 inch = 300 feet

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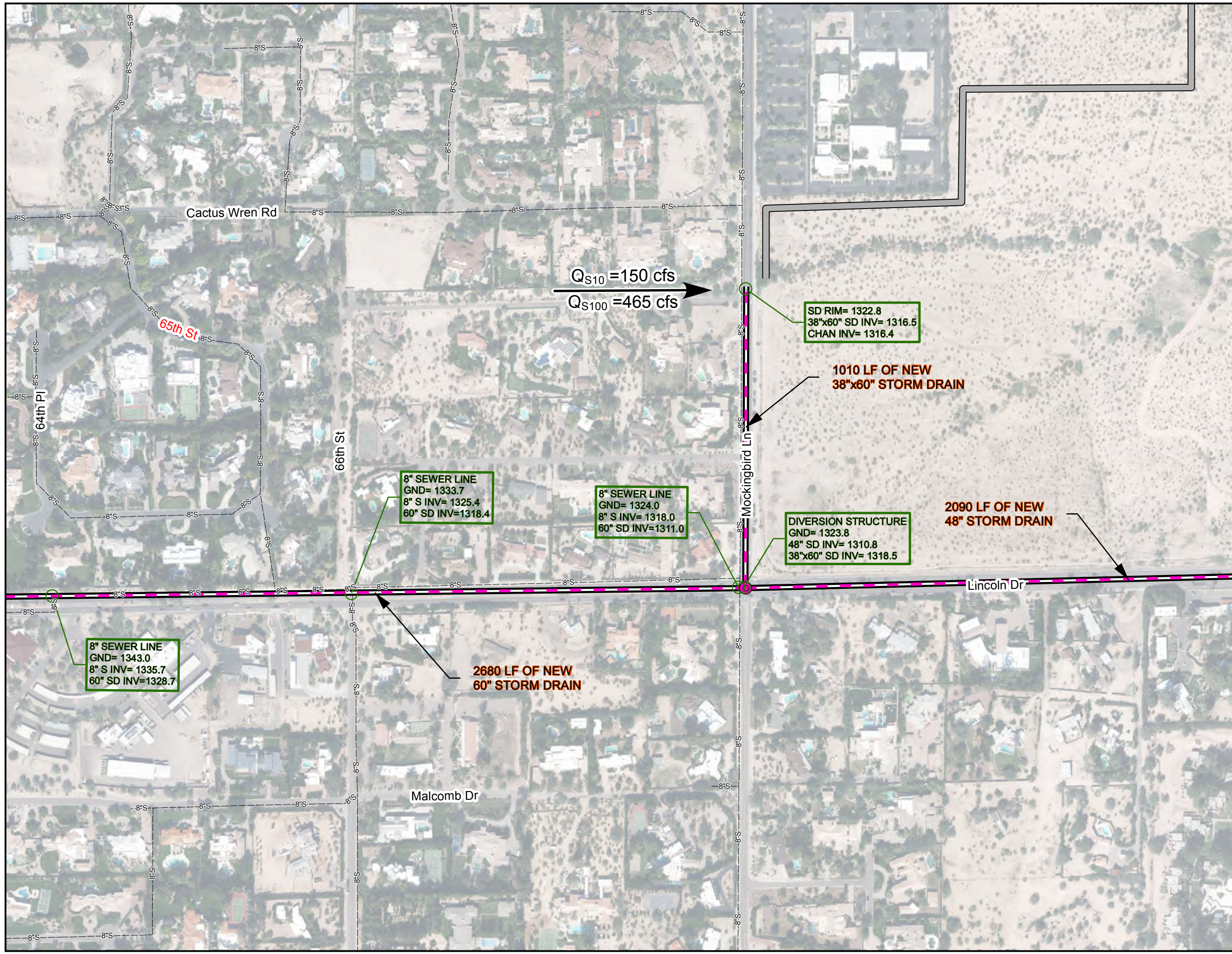
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**LOWER INDIAN BEND  
WASH ADMS**

Paradise Valley Wash  
Alternative 3 - 2

	By	Date
Prepared	Cole Cooper	1/17/2017
Checked	Reynold Kraft	1/17/2017





**LEGEND**

**Proposed Flooding Mitigation**

- Storm Drain
- Channel by Others

**Peak Discharge Summary**

- Existing Surface Flow

**Existing Infrastructure**

- Sewer Lines

$Q_{S10} = 150 \text{ cfs}$   
 $Q_{S100} = 465 \text{ cfs}$

SD RIM= 1322.8  
 38"x60" SD INV= 1316.5  
 CHAN INV= 1316.4

1010 LF OF NEW  
 38"x60" STORM DRAIN

8" SEWER LINE  
 GND= 1333.7  
 8" S INV= 1325.4  
 60" SD INV=1318.4

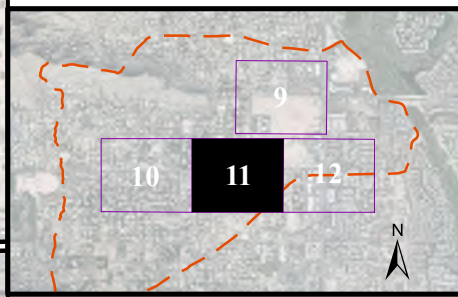
8" SEWER LINE  
 GND= 1324.0  
 8" S INV= 1318.0  
 60" SD INV=1311.0

DIVERSION STRUCTURE  
 GND= 1323.8  
 48" SD INV= 1310.8  
 38"x60" SD INV= 1318.5

2090 LF OF NEW  
 48" STORM DRAIN

8" SEWER LINE  
 GND= 1343.0  
 8" S INV= 1335.7  
 60" SD INV=1328.7

2680 LF OF NEW  
 60" STORM DRAIN



**KEY MAP**

N

0 150 300

1 inch = 300 feet

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 Phoenix, AZ 85012 Phone 480-200-0211

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**LOWER INDIAN BEND  
 WASH ADMS**

Paradise Valley Wash  
 Alternative 3 - 3

	By	Date
Prepared	Cole Cooper	1/17/2017
Checked	Reynold Kraft	1/17/2017



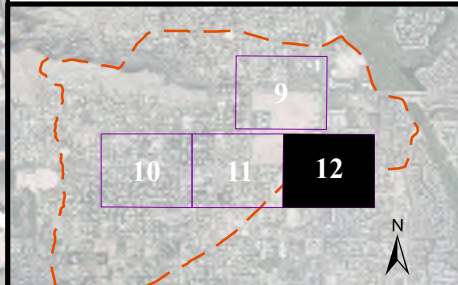
**LEGEND**

**Proposed Flooding Mitigation**

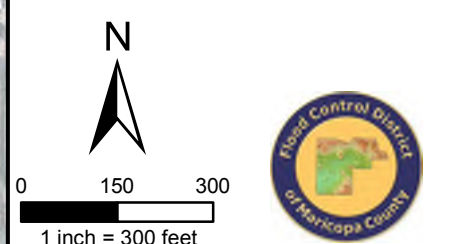
- Storm Drain
- Inlet
- Manhole
- DIA: 27" and Smaller
- DIA: 30" - 45"
- DIA: 48" - 63"
- DIA: 66" - 81"
- DIA: 84" and Bigger

**Existing Infrastructure**

- Sewer Lines



**KEY MAP**



**Gavan & Barker** Civil Engineering & Landscape Architecture  
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**LOWER INDIAN BEND WASH ADMS**  
**Paradise Valley Wash**  
**Alternative 3 - 4**

	By	Date
Prepared	Cole Cooper	1/17/2017
Checked	Reynold Kraft	1/17/2017

Don Rerick  
Flood Control District of Maricopa County  
July 14<sup>th</sup>, 2017

**APPENDIX E**  
**PARADISE VALLEY WASH FHA**

**LOWER INDIAN BEND WASH ADMS**

**PARADISE VALLEY WASH FLOOD HAZARD AREA**

**Legend**

**(Max Discharge in CFS)**

- 0.00 - 1.00
- 1.01 - 5.00
- 5.01 - 10.00
- 10.01 - 25.00
- 25.01 - 50.00
- 50.01 - 100.00
- 100.01 - 200.00
- 200.01 - 500.00
- 500.01 - 1,000.00
- > 1,000.01

**Brainstorming Results**

- New Channel
- New Storm Drain
- New Detention Basins
- Proposed LID Improvements

**Drainage Complaint Location**

- Drainage Complaint On File
- Area of High Importance

**Existing Storm Drain**

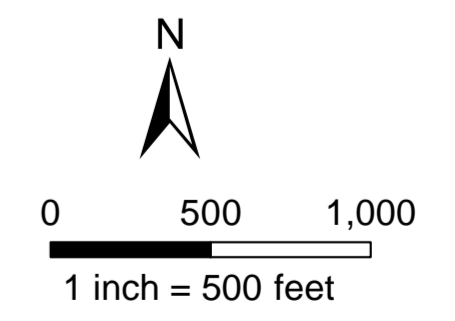
- Inlets
- Manholes
- Outfall
- 27" and Smaller
- 30" - 45"
- 48" - 63"
- 66" - 81"
- 84" and Bigger
- Box Culvert

**Flood Prone Buildings**

- Probable Structural Flooding

**Reference Features**

- Flood Hazard Area



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	By	Date
Prepared	XX	9/10/2015
Checked	XX	9/10/2015

