Town of Paradise Valley

6401 E Lincoln Dr
Paradise Valley, AZ 85253

Meeting Notice and Agenda

Town Council

Mayor Mark Stanton
Vice Mayor Ellen Andeen-Keller
Councilmember Christine Labelle
Councilmember Karen Liepmann
Councilmember Scott Moore
Councilmember Julie Pace
Councilmember Anna Thomasson

Thursday, October 9, 2025 **4:00 PM** **Council Chambers**

1. CALL TO ORDER / ROLL CALL

Notice is hereby given that members of the Town Council will attend either in person or by electronic conference system, pursuant to A.R.S. §38-431(4).

2. EXECUTIVE SESSION

25-229 **Discussion and consultation regarding Municipal Court Performance Reviews and Reappointment of Municipal Court Judges as authorized by A.R.S. §38-431.03(A)(1).**

25-225 **The Town Council may go into executive session at one or more times during the meeting as needed to confer with the Town Attorney for legal advice regarding any of the items listed on the agenda as authorized by A.R.S. §38-431.03(A)(3).**

3. STUDY SESSION ITEMS - IMMEDIATELY FOLLOWING THE EXECUTIVE SESSION

The Study Session is open to the public for viewing, and the following items are scheduled for discussion among the Council, Staff, and their designees. The Town Council will be briefed by staff and other Town representatives. There will be no votes and no final action taken on discussion items. The Council may give direction to staff and request that items be scheduled for consideration and final action at a later date. The order of discussion items and the estimated time scheduled to hear each item are subject to change.

25-231 **Discussion of Draft Final Stormwater Master Plan - Check In #4**
45 Minutes

Staff Contact: Shar Johnson 480-348-3573

25-207 **Discussion of Curb Replacement Projects: McDonald Dr. (40th St. to 44th St.) and 45th St. (McDonald Dr. to Valley Vista Ln)**
30 Minutes

Staff Contact: Sam Kayat 480-348-3541

4. BREAK

5. RECONVENE FOR REGULAR MEETING 6:00 PM

6. ROLL CALL

7. PLEDGE OF ALLEGIANCE*

8. PRESENTATIONS*

25-228 **Proclaim October as Domestic Violence Awareness Month**

Recommendation: Proclaim October as Domestic Violence Awareness Month

Staff Contact: Duncan Miller, 480-348-3610

25-227 **Advisory Committee on Public Safety (ACOPS) Update**

Staff Contact: Duncan Miller, 480-348-3610

9. CALL TO THE PUBLIC

Citizens may address the Council on any matter not on the agenda or any item on the Study Session (Section 3 on the agenda). In conformance with Open Meeting Laws, Council may not discuss or take action on this matter at this Council meeting, but may respond to criticism, ask that staff review a matter raised, or ask that it be placed on a future agenda. Those making comments shall limit their remarks to three (3) minutes. Please fill out a Speaker Request form prior to addressing the Council.

10. CONSENT AGENDA

All items on the Consent Agenda are considered by the Town Council to be routine and will be enacted by a single motion. There will be no separate discussion of these items. If a member of the Council or public desires discussion on any item it will be removed from the Consent Agenda and considered separately. Please fill out a Speaker Request form prior to the start of the meeting and indicate which item you would like to address.

25-226 **Minutes of Town Council Meeting September 25, 2025**

25-233 **Discussion and Possible Action to Authorize the Town Manager to Execute a Linking Agreement with Logicalis, Inc. for the Purchase of Replacement Security Cameras and Servers**

Recommendation: Authorize the Town Manager to execute a linking agreement with Logicalis, Inc for the replacement of security cameras and related equipment for the Town Hall Campus in the amount of $209,278.79.

Staff Contact: James Bailey, 480-348-3672

11. PUBLIC HEARINGS

The Town Council may hear public comments and take action on any of these items. Citizens may address the Council regarding any or all of these items. Those making comments are limited to three (3) minutes. Speakers may not yield their time to others. Please fill out a Speaker Request form prior to the start of the meeting and indicate which item you would like to address.

12. ACTION ITEMS

The Town Council May Take Action on This Item. Citizens may address the Council regarding any or all of these items. Those making comments are limited to three (3) minutes. Speakers may not yield their time to others. Please fill out a Speaker Request form prior to the start of the meeting and indicate which item you would like to address.

13. FUTURE AGENDA ITEMS

The Town Council May Take Action on This Item. The Mayor or Town Manager will present the long range meeting agenda schedule and announce major topics for the following meeting. Any member of the Council may move to have the Town Manager add a new agenda item to a future agenda. Upon concurrence of four more Members, which may include the Mayor, the item shall be added to the list of future agenda items and scheduled by the Town Manager as a future agenda item within 60 days, or longer with Council approval.

25-230 **Consideration of Requests for Future Agenda Items**

Recommendation: Review the current list of pending agenda topics.

Staff Contact: Town Manager, 480-348-3690

14. MAYOR / COUNCIL / MANAGER COMMENTS

The Mayor, Council or Town Manager may provide a summary of current events. In conformance with Open Meeting Laws, Council may not have discussion or take action at this Council meeting on any matter discussed during the summary.

15. ADJOURN

AGENDA IS SUBJECT TO CHANGE

**Notice is hereby given that pursuant to A.R.S. §1-602.A.9, subject to certain specified statutory exceptions, parents have a right to consent before the State or any of its political subdivisions make a video or audio recording of a minor child. Meetings of the Town Council are audio and/or video recorded, and, as a result, proceedings in which children are present may be subject to such recording. Parents in order to exercise their rights may either file written consent with the Town Clerk to such recording, or take personal action to ensure that their child or children are not present when a recording may be made. If a child is present at the time a recording is made, the Town will assume that the rights afforded parents pursuant to A.R.S. §1-602.A.9 have been waived.*

The Town of Paradise Valley endeavors to make all public meetings accessible to persons with disabilities. With 72 hours advance notice, special assistance can also be provided for disabled persons at public meetings. Please call 480-948-7411 (voice) or 480-483-1811 (TDD) to request accommodation to participate in the Town Council meeting.

Town of Paradise Valley

6401 E Lincoln Dr
Paradise Valley, AZ 85253

Action Report

File #: 25-229

Action Report

File #: 25-225

The Town Council may go into executive session at one or more times during the meeting as needed to confer with the Town Attorney for legal advice regarding any of the items listed on the agenda as authorized by A.R.S. §38-431.03(A)(3).

Action Report

File #: 25-231

AGENDA TITLE:
Discussion of Draft Final Stormwater Master Plan - Check In #4

STAFF CONTACT:

TOWN
Of
PARADISE VALLEY

STAFF REPORT

TO: **Mayor Stanton and Town Council Members**

FROM: **Andrew Ching, Town Manager**
Chad Weaver, Community Development Director
Shar Johnson, Town Engineer
Geoff Brownell, Kimley-Horn Consulting Project Manager

DATE: **October 9, 2025**

DEPARTMENT: Community Development – Engineering Division
Shar Johnson , 480-348-3522

AGENDA TITLE:
Town of Paradise Valley's Stormwater Master Plan Development (Council Check-In #4)

SUMMARY STATEMENT:

The Town's Stormwater Master Plan Development is at a draft final stage and staff is prepared to present project update materials to Council for a fourth check-in.

The project scope of work includes combining and overlaying modeling efforts from the Flood Control District of Maricopa County's previous Area Drainage Master Studies and Plans with additional modeling within the Town of Paradise Valley to identify and prioritize alternative projects for high hazard areas.

The major scope tasks for the Stormwater Master Plan includes:

- Task 1 – Project Management
- Task 2 – Data Collection
- Task 3 – Mapping and Assessment of Storm Drain Assets
- Task 4 – Townwide FLO-2D Model
- Task 5 – Long Range Capital Improvement Plan Development
- Task 6 – Development of Stormwater Master Plan
- Task 7 – Town Council Meetings/Coordination

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BACKGROUND

Between 2013 and 2014, the Town of Paradise Valley experienced significant flooding events and property damage during these events. The Town Council was moved to host a Community Conversation on Stormwater on February 26, 2015. Town staff proceeded to develop a plan in 2015 that included short-term, mid-term and long-term measures to educate residents and provide solutions to remediate flooding in the Town.

Major milestones for stormwater management in the Town include the following Council actions:

1) On April 13, 2017, the Town Council Approves Resolution 2017-08 with the following excerpt:

   NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE TOWN OF PARADISE VALLEY, ARIZONA, THAT:

   SECTION 1. The Town of Paradise Valley will:

   A. provide storm water data and information available to it concerning the 100 year, 2 hour storm event to property owners;
   B. participate in National Flood Insurance Program such that property owners have the ability to purchase federally backed flood insurance;
   C. regulate development to mitigate the impacts of storm drainage;
   D. budget for small (i.e. under the Capital Improvement Program financial threshold) flood control projects that benefit two or more Paradise Valley parcels and seek cost sharing opportunities for these or other storm water management projects; and,
   E. consider cost-benefit analysis for all proposed projects.

2) Town Council Approves Ordinance 2017-01 on 4/13/2017 adopting the updated Storm Drainage Design Manual

   - Originally adopted in 1987, first comprehensive update
   - The updated manual incorporated all aspects of stormwater management.
     - Major changes include comprehensive submittal requirements, BMPs, updated rainfall data, updated retention requirements, certification of retention basin volume, first flush requirements.

3) Between 2017 and 2023, Council declines to participate in some large ($10M+) Flood Control District of Maricopa County (FCDMC) projects identified in the Area Drainage Master Plan/Study (ADMP/S) due to cost/benefit analyses.

4) April 27, 2023, Council approves the FY24 Capital Improvement Plan budget. The budget includes $450,000 for Watershed Studies / Storm Drainage Strategic Plan (i.e. Stormwater Master Plan).

5) On November 9, 2023, Council issued comments and directions to staff to revise the scope and fee proposal to develop a Town Stormwater Master Plan for further review. Council's comments and directions emphasized: a) The benefits

and costs associated with developing a Town-wide Stormwater Master Plan; b) A cost-effective project approach that includes more direct oversight by staff; c) Council "check-ins" throughout the plan's development; public involvement by data collection activities; d) understanding the Town's history of stormwater management and mitigation practices; and e) the identification of new flood hazard areas, prioritization of new and existing projects and the process to include these projects in the Town's Five-Year Capital Improvement Program budget.

6) On January 11, 2024, Council directed staff to proceed with a professional services contract with Kimley-Horn to develop a Town-wide Stormwater Master Plan.

7) The Town of Paradise Valley's professional services contract agreement (CON-24-025) with Kimley-Horn was entered on March 6, 2024.

8) Intergovernmental Agreement (IGA) between the Town of Paradise Valley and the Flood Control District of Maricopa County (FCD) was approved and accepted on March 27, 2024.

PROJECT PROGRESS

The project kick-off meeting took place on March 26, 2024, and Council Session check-ins on June 13, 2024, November 14, 2024, and March 27, 2025. At the initial Council check-in on June 13, 2024, staff presented the results of data collection and cataloging, and the compilation of a townwide comprehensive two-dimensional hydrologic and hydraulics modeling effort.

- **Data collection and cataloging –** Considerable data on flood problem areas and potential mitigation projects has already been identified by residents, Town Staff, and through the various watershed studies completed within Town boundaries. The intent is for the PVSWMP to springboard off and build from this data to identify the project that will benefit residents the most. To this end, the project team has collected all pertinent study data, project data, flood complaints, and staff identified problem locations.

- **Hydrologic and Hydraulic Modeling –** The project team focused on compiling the townwide model that will serve as the basis of design for conceptual project formulation. The model results will also allow Town staff to effectively manage new development such that flood hazards are reasonably mitigated. Modeling is scheduled to continue until the end of November 2024 with refinement and calibration of flood areas.

At the second Council check-in on November 14, 2024, staff presented the results of the flood hazard area designations and flood area prioritization. Staff also presented the plan for project prioritization as part of future efforts.

- **Flood Hazard Areas** – Flood hazard areas were classified as either having nuisance, moderate, or severe flooding potential based on depth of flood flows against structures and over roadways. The classifications were overlayed onto the Flood Hazard Areas Map. Also illustrated on maps were factors and parameters to further delineate the flood hazard areas such as maximum depth, depth x velocity, and erosion or sedimentation potential.

  An additional map prepared was the Reported Flooding Issues Map which overlays the Flood Hazard Classifications areas with property flooding, road closures due to flooding risks, road flossing and structural flooding. The flooding issues are demonstrated throughout the entire Town with many clusters near or within the flood hazard areas.

- **Flood Area Prioritization -** A decision matrix was prepared to assist with prioritizing flood areas. The decision variables included with initial priority weightings were:
  - Severity of Flooding,
  - Potential Benefits to Streets/Structures,
  - Potential Streets Protected,
  - Emergency Access, and
  - Multi-Use Opportunities.

  The results of the areas ranking based on the decision matrix was mapped and overlayed with the flood hazard areas for prioritization.

- **Project Prioritization -** The check-in presentation included a brief overview of the proposed project alternative analysis in preparation for next steps in the development of the Town's Stormwater Master Plan. The analysis included categorizing and prioritizing project alternatives for capital improvements in the Town. Major project categories include small, medium and large projects based on the Flood Control District of Maricopa County's (FCDMC) funding program thresholds and other qualifying regional and federal grant programs.

At the third Council check-in on March 27, 2025, staff presented updates on the Town-wide hydrologic and hydraulic modeling effort, a summary of the flood hazard area prioritization, and project alternatives development and prioritization.

- **Model Finalization –** Draft final models were submitted to the Town and Flood Control District of Maricopa County (FCDMC) on January 21, 2025. Comments were received from FCDMC on March 10, 2025 and are currently being addressed. The submission to FCDMC included calibration models using actual storm event data. The FCDMC flood control basin near 44th Street and Shea Boulevard was used for calibration as it has a reliable stream gage at the spillway into the basin. Once the models are finalized, the Town will have comprehensive, town-wide hydrology and hydraulic data spaced every ten feet. This will allow for the determination of runoff conditions anywhere in the Town, helping facilitate safe developments and informed improvement projects.

- **Flood Hazard Area Prioritization –** During the Council check-in on November 14, 2024, the flood hazard area prioritization process was discussed in detail. Areas were delineated based on modeling results, erosion/sedimentation potential, flood complaints, and reoccurring maintenance. These areas were classified as nuisance, moderate, and severe based on depth of flooding against structures and over roadways during the simulated 100-year event. Nineteen total areas were delineated as particularly flood prone. Of these, three were categorized as nuisance, seven as moderate, and nine as severe. Flood hazard project alternatives were developed for the nine areas with potentially severe flood hazards (high priority areas).

- **Project Alternative Development –** For each of the nine severe flooding potential areas, flood mitigation project alternatives were developed. All projects were developed such that improvements were contained within existing Town right-of-way where feasible. Projects for each area were then ranked to determine a recommended alternative using the following criteria:

    1. Improvements were sized to convey runoff from a 10-year storm event
    2. Potential structures protected and design/construction costs were weighed the highest score of 5.
    3. Streets protected and partnership opportunities were weighed the next highest score of 4.
    4. Operations and maintenance costs and utility constraints were weighed using a factor of 3.
    5. Multi-use opportunities were weighted using a factor of 2.
    6. Green stormwater infrastructure opportunities were weighed the lowest 1.

    The recommended alternative for each of the nine high priority areas was refined to create conceptual plans, opinion of probable cost, cost/benefit analysis, and proposed conditions hydraulic modeling. These data are housed in the Storm water Master Plan and will help inform CIP updates and prioritization.

    Each of the high priority areas and the corresponding project alternatives were included in the presentation. The alternatives data included a brief description, estimated cost, and estimated quantities of improvements. The presentation also included a summary sheet of the recommended alternative per high priority area with the major design component.

WORK SESSION MATERIALS

This session will include presentation of the draft final Paradise Valley Stormwater Master Plan to include:

- **Overall Project Summary –** The summary includes project timeline to date, project purpose, methods for identifying flood hazard areas, the study and model boundaries, and summary of final deliverables.

- **Model Compilation and Results Summary –** Two-dimensional modeling was compiled for the entire Town for the 2-, 10-, and 100-year hypothetical storm events. The modeling results provide detailed and accurate flood depth and velocity results anywhere in the Town, discretized on a 10' by 10' gridded basis (unique results every 10').

- **Data Collection Summary –** The data collection effort consisted of compiling flood related complaints and problem spots from both residents and Town staff. In all, 275 unique locations were identified. Past flood mitigation study results from both Town and Flood Control District of Maricopa County (FCDMC) projects were also collected and used as the starting point for the modeling effort and for identifying flood hazard areas.

- **Existing Infrastructure Evaluation –** Existing infrastructure was evaluated to qualitatively identify infrastructure that may be undersized. These determinations were made by evaluating performance during the 2-, 10-, and 100-year theoretical storm simulations. For example, if significant ponding occurred at a storm drain or culvert inlet during the 10-year simulation but not during the 2-year simulation, it was deduced that the capacity of that system was between the two storm events. These evaluations were focused mainly on culverts as there is limited storm drain in the Town, and undersized culvert can create significant flooding hazards for vehicles during large storm events.

- **Flood Hazard Analysis –** Model results were next used to perform flood hazard analyses. These analyses included mapping buildings potentially inundated (with depth data) for each storm event, erosion and sedimentation potential along washes using velocity data, and risk to passenger vehicle at wash road crossings using the product of depth and velocity. The results of each analysis were used to create hazard maps, and to identify potential flood prone areas throughout the Town.

- **Flood Hazard Area Classification and Prioritization –** Using staff and resident identified problem areas, model results, and the flood hazard analyses, nineteen separate areas were identified as particularly flood prone. Each of these areas was classified as having either 'nuisance flooding', moderate flooding', or 'severe flooding' potential based on depths of flooding in the roadways and the number of structures impacted. Sixteen of the nineteen areas were classified as having either moderate or severe flooding potential. These sixteen areas were ranked for development of flood mitigation project alternatives. Rankings were based on:

    1. Severity of Flooding
    2. Potential Structures Protected
    3. Potential Streets Protected

4. Restrictions to Emergency Access
5. Multi-Use Opportunities

The specific criteria and ranking scheme are detailed in the master plan report. The top nine areas were advanced for mitigation project alternative development. The nine include seven severe and two moderate flood potential areas, with up to 512 structures protected, and emergency access improvements for six.

- **Proposed Project Alternatives Development –** For each of the nine areas, two or three project alternatives were developed and ranked against each other to determine one recommended alternative. The rankings were based on:

    1. Potential Structures Benefitted
    2. Design and Construction Cost/Benefit
    3. Potential Streets Protected
    4. Green Storm Water Infrastructure Opportunities
    5. Project Partnership Potential
    6. Multi-Use Opportunities
    7. Operations and maintenance Costs
    8. Utility Constraints

    The specific criteria and ranking scheme are detailed in the master plan report. It should be noted that because of the Council's directive to keep proposed improvements within existing Town right-of-way, cost was the primary determining factor as most project alternatives consist of storm drain systems or improved road crossings.

- **Highest Priority Alternatives Conceptual Plan Development –** For the top six highest ranked flood hazard areas, the recommended alternative was further developed to provide design and construction cost estimates, cost/benefit analysis if applicable, proposed conditions modeling results, and 15% level plans. It is anticipated that these six will inform the Town's CIP for stormwater projects over the next several years. Only six, as opposed to all nine, were further developed due to budget limitations.

- **Grant Funding Opportunities Summary –** The Stormwater Master Plan also includes a matrix of possible grant funding opportunities. In addition to the two programs through FCDMC (small projects and large projects) that the Town has leveraged in the past, other potential federal opportunities with typical requirements and due dates were also listed.

- **CIP Prioritization Summary –** Of the six fully developed projects, two benefit a significant number of residential structures. These two were ranked against each other based on their cost/benefit ratios. The four roadway focused projects were ranked based largely on cost. The table listed in the Stormwater Master Plan gives the Town some data points to program CIP expenditures depending on budgets and priorities at the time.

General Plan:

The project supports the General Plan, particularly the Environmental Planning and Water Resources section by recognizing the hazards within the Town due to rainfall runoff. Analyzing such hazards with the best available data in concert with regional authorities in the area and formulating plans for mitigation and improvement when they are needed, warranted, and represent an efficient use of the Town's resources.

BUDGETARY IMPACT:

The Town staff administers Capital Improvement Projects through the Town based on approvals by the Town Council during the annual budget process. The Stormwater Master Plan project is in the Town's approved FY 2024 Capital Improvement Plan (CIP) Stormwater category for $450,000. The Town also gained cost participation through the Flood Control District of Maricopa County (FCDMC) for this study.

Here is a breakdown of the project budget with FCDMCs participation:

1) Town of PV (FY24 Approved CIP) - **$450,000**
2) Flood Control District of Maricopa County (FCDMC) – 50/50 share = **$316,000**

Total Estimated Project Fee/ Cost (Intergovernmental Agreement)	**$632,000 (rounded)**
FCDMC Share	$316,000
Town of PV's Share	$316,000

With the Flood Control District of Maricopa County's 50/50 participation, the current approved CIP budget is sufficient to fund all phases of the project.

RECOMMENDATION:

Staff requests Town Council's input on the Town-wide Stormwater Master Plan.
The Plan will be placed on the agenda for approval at the next available meeting once deemed ready by Council.

ATTACHMENT(S):

A. Staff Report
B. Presentation
C. Stormwater Master Plan
D. H&H Model Report

Paradise Valley Storm Water Master Plan Update

Town Council Work Session
October 9, 2025

Kimley»Horn

Project Timeline

Project Kick Off
March 26, 2024

- Town Priorities
- Overview of Project Scope and Schedule

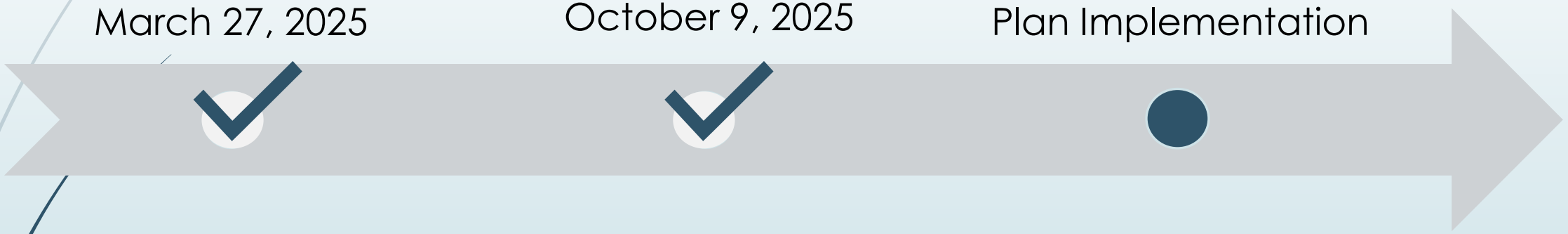
1st Council Session
June 13, 2024

- Data Collection
- Hydrology and Hydraulics Model

2nd Council Session
November 14, 2024

- Flood Hazard Analysis
- Identification of Priority Areas
- Project Ranking Criteria

Project Timeline



- Model Finalization
- Flood Hazard Area Prioritization Results
- Proposed Project Alternative Analysis

- Draft Final Deliverables
- Adoption

Study Session's Topics

PRESENTATION OF DRAFT FINAL STORM WATER MASTER PLAN

POSSIBLE COUNCIL ADOPTION

Project Purpose

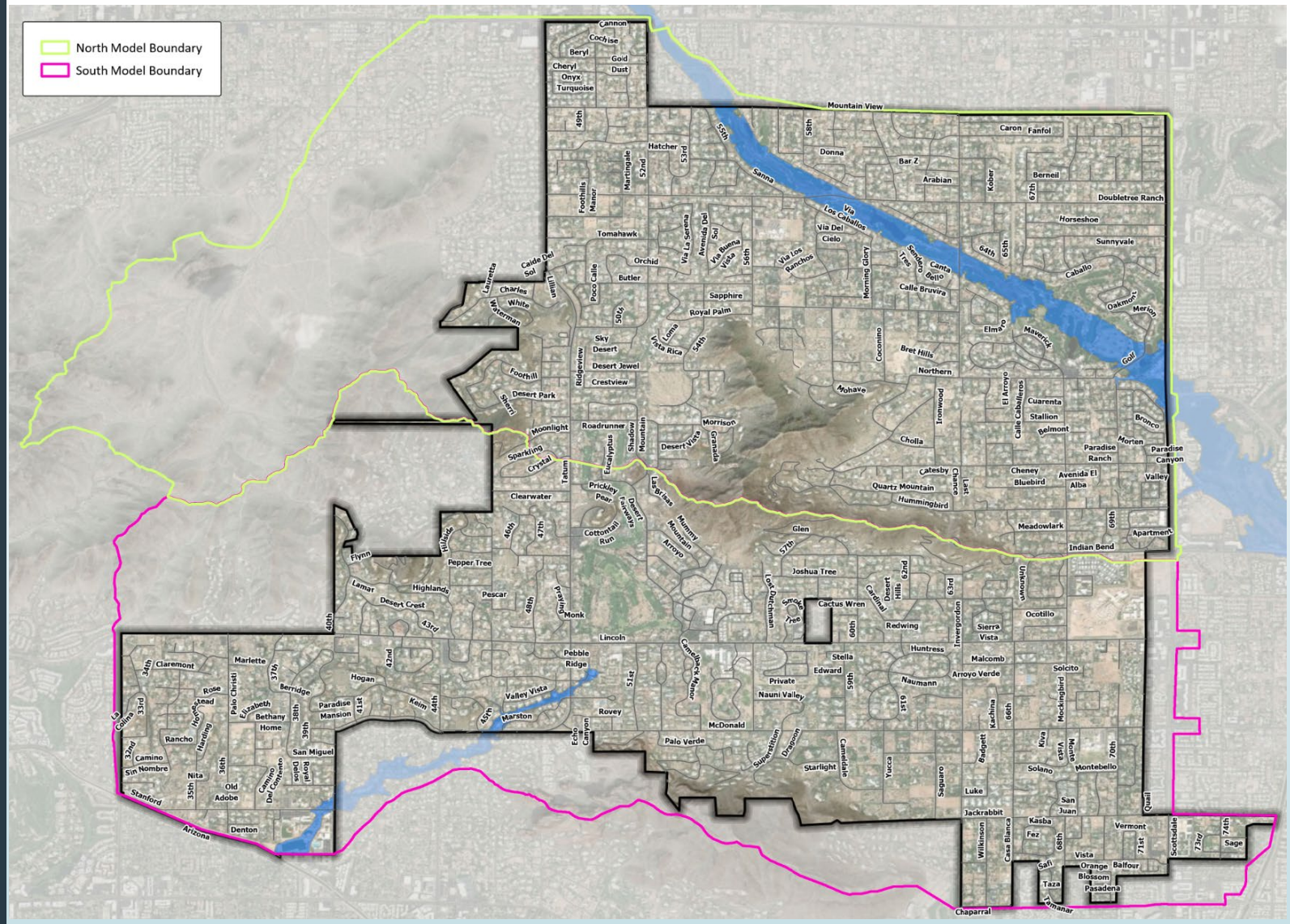
Jul 21, 2013 ABC15Arizona

- Identify flood prone areas
- Develop conceptual solutions
- Inform CIP
- Identify funding opportunities for infrastructure improvements

Methodology for Identifying Flood Hazard Areas

- Data from Town staff and residents
- Previous conceptual engineering studies
- Comprehensive Town-wide 2D hydrology and hydraulics models

Study Location

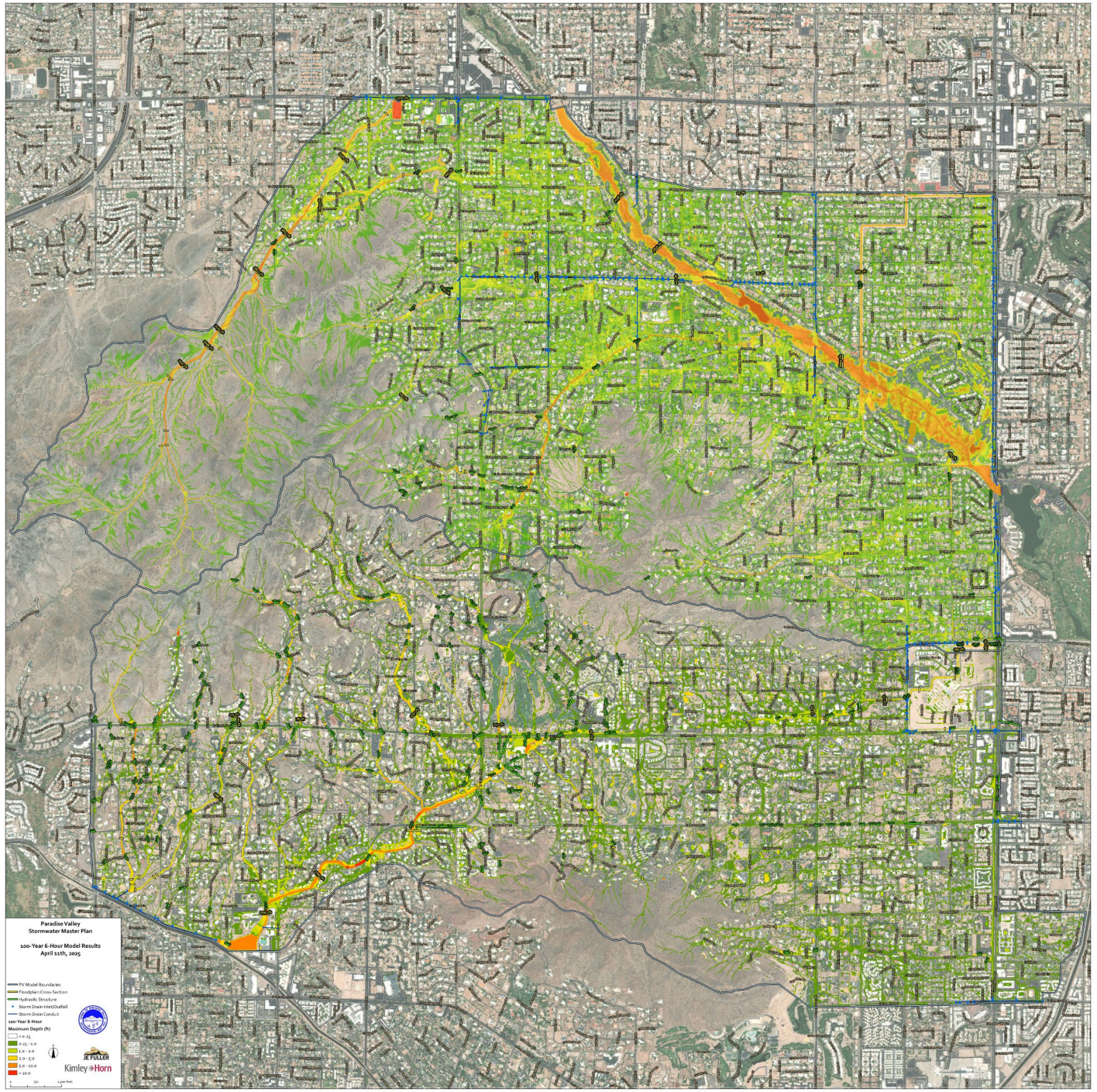


Final Deliverables

- Comprehensive Town-wide 2D Hydrology and Hydraulics Model
- Final SWMP Report
  - Summary of Data Collection
  - Existing Infrastructure Capacity
  - Flood Hazard Analysis
  - Flood Hazard Area Classification/Prioritization
  - Proposed Project Alternatives
  - Highest Priority Alternatives with Cost Analysis
  - Grant Funding Opportunities
  - Project Prioritization

Model Completion

- Reliable and accurate model
  - 2-, 10-, and 100-year results
- FCDMC reviewed and approved *

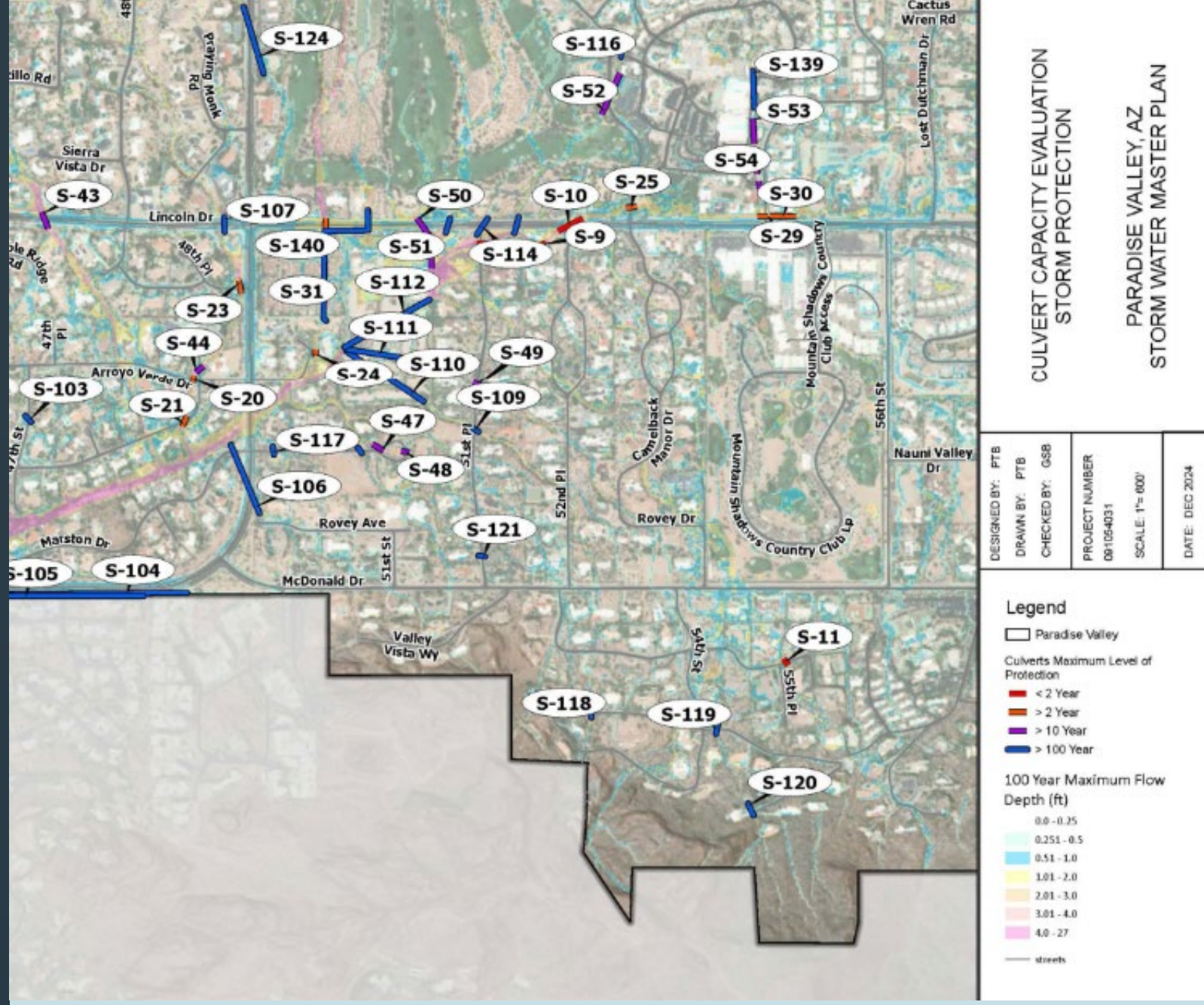


Data Collection

- 275 stormwater problem locations were identified
  - Identified by both staff and residents
  - Consists of structure (25), property(39), and road(211)flooding
- Flood hazard data and projects from regional and Town studies
  - Cheney Watershed Study - Town
  - Cudia City Wash ADMS and DCR - FCDMC
  - Lower Indian Bend Wash ADMP - FCDMC
  - Middle Indian Bend Wash ADMS – FCDMC
  - East Shea ADMS - FCDMC

Existing Infrastructure Evaluation

- Focused on street inlets and storm drain
- Used 2-, 10-, and 100-year model results to evaluate performance



Flood Hazard Analysis

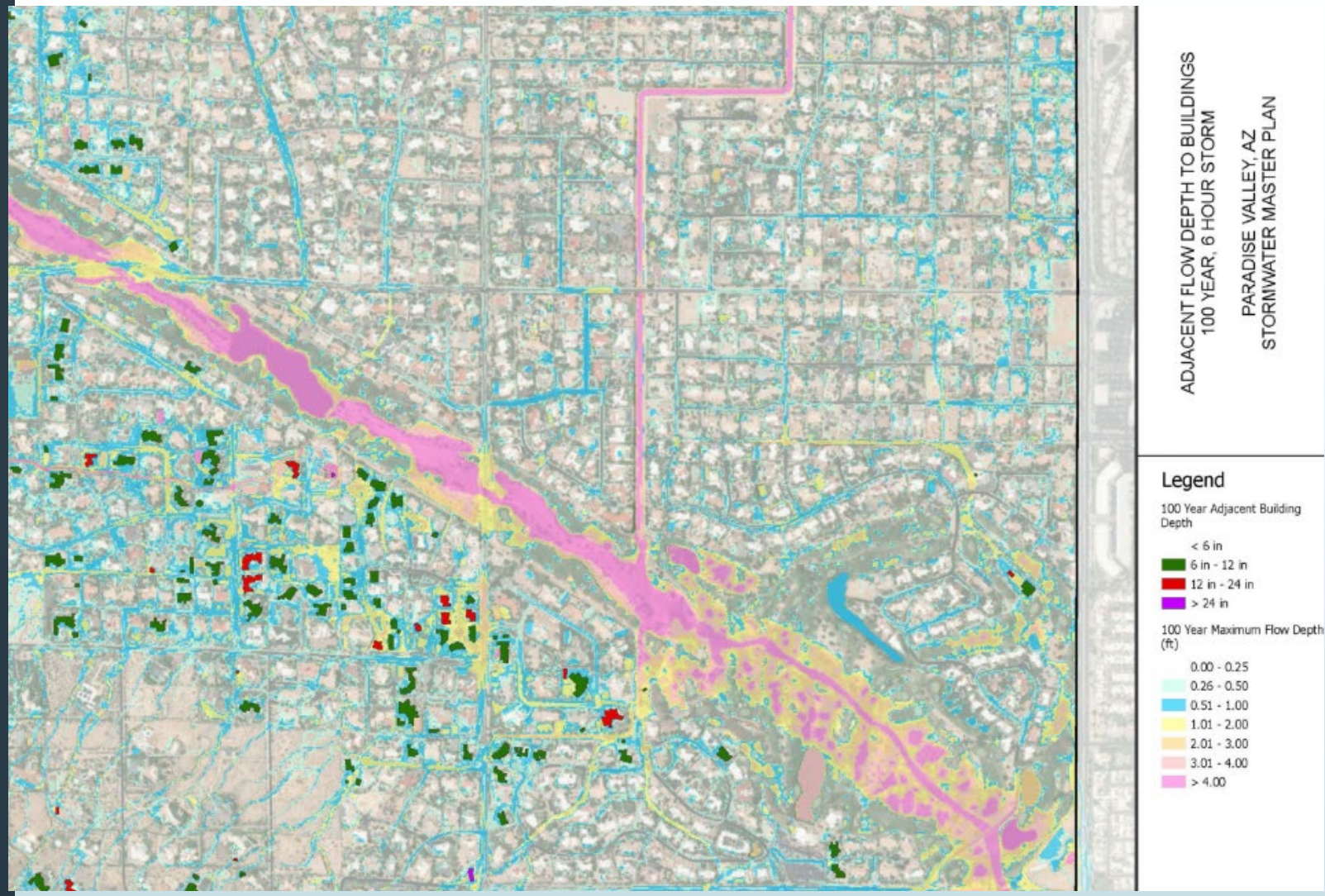
- Includes:
  - Building inundation analysis
  - Erosion potential
  - Sedimenation potential
  - Risk to passenger vehicles

Methodology	Per Storm Event		
	2-Year	10-Year	100-Year
>0.5 feet of flow depth for at least 20% of the building	43	304	857
>1 foot of flow depth for at least 15% of the building	11	43	283
>2 feet of flow depth for at least 10% of the building	6	9	52
Total Structures Impacted	60	356	1,192

Storm Event	Street Type	Extreme Erosion Risk Locations	Extreme Sediment Risk Locations
100-Year	Arterial	6	28
	Collector	29	144
	Residential	245	989
10-Year	Arterial	2	14
	Collector	12	65
	Residential	92	352

Storm Event	Street Type	High Danger Zone for Passenger Vehicles
100-Year	Arterial	29 Crossings
		3.9% of Arterial Streets
	Collector	79 Crossings
		9.7% of Collector Streets
	Residential	931 Crossings
		7.0% of Residential Streets
10-Year	Arterial	12 Crossings
		1.2% of Arterial Streets
	Collector	29 Crossings
		3.4% of Collector Streets
	Residential	220 Crossings
		1.6% of Residential Streets

Building Inundation



Flood Hazard Designations

Nuisance Flooding

0.5 ft of water at road crossings and/or properties within Flood Hazard Area

Moderate Flooding

1 ft of water at road crossings and properties within Flood Hazard Area

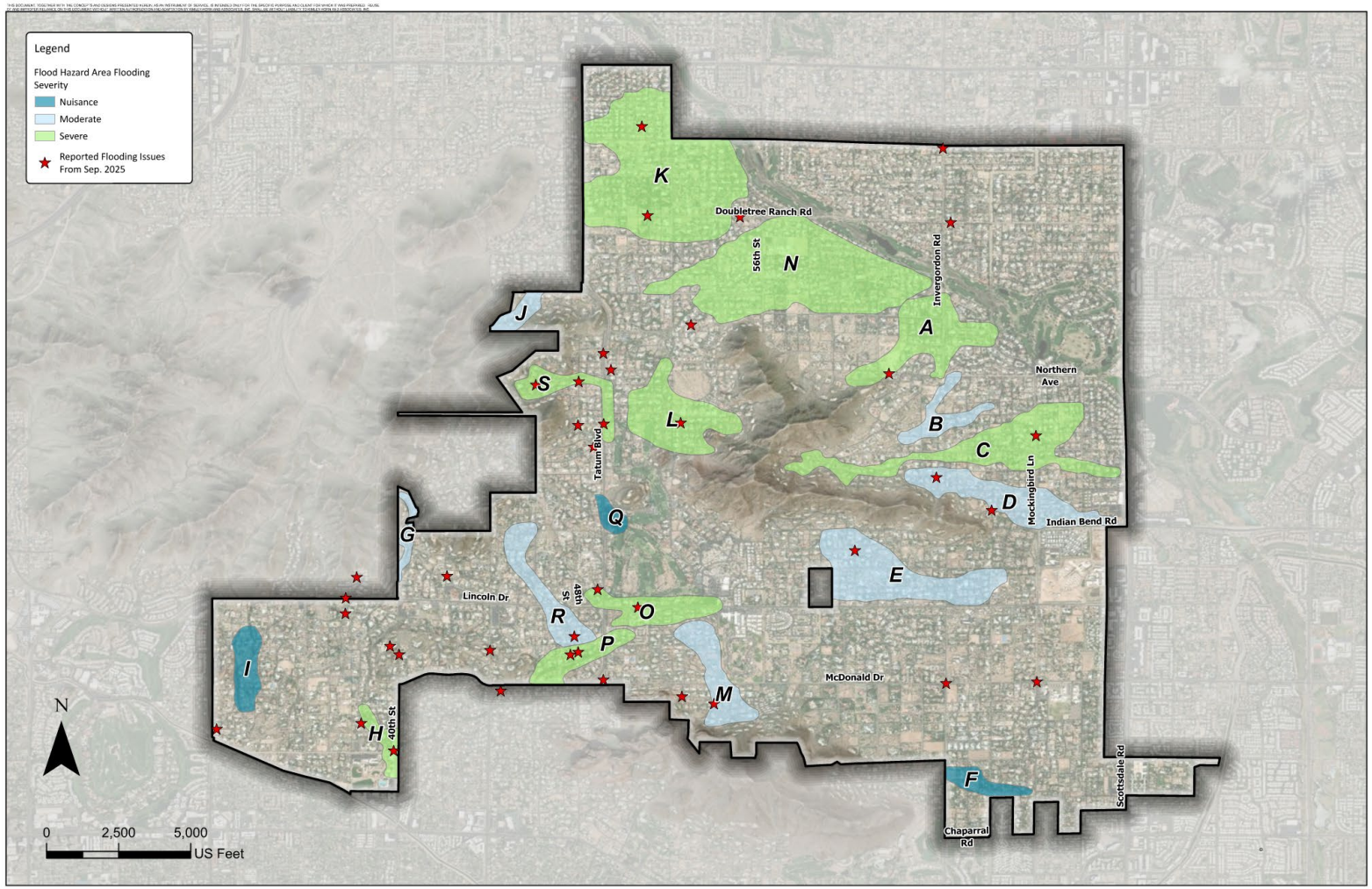
Severe Flooding

> 2 ft of water at road crossings and properties within Flood Hazard Area

- Delineation of areas based on max depth, depth x velocity, erosion & sedimentation potential, and impacted properties & structures

Flood Hazard Area Classification

- Nuisance – 3
- Moderate – 7
- Severe – 9



Flood Hazard Area Prioritization

Table 6: Flood Hazard Area Prioritization Criteria

Criteria	Scoring Criteria		Weighted Score	Highest Possible Score	Lowest Highest Score
Severity of Flooding	1-	Nuisance	5	15	5
	2-	Medium			
	3-	Severe			
Potential Structures Protected	1-	1 to 30 Structures	5	15	5
	2-	31-50 Structures			
	3-	>51 Structures			
Potential Streets Protected	1-	Local Street Benefits Only	4	12	4
	2-	Arterial/Collector Street or Multiple Local Streets Benefits			
	3-	Multiple arterial/collector & Local Street Benefits			
Restriction to Emergency Access	0-	No Impact to Emergency Access	3	6	0
	2-	Impacts to Emergency Access			
Multi-Use Opportunities	1-	No Opportunities	1	2	1

Flood Hazard Area Prioritization

Table 7: Flood Hazard Area Ranking and Characteristics

Flood Mitigation Alternatives Developed

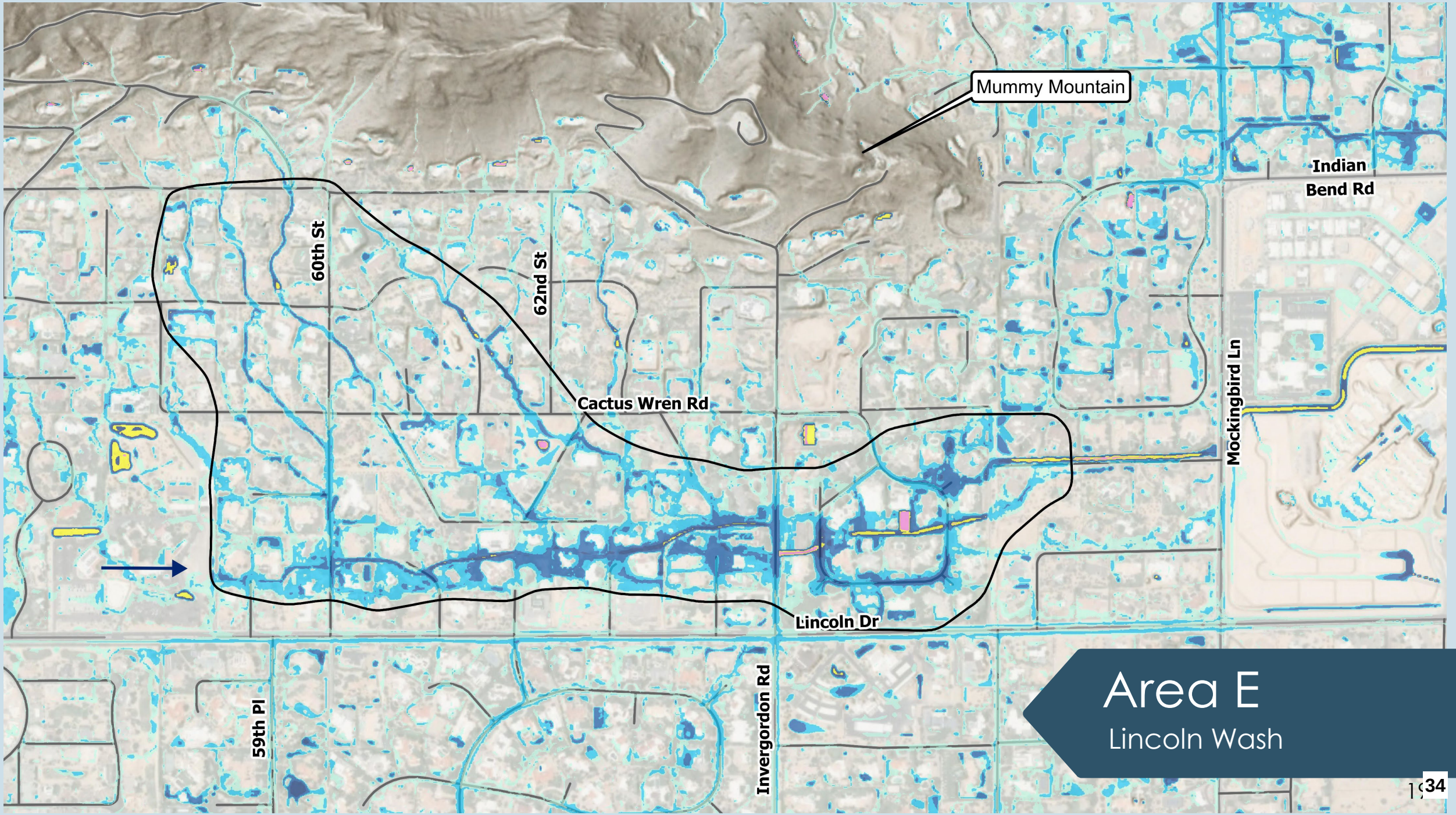
Flood Hazard Area	Matrix Score	Severity of Flooding	Structures with Adjacent Depths of at Least 0.5 ft	Streets Impacted by at Least 0.5 ft Depths	Potential Impact to Emergency Access
N	49	Severe	123	2 Collector; 8 Local	Yes
A	45	Severe	43	2 Collector; 6 Local	Yes
O	45	Severe	22	2 Collector; 4 Local	Yes
K	43	Severe	141	2 Collector; 13 Local	No
L	41	Severe	35	0 Collector; 5 Local	Yes
H	40	Severe	9	2 Collector; 2 Local	Yes
P	39	Severe	17	1 Collector; 2 Local	Yes
C	39	Moderate	70	1 Collector; 2 Local	No
E	38	Moderate	52	2 Collector; 5 Local	No
S	36	Severe	14	1 Collector; 1 Local	Yes
R	36	Severe	27	1 Collector; 5 Local	Yes
D	33	Severe	20	2 Collector; 1 Local	No
G	32	Severe	2	0 Collector; 2 Local	Yes
M	25	Moderate	19	1 Collector; 6 Local	No
B	25	Moderate	4	1 Collector; 2 Local	No
J	21	Moderate	8	0 Collector; 3 Local	No

Proposed Project Alternatives

- 2-3 projects per area
- Ranked based on Table 8 criteria
- Because of ROW constraints:
  - Cost was primary determining factor
  - Most projects are storm drain or improved road crossings

Table 8: Project Prioritization Criteria

Criteria	Scoring Criteria	Weighted Score	Highest Possible Score	Lowest Possible Score
Potential Structures Protected	1- 1 to 30 Structures 2- 31 to 50 Structures 3- > 51 structures	5	15	5
Design & Construction Cost/Benefit	1- Most Expensive 2- Least Expensive	5	10	5
Potential Streets Protected	1- Local Street Benefit Only 2- Arterial/Collector Street or Local Streets Benefit 3- Multiple Arterial/Collector Streets and Local Streets Benefit	4	12	4
Green Storm Water Infrastructure	1- No Opportunities 2- Some Opportunities	1	2	1
Project Partnership	1- Grant Funding or Partnerships Likely 2- Local Partnership/Grant Eligible 3- Local and Federal Partnerships/Grant Eligible	4	12	4
Multi-Use Opportunities	1- No Opportunities 2- Some Opportunities	2	4	2
Operation and Maintenance Costs	1- Maintenance After Every Storm Event 2- Maintenance at Standard Intervals	3	6	3
Utility Constraints	1- Major Constraints 2- Minor Constraints	3	6	3

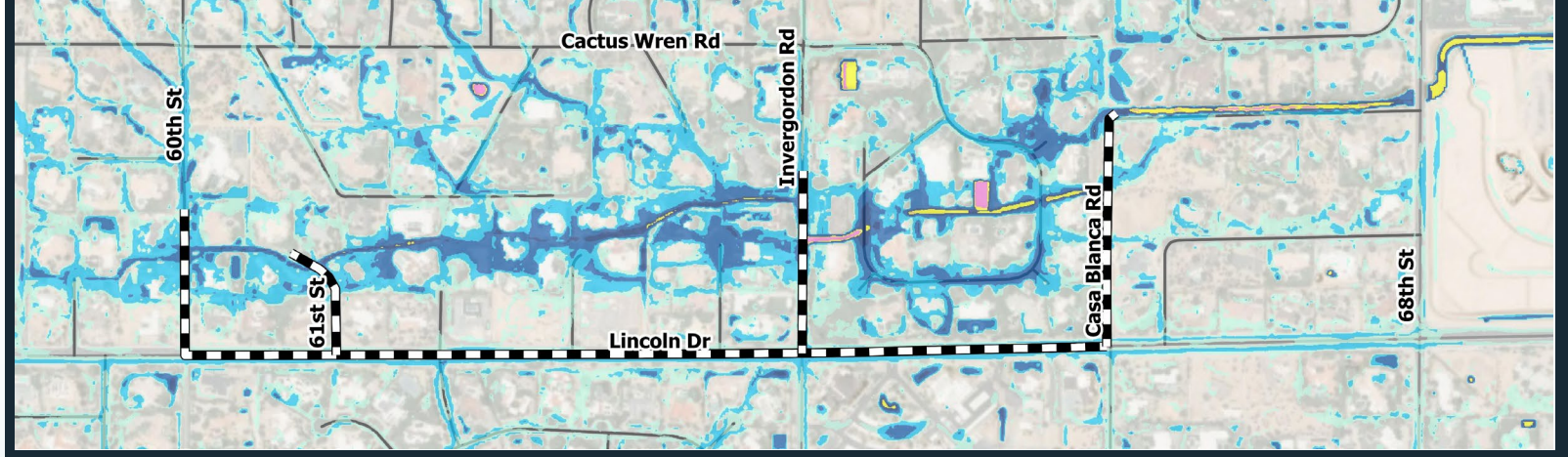


Area E

Lincoln Wash

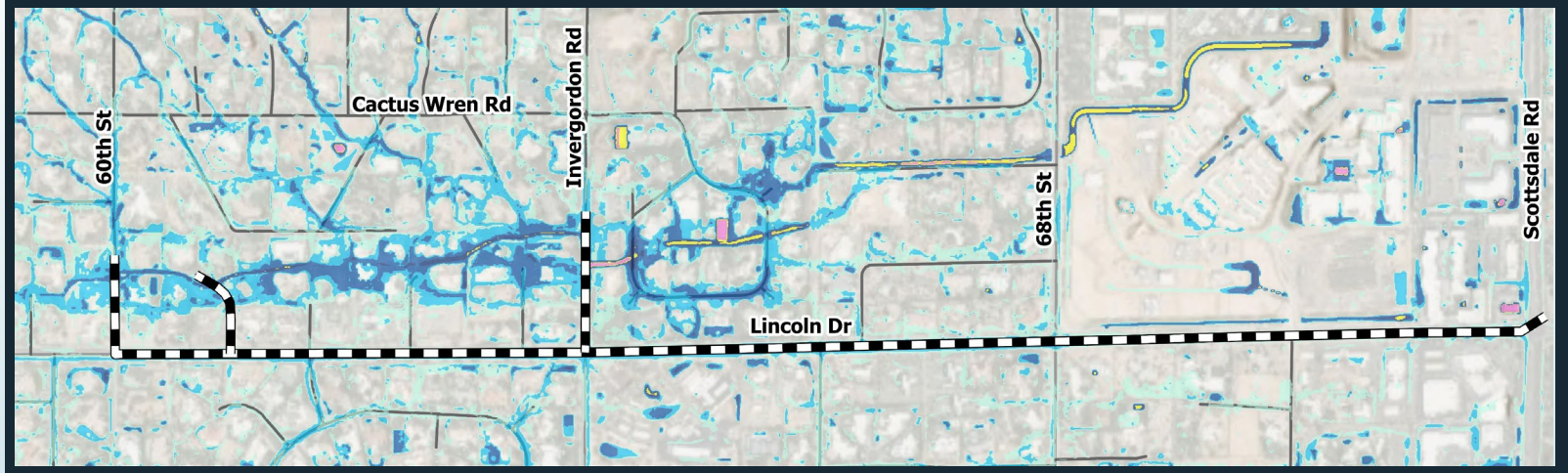
Alternative 1

- Outfall to Ritz-Carlton Channel
- 4,500 LF of 36" SD
- 2,300 LF of 48" SD
- ~$14.9 M



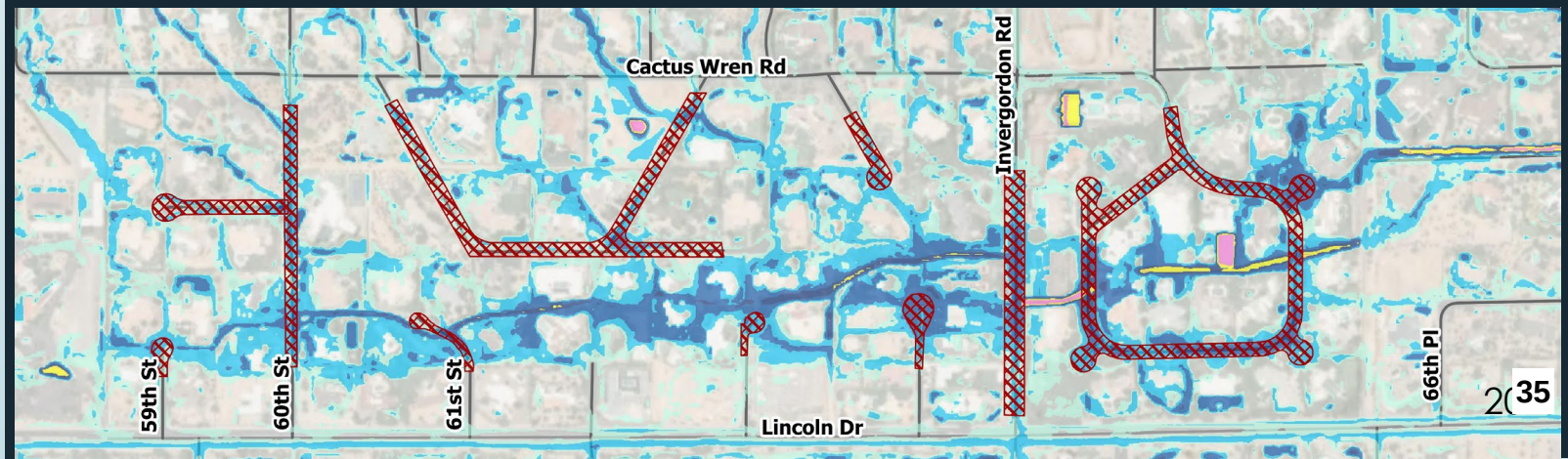
Alternative 2

- Outfall to Existing Scottsdale Rd SD
- 4,500 LF of 36" SD
- 5,250 LF of 48" SD
- ~ $9.5 M



Alternative 3

- 7,900 LF of Permeable Pavement
- ~$1.4M



Highest Priority Alternatives

- 15% Plans
- Cost Estimates
- Benefit/Cost Analysis
- Proposed Conditions Modeling

Table 29: Prioritized Projects Summary

Top Ranking Six

Area Identification	Selected Alternative	Ranking Score
N	Alternative 1	49
A	Alternative 1	45
O	Alternative 2	45
K	Alternative 2	43
L	Alternative 1 & 2	41
H	Alternative 2	40
P	Alternative 1	39
C	Alternative 2	39
E	Alternative 3	38

Area A Example

Table 30: Area A Benefit Cost Ratio Summary

Number of Properties Impacted		220
Approximate Population1		550
Benefit with Drainage Improvements in Place ($)	Damage Reduction	21,394,816
	Social Benefits	1,978,900
	Total	23,293,796
Construction Cost		11,616,355
Benefit-Cost Ratio (BCR)		2.01

1Assumed 2.5 people per household from U.S. Census for the Town of Paradise Valley.
2Social benefits are based on the number of residents impacted and are calculated using FEMA's Benefit Cost Analysis toolkit. This would account for traffic closures, interruptions to work, etc.
3Assumed at least seven 10-year storms and one 100- year storm occur during the 75-year life span of the improvements.

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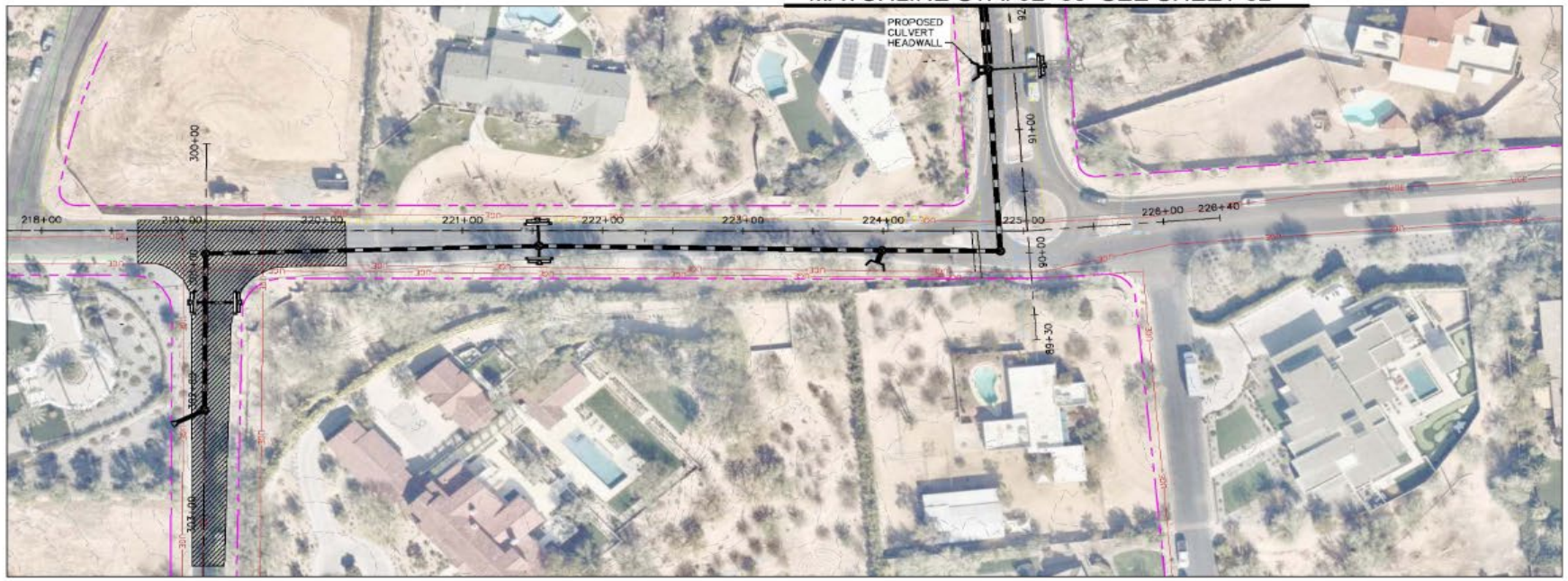

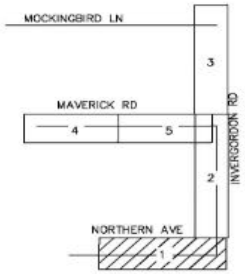

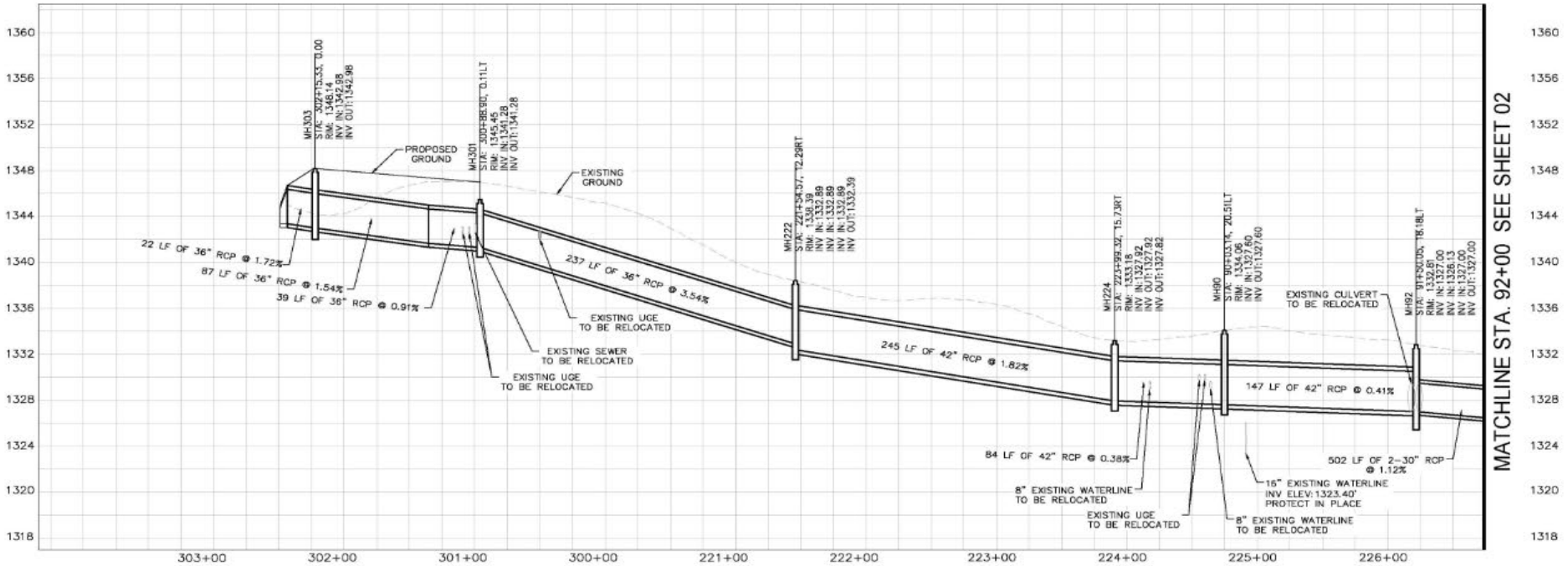

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Kimley»Horn

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1961 E. CAMELBACK RD # 400
PHOENIX, ARIZONA 85016 (602) 944-5500

NO.	REVISION	DATE

SCALE (H): 1"=50'
SCALE (V): 1"=5'
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
DATE: 05/2025

PARADISE VALLEY SWMP
AREA A SELECTED ALTERNATIVE 15% PLANS

NORTH

PROJECT NO. 091054
DRAWING AREA 38
1 OF 6

AND SHOULD NOT BE USED WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. ALL OR WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.

Caballo Dr
Caballo Dr
Morning Glory Rd
Canta Bello
Canta Bello
Calle Bruvira
Pisado Bueno
Sendero Tres M
Canta Redondo
64th Pl
67th St
68th St
Caballo Dr
INDIAN BEND WASH
Sapphire Ln
61st Pl
62nd St
El Maro Cir
El Maro Cir
Mockingbird Ln
TIE INTO EXISTING STORM DRAIN
882 LF OF 12' X 3' CBC STORM DRAIN
Royal Palm Rd
Royal Palm Rd
Royal Palm Rd
62nd Pl
Invergordon Rd
1,075 LF OF 54" STORM DRAIN
Maverick Rd
Maverick Rd
Maverick Rd
65th St
Coconino Rd
62nd Pl
1,367 LF OF 2-30" STORM DRAIN
Bret Hills
64th Pl
68th St
MAVERICK WASH
Q10 = 53 CFS
Q100 = 106 CFS
PROPOSED HEADWALL
EXISTING CULVERT TO
BE REMOVED
66th St
Ironwood Dr
410 LF OF 36" STORM DRAIN
Northern Ave
Mockingbird Ln
IRONWOOD WASH
Q10 = 60 CFS
Q100 = 144 CFS
Foothill Dr
Ironwood Dr
Invergordon Pl
65th St
El Arroyo Rd
Calle Caballeros
476 LF OF 42" SOTRM DRAIN
N
0 150 300 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
PROPOSED PROJECT 10-YEAR STORM
REDUCTION IN WATER SURFACE ELEVATION
Legend
Parcels
Existing Storm Drain
Existing Culvert
Project Components
Storm Drain
Reduction of Water Surface Elevation (ft) (10-Year)
3 - 4 ft Reduced
2 -3 ft Reduced
1 - 2 ft Reduced
0 -1 ft Reduced
Kimley»Horn

Grant Funding Opportunities

- FCDMC Grants
  - Small Project Assistance Program (<$1.3M)
  - Capital Improvement Program (>$1.3M)
- Other Federal Grant Programs Identified
  - FEMA (x4)
  - US Department of Housing and Urban Development
  - EPA (x2)
  - US Army Corps of Engineers
  - US Economic Development Administration

Prioritization

Table 33: Project Prioritization

Flood Hazard Area Designation	Project Size (Medium or Large)	Primary Benefit	Cost	BCR	Project Considerations
K	Large	Residential Structures	~ $6.1 M	3.08	The recommended project alternative for Area K has the highest BCR for the projects that primarily benefit residential structures. It is also potentially more cost effective than the Area A project. Because of this, it is ranked as the highest priority large project benefiting private property.
A	Large	Residential Structures	~ $11.6M	2.01	recommended project alternative ties into the ongoing Mockingbird Lane drainage improvements, creating an overall flood mitigation project for the area.
H	Medium	Arterial Roadways	~ $1M	n/a	Area H recommended project alternative may fall within the SPAP cost criteria, making it eligible for a 75% cost share with FCDMC. Because of this, Area H was ranked as the highest priority roadway-oriented project.
O	Large	Arterial and Residential Roadways	~ $2M	n/a	Area O recommended project alternative benefits both an arterial roadway (Lincoln Drive) and residential streets. Because of this, it was ranked higher than Areas L and N.
N	Large	Residential Roadways	~ $2M	n/a	Area N was ranked higher than Area L because of the lower cost for construction.
L	Large	Residential Roadways	~ $6.1M	n/a	Area L benefits residential streets only.

Key Takeaways

- Comprehensive Town-wide flood hazard modeling
  - Regulate development
  - Design stormwater improvements
- Assessed building inundation, erosion, sedimentation, and vehicular hazards for 2-, 10-, & 100-year storms
- Identified 19 flood prone areas
- Developed project alternatives for 9 of these
- Further developed 15% plans, cost, benefit/cost for 6 of the 9
- Identified local and federal grant funding opportunities
- Cited prioritization considerations

QUESTIONS?

PARADISE VALLEY
STORM WATER MASTER PLAN

June 30, 2025

Prepared by

Kimley»Horn

Expect More. Experience Better.

I. EXECUTIVE SUMMARY

The Paradise Valley Master Plan identifies and assess areas susceptible to flooding and proposes mitigation strategies to address the highest-risk areas. This plan supports the Town's efforts to prioritize projects for Capital Improvement Program (CIP) and grant funding opportunities. Potential flood risk areas were identified through input from Town staff and residents, previous studies, and new comprehensive townwide hydrology and hydraulic modeling.

Purpose of Study

The primary objective of the study is to identify flood-prone areas and offer solutions that will assist the Town of Paradise Valley in strategic planning for flood mitigation.

Methodology

The Master Plan incorporates data from Town staff and residents, previous efforts and two-dimensional (2D) hydrologic and hydraulic modeling from the Flood Control District of Maricopa County (FCDMC) Area Drainage Master Studies/Plans (ADMP/S). These data are coupled with new town-wide 2D modeling using current rainfall, land use, topography, and hydraulic structures data to pinpoint potential flood hazards and effective mitigation strategies.

Study Location

The study covers the entire Town of Paradise Valley, encompassing approximately 15 square miles. The area is significantly impacted by runoff from surrounding mountains, including Mummy Mountain and Camelback Mountain. In addition, townwide modeling also included flow inputs from the surrounding areas in both the City of Phoenix and the City of Scottsdale. A Hydrology Report was prepared under separate cover detailing the modeling approach.

Data Collection

Data was aggregated from diverse sources, including past drainage studies, FCDMC ADMS/Ps, reports from Town staff and residents, and on-site documentation. This preliminary understanding of flooding hazards forms the foundation for the Master Plan. Housing this data in one reference was also a primary goal of the Master Plan.

Existing Infrastructure Evaluation

The Master Plan evaluates existing basin, channel, storm drain, and culvert capacities by reviewing performance during the 2-, 10-, and 100-year storm simulations per the modeling effort. This approach allows for an estimate of existing capacities as less than 2-year, between 2- and 10-year, between 10- and 100-year, and greater than 100-year. Significant findings include undersized inlets/storm drain affecting residential neighborhoods, and culverts that impede the traveling public and emergency access.

Flood Hazard Analysis

Flood analysis includes evaluating inundation risk, erosion and sediment deposition hazards, and potential risks to passenger vehicles. These insights were crucial in identifying flood hazard areas within the Town. These analyses were also coupled with staff and resident flood complaints, road closure locations, and undersized culvert locations to better develop a holistic understanding of flood hazards throughout the town. The Master Plan creates a database of each hazard that can be used in the future to plan routine maintenance and smaller scale improvement projects as part of the annual maintenance budget.

Flood Hazard Area Classification

Nineteen distinct flood hazard areas were identified and classified within the Town based on the extent and nature of flooding. Each the flood hazard for each identified area was characterized as either nuisance, moderate, or severe using the following criteria:

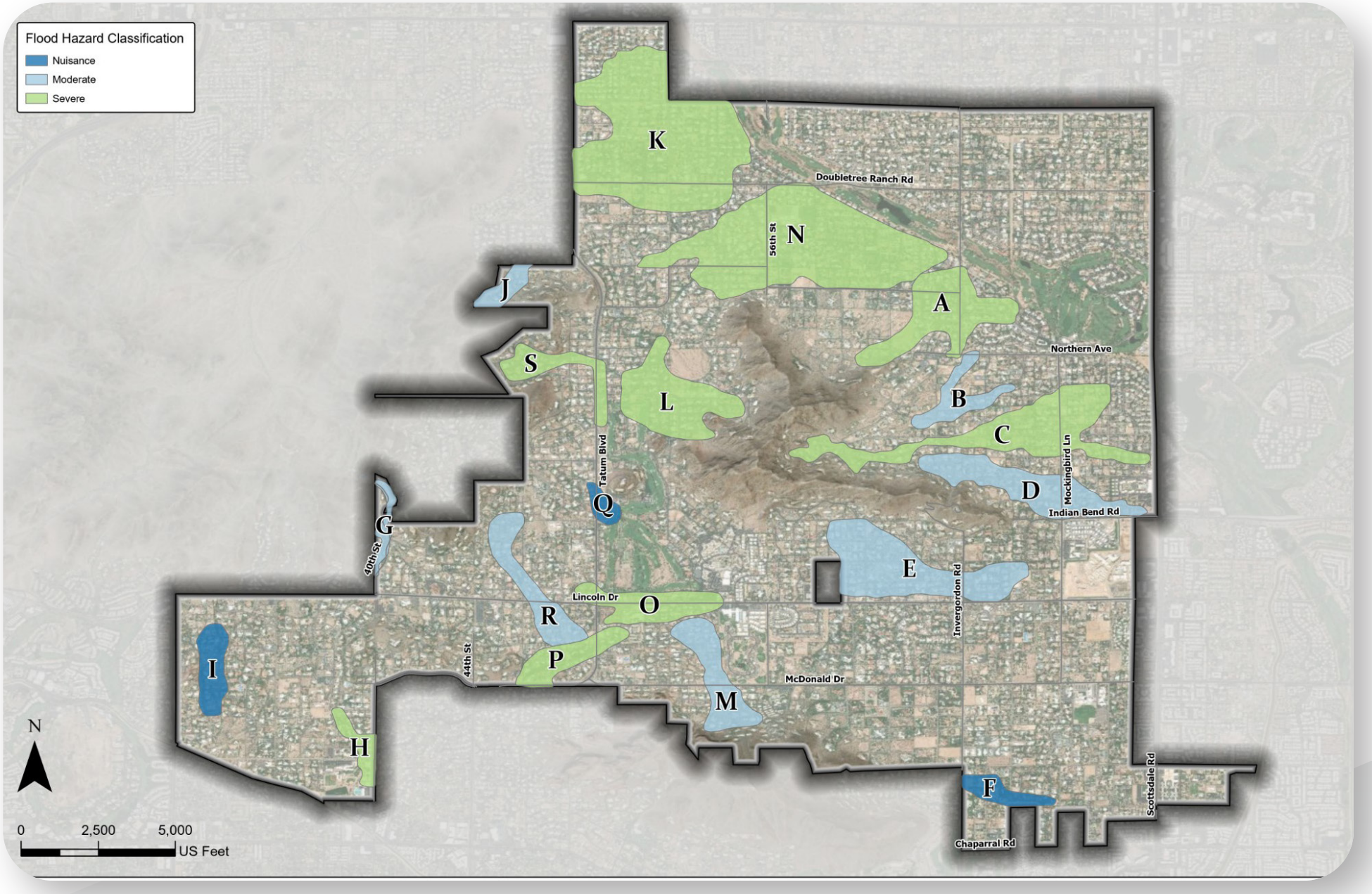
- **Nuisance Flooding:** Water depth approximately 0.5 to 1 foot along roads and adjacent to structures.
- **Moderate Flooding:** Water depth approximately 1 to 2 feet along roads and adjacent to structures.
- **Severe Flooding:** Water depth greater than 2 feet along roads and adjacent to structures.

A decision matrix is used to rank the flood hazard areas incorporating the criteria and weights shown below, allowing the plan to prioritize areas that would benefit the greatest from flood mitigation.

1. Severity of Flooding (Weight: 5)

- This criterion received a weighted score of 5, as it directly impacts the safety

Figure 7: Classifications of Flood Hazard Areas



and well-being of residents and the community. The degree of flooding, whether nuisance, moderate, or severe, influences the urgency and scale of necessary interventions.

2. Potential Structures Protected (Weight: 5)

- The number of structures that could be protected by mitigation measures was also heavily weighted. This criterion reflects the plan's focus on minimizing property damage and protecting as many residential and commercial buildings as possible.

3. Potential Streets Protected (Weight: 4)

- The number of roads (local, collector, arterial) affected by flooding and their role in community connectivity and accessibility were considered significant, but slightly less critical than the direct impact of flooding on structures and severity.

4. Impacts to Emergency Access (Weight: 3)

- Evaluating how flooding affects emergency vehicle access and response times was important, as maintaining reliable emergency services is crucial during and after flood events. This criterion was given a moderate weight.

5. Multi-Use Opportunities (Weight: 1)

- This criterion considered the potential for projects to incorporate additional community benefits beyond flood mitigation, such as recreational spaces or aesthetic enhancements. It had the lowest weight, reflecting its lower priority relative to immediate flood risk reduction.

For a detailed review of how each criterion was scored and its weight, please refer to the decision matrices included within the full text of the Master Plan and **Appendix D** where the area decision matrix and area data sheets are provided.

Snapshot of Decision Matrix (Table 6 from the Master Plan)

Criteria	Scoring Criteria	Score Range	Weighted Score
Severity of Flooding	Nuisance, Medium, Severe	1, 3, 5	5
Potential Structures Protected	1 to 30 Structures, 31-50 Structures, >51	1, 3, 5	5
Potential Streets Protected	Local Street Benefits Only, Arterial/Collector Street or Multiple Local Streets Benefits, Multiple arterial/collector & Local Street Benefits	1, 2, 4	4
Impacts to Emergency Access	No Impact to Emergency Access, Impacts to Emergency Access	1, 3	3
Multi-Use Opportunities	No Opportunities, Possible Opportunities	1, 2	1

The nine-highest ranking flood hazard areas are furthered for project alternative development. Nine areas were chosen to advance based on the scoring results and a logical breakpoint. The nine highest-ranking flood hazard areas identified are:

1. **Flood Hazard Area A:** Invergordon Road and Mockingbird Lane
2. **Flood Hazard Area C:** Cheney Wash
3. **Flood Hazard Area E:** Lincoln Wash
4. **Flood Hazard Area H:** 40th Street and Stanford Drive
5. **Flood Hazard Area K:** Mountain View Road
6. **Flood Hazard Area L:** Upstream Cherokee Wash
7. **Flood Hazard Area N:** Downstream Cherokee Wash
8. **Flood Hazard Area O:** Lincoln Drive
9. **Flood Hazard Area P:** Tatum Boulevard and McDonald Drive

Proposed Project Alternatives

For the nine highest-ranking flood hazard areas, flood mitigation projects are identified and/or developed. Identified projects are those from previous studies. These projects and new projects are further developed. Projects are categorized into maintenance projects, medium-sized projects, and large projects based on their estimated construction costs:

- **Maintenance Projects:** Costs less than $250,000.
- **Medium Projects:** Costs between $250,000 and $1.3 million. These are eligible for the Flood Control District of Maricopa County's Small Project Assistance Program (SPAP).
- **Large Projects:** Costs exceed $1.3 million. These projects qualify for other grant programs like the Flood Control District of Maricopa County's Capital Improvement Project Partnership Program (CIPPP) or other grant opportunities through FEMA.

For the nine areas, two to three medium and large-scale project alternatives are developed and proposed. Small projects are not included as these projects are more appropriate as annual maintenance projects. Project costs, benefits, and multi-use opportunities are determine such that the most effective flood mitigation strategies are recommended for each area. A decision matrix similar to the matrix used to rank flood hazard areas is used to rank the alternatives for a given area.

Snapshot of Project Prioritization Matrix (Table 8 from the Master Plan)

Criteria	Scoring Criteria	Weighted Score	Highest Possible Score	Lowest Possible Score
Potential Structures Protected	1 to 30 Structures	5	15	5
	31 to 50 Structures	5	15	5
	> 51 Structures	5	15	5
Design & Construction Cost/Benefit	Most Expensive	10	10	5
	Least Expensive	10	10	5
Potential Streets Protected	Local Street Benefit Only	4	12	4
	Arterial/Collector Street or Local Streets Benefit	4	12	4
	Multiple Arterial/Collector Streets and Local Streets Benefit	4	12	4
Green Storm Water Infrastructure	No Opportunities	1	2	1
	Some Opportunities	1	2	1
Project Partnership	Grant Funding or Partnerships Likely	4	12	4
	Local Partnership/Grant Eligible	4	12	4
	Local and Federal Partnerships/Grant Eligible	4	12	4
Multi-Use Opportunities	No Opportunities	2	4	2
	Some Opportunities	2	4	2
Operation and Maintenance Costs	Maintenance After Every Storm Event	3	6	3
	Maintenance at Standard Intervals	3	6	3
Utility Constraints	Major Constraints	3	6	3
	Minor Constraints	3	6	3

This table outlines the criteria used to prioritize projects, assigning a weighted score to each criterion to help determine the overall priority of each project, and ultimately selected a recommended project alternative.

Highest Priority Alternatives – Benefit Cost Analysis

Of the nine highest-ranking flood hazard areas identified in the Paradise Valley Master Plan, recommended alternatives for the top six are further developed into 15% conceptual plans, with engineer's opinion of probable costs (EOPC) and cost/benefit analysis also included. The top six areas and recommended alternatives are:

1. Flood Hazard Area A – Invergordon and Mockingbird Lane

- Recommended Alternative: Implementation of new storm drain systems along Invergordon Road and Maverick Road, with inlets and lateral extensions. The estimated construction cost for this alternative is approximately $11,616,355.

2. Flood Hazard Area H – 40th Street and Stanford Drive

- Recommended Alternative: Improvements to the existing roadway drainage infrastructure including curb inlets, a flood control basin at the corner of Stanford Drive and 40th Street, safety rails, staff gages, and warning signs. The estimated construction cost for this alternative is approximately $1,039,500.

3. Flood Hazard Area K – Mountain View Road

- Recommended Alternative: Construction of a detention/retention basin upstream of Mountain View Road to reduce runoff discharge at Tatum Boulevard. The estimated construction cost for this alternative is approximately $6,072,476.

4. Flood Hazard Area L – Upstream Cherokee Wash

- Recommended Alternative: Replacement of low water crossings at Crestview Drive, Arroyo Drive, and Desert Jewel Drive with box culverts and necessary road improvements. The estimated construction cost for this alternative is approximately $6,113,214.

5. Flood Hazard Area N – Downstream Cherokee Wash

- Recommended Alternative: Replacement of four low water crossings at 58th Place, 59th Place, Morning Glory Road, and 61st Place with box culverts and channel improvements. The estimated construction cost for this alternative is approximately $2,800,333.

6. Flood Hazard Area O – Lincoln Drive

- Recommended Alternative: Increase culvert capacity at Desert Fairways Drive, Lincoln Drive, and 51st Place by replacing undersized culverts with new configurations and making corresponding road improvements. The estimated construction cost for this alternative is approximately $1,979,147.

Grant Funding Opportunity

The plan identifies accessible grant funding options, including the Flood Control District of Maricopa County's (FCDMC) SPAP and CIP programs, and outlines other state and federal funding opportunities.

Prioritization

Projects were prioritized based on cost, benefit/cost ratios, and mitigation impacts. Key considerations included grant funding accessibility and overall project effectiveness. Prioritization is qualitative in nature, as both medium and large projects are included, as well as projects that benefit both roadway and residential structure. This will allow the Town to program projects into CIP planning based on funding, grant opportunities, and overall Town priorities.

Abreviation Guide

Abbreviation	Meaning
PV-SWMP	Paradise Valley Storm Water Master Plan
CIP	Capital Improvement Project
2D	Two-dimensional
FCDMC	Flood Control District of Maricopa County
ADMP/S	Area Drainage Master Plans/Studies
ACDC	Arizona Canal Diversion Channel
CIPPP	Capital Improvement Project Partnership Program
FEMA	Federal Emergency Management Agency
EOPC	Engineer's Opinion of Probable Cost
SPAP	Small Project Assistance Program
CCW	Cudia City Wash
MIBW	Middle Indian Bend Wash
LIBW	Lower Indian Bend Wash
ESC	East Shea Corridor
PE	Professional Engineer
FLO-2D	Floodplain Modeling in Two-dimensions
RCBC	Reinforced Concrete Box Culvert
CMP	Corrugated Metal Pipe
PCSWMM	Personal Computer Storm Water Management Model
GIS	Geographic Information System
USD	United States Dollar
USACE	United States Army Corps of Engineers
BCR	Benefit-Cost Ratio

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II. INTRODUCTION

A. Purpose of Study

The primary objective of the Paradise Valley Master Plan Master Plan is to identify and quantitatively assess areas vulnerable to flooding and to propose flood mitigation strategies to address areas at the highest risk. The flooding solutions proposed in this study are intended to assist the Town with prioritizing projects for Capital Improvement Program (CIP) and for identifying grant funding sources to aid in project development.

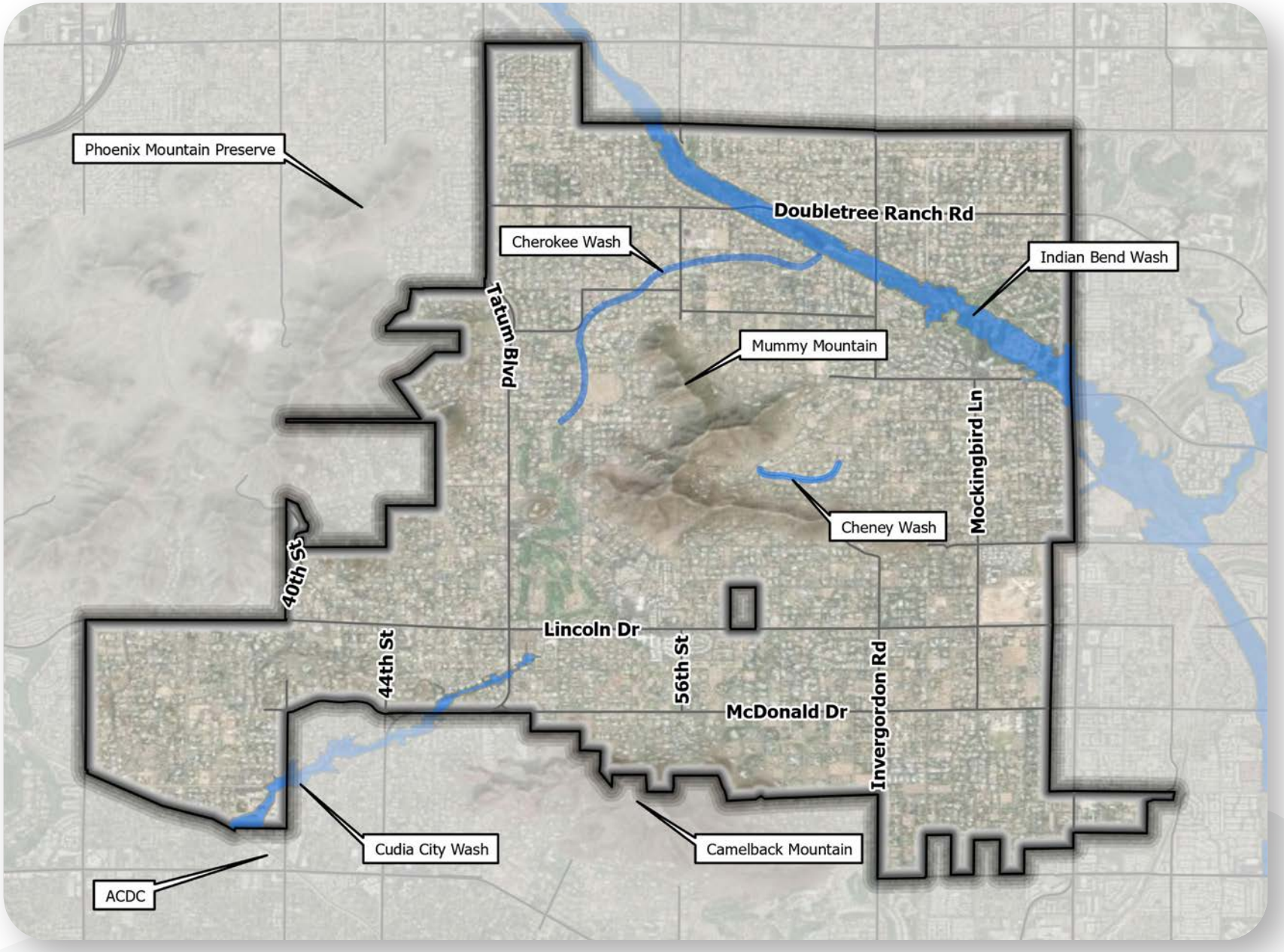
B. Methodology

The Master Plan utilized data collected by previous efforts in the Town, and two-dimensional (2D) hydrologic and hydraulic modeling from Flood Control District of Maricopa County (FCDMC) Area Drainage Master Studies/Plans (ADMP/S) for an initial assessment of flood hazards. New, comprehensive town-wide 2D modeling was also developed by incorporating up-to-date rainfall, land use, topography, and hydraulic structures data. These models serve as the basis for identifying and characterizing potential flood hazard areas, utilizing defined criteria to assess the level of risk. Subsequently, multiple drainage solutions were established for each identified area. Based on feedback and priorities provided by the Town Council, staff, and residents, the most beneficial flood mitigation projects were selected. The selected projects were further developed into conceptual plans with associated cost. With the results and recommendations derived from this comprehensive study, Paradise Valley can formulate an informed and strategic plan for effective flooding mitigation.

C. Study Location

The project area is the entire Town of Paradise Valley, approximately 15 square miles. Paradise Valley is bordered roughly by Shea Blvd to the north, Scottsdale Rd to the east, Camelback Mountain and Camelback Road to the south, and the Phoenix Mountain Preserve and Arizona Canal to the west. Flooding in the Town is primarily attributed to runoff from surrounding mountains and lack of conveyance through residential areas. Mummy Mountain, centrally located in Paradise Valley, plays a significant role in contributing runoff to the major washes in the area, namely Cherokee Wash, Cheney Wash, and Cudia City Wash. Camelback Mountain, situated along the southern border of the Town, contributes to the flow in Cudia City Wash. The western portion of the Town is impacted by runoff from the Phoenix Preserve Mountains, which flow into both Cudia City Wash and Cherokee Wash. Indian Bend Wash (IBW) is the largest flood conveyance corridor in the Town and is the ultimate outfall for the northern and southeast portion of Paradise Valley. The southwest portion of the Town primarily drains to Cudia City Wash and then to the Arizona Canal Diversion Channel (ACDC). The location and major features within Paradise Valley are shown in **Figure 1 and Appendix A.**

Figure 1: Location Map



III. DATA COLLECTION

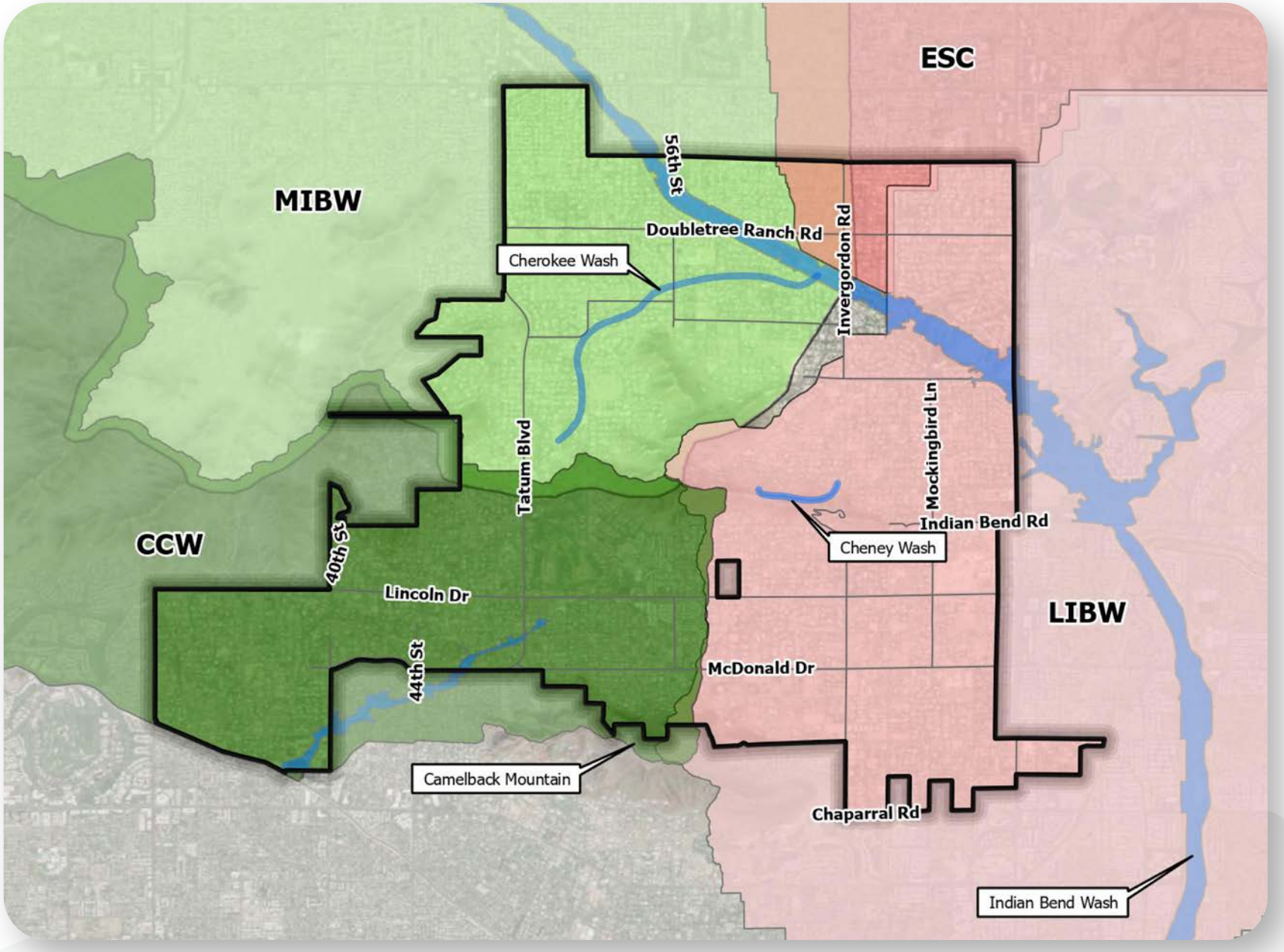
The data collected for the Paradise Valley Master Plan was from multiple sources and consisted of both qualitative and quantitative flood related information. These sources included past drainage studies and FCDMC ADMS/Ps with corresponding modeling results, reports of flooding issues from Town staff and residents, and on-site documentation. By incorporating and analyzing these diverse sources of data, a preliminary understanding of the extent of flooding hazards existing within the Town was developed. This comprehensive approach forms the basis for the creation of an effective and tailored Master Plan.

A. Existing Studies

The Flood Control District of Maricopa County previously completed five Area Drainage Master Studies or Plans that cover portions of Paradise Valley. These studies were completed between 2017 and 2022. In addition, Paradise Valley conducted several studies and evaluations focused on flood hazard identification. In combination, these studies were used to compile information on existing drainage infrastructure and previously proposed solutions for flooding. They also formed the basis for the updated FLO-2D modeling. For more details on the town-wide FLO-2D modeling, please refer to the Hydrology & Hydraulics report. See **Figure 2 and Appendix A** for a map of the previous study boundaries. The studies incorporating portions of the Town include:

- Cudia City Wash (CCW) ADMS (Michael Baker, 2020)
- Middle Indian Bend Wash (MIBW) ADMS (Kimley-Horn, 2019)
- Lower Indian Bend Wash (LIBW) ADMS (Gavin & Barker, 2017)
- East Shea Corridor (ESC) ADMS (Wilson, 2023)
- Paradise Valley Cheney Watershed Hazards Identification (Dibble, 2017)
- Paradise Valley Identified Drainage Problem Areas Technical Memorandum (Kimley-Horn, 2019)
- Cudia City Wash (CCW) Zone 4 Drainage Concept Report (JE Fuller, 2021)

Figure 2: Previous FCDMC ADMS/Ps



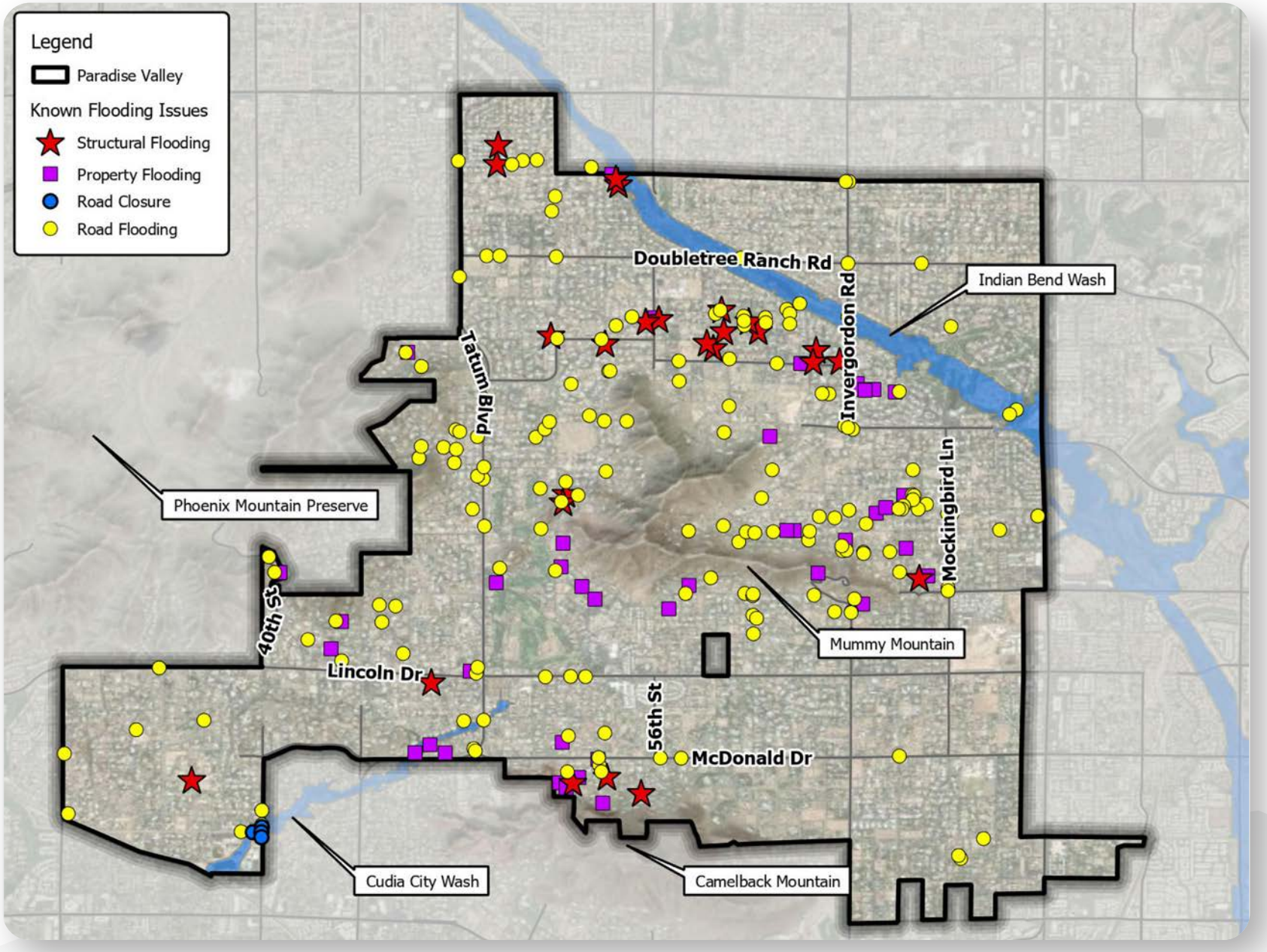
B. Known Flooding Issues

Reports of flooding issues from Town staff and residents played a vital role in capturing direct experiences and observations, ensuring that the Master Plan addressed the concerns of those directly impacted by flooding events.

Past flood complaints from both Town staff and residents were catalogued. Documentation of flooding issues was provided by the Town, including records from Engineering and Public Work's maintenance logs. Records of documented road closure locations were also included. Residents' complaints were extracted from the CivicPlus Portal, an online hub specifically designed for residents to submit issues and receive feedback from the Town.

To enhance the understanding of the frequency and qualitative impacts of flooding throughout the town, the past complaints were categorized accordingly. The categorization was based on both the source of reporting, whether from Town staff or residents, and the type of flooding reported. The types of flooding considered included road flooding, property flooding, and structural flooding. Based on the location of the report, it was noted that the majority of flooding issues occurred at the washes or directly downstream of the Phoenix Mountain preserve. For a detailed list and map of known flooding issues, refer to **Appendix A. Figure 3** shows the location and type of flooding for each past reported or documented issue.

Figure 3: Known Flooding Issues



C. As-Built and Design Plans

Information about drainage infrastructure that has recently been built or is currently in design was not included in past studies. Therefore, coordination was conducted to receive as-builts or Professional Engineer (PE) sealed plans to include recent drainage infrastructure in the updated, town-wide FLO-2D models. **Table 1** contains the information received.

D. Field Assessment

Field assessments were conducted to bridge data gaps as needed to support the modeling effort and to supplement the Town's geodatabase. During these visits, culverts and inlets were measured and assessed to evaluate the Town's existing infrastructure sizes and conditions. A collection of photos documenting the visited sites is included on the following **Pages 9-15.**

Table 1: As-Builts and Plans Received for Data Collection

Type of Document	Consultant	Project	Location
As-Built	TY LIN International 07/28/2021	Roadway and Utility Improvements on Lincoln Drive, Mockingbird Lane and Indian Bend Road	N 68th Street from E Meadowlark Lane to E Lincoln Drive
Drainage Plan Sealed by PE	Coe & Van Loo Consultants, Inc. 05/24/2019	Ritz-Carlton	Between N 68th Street and N Scottsdale from E Lincoln Drive to E Indian Bend Road
Drainage Plan Sealed by PE	Kimley-Horn, Inc. 08/01/2024	Mockingbird Lane Drainage and Roadway Improvements	Mockingbird Lane from N 56th Street and N Invergordon Road

Field Assessment Sheets

STRUCTURE ID: N-23

Number of Barrels: **2**
Barrel Height: **4 ft**
Barrel Width: **10 ft**
Culvert Type: **RCBC**
Culvert Length: **49 ft**

Location: **70th Street & Foothill Drive**
Juristiction: **Paradise Valley**

Inlet Sediment: **Clean**
Inlet Vegetation: **None**
Inlet Protection: **Concrete/Riprap**
Inlet Scour: **None**
Inlet Invert: **1297.90**

Outlet Sediment: **Little to none**
Outlet Vegitation: **None**
Outlet Protection: **Concrete/Riprap**
Outlet Scour: **None**
Outlet Invert: **1297.75**

Inlet Photo

Upstream Photo

Outlet Photo

Downstream Photo

STRUCTURE ID: N-27

Number of Barrels: **3**
Barrel Height: **1.5 ft**
Barrel Width: **26 ft**
Culvert Type: **RCBC**
Culvert Length: **170 ft**

Location: **Scottsdale Road & Hummingbird Lane**
Juristiction: **Paradise Valley**

Inlet Sediment: **Little to none**
Inlet Vegetation: **Moderate**
Inlet Protection: **Grate**
Inlet Scour: **None**
Inlet Invert: **1290.17**

Outlet Sediment: **Little to none**
Outlet Vegitation: **None**
Outlet Protection: **Riprap**
Outlet Scour: **None**
Outlet Invert: **1291.17**

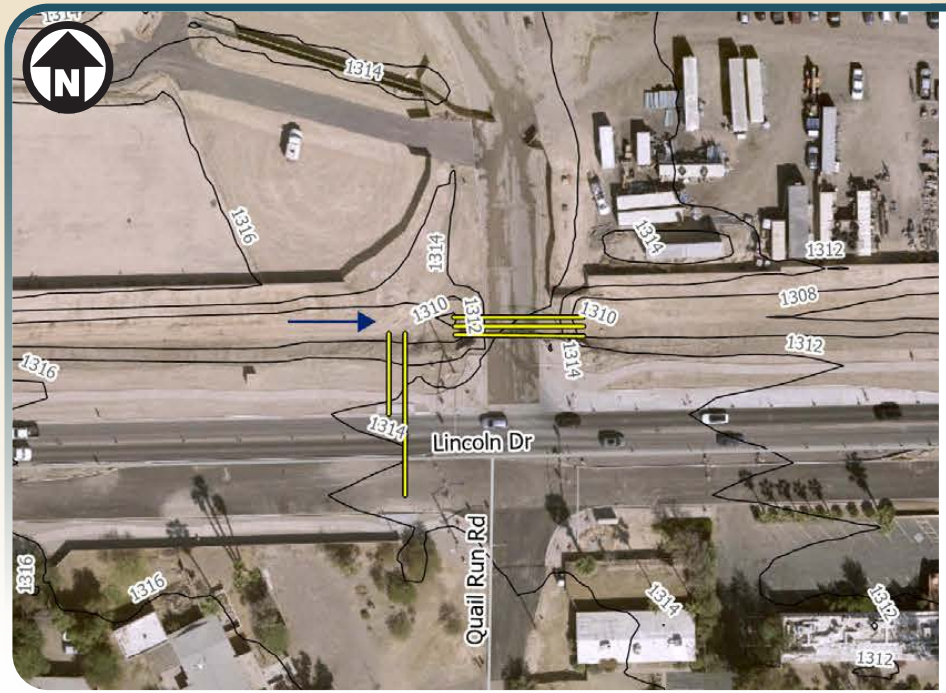
Inlet Photo

Upstream Photo

Outlet Photo

Downstream Photo

STRUCTURE ID: S-149



Number of Barrels: **3**
Barrel Height: **3 ft**
Barrel Width: **8 ft**
Culvert Type: **RCBC**
Culvert Length: **64 ft**

Location: **Lincoln Drive & Quail Run Road**
Juristiction: **Paradise Valley**

Inlet Sediment: **Little to none**
Inlet Vegetation: **None**
Inlet Protection: **Riprap**
Inlet Scour: **None**
Inlet Invert: **1309.30**

Outlet Sediment: **Little to none**
Outlet Vegitation: **Little to none**
Outlet Protection: **None**
Outlet Scour: **None**
Outlet Invert: **1308.48**

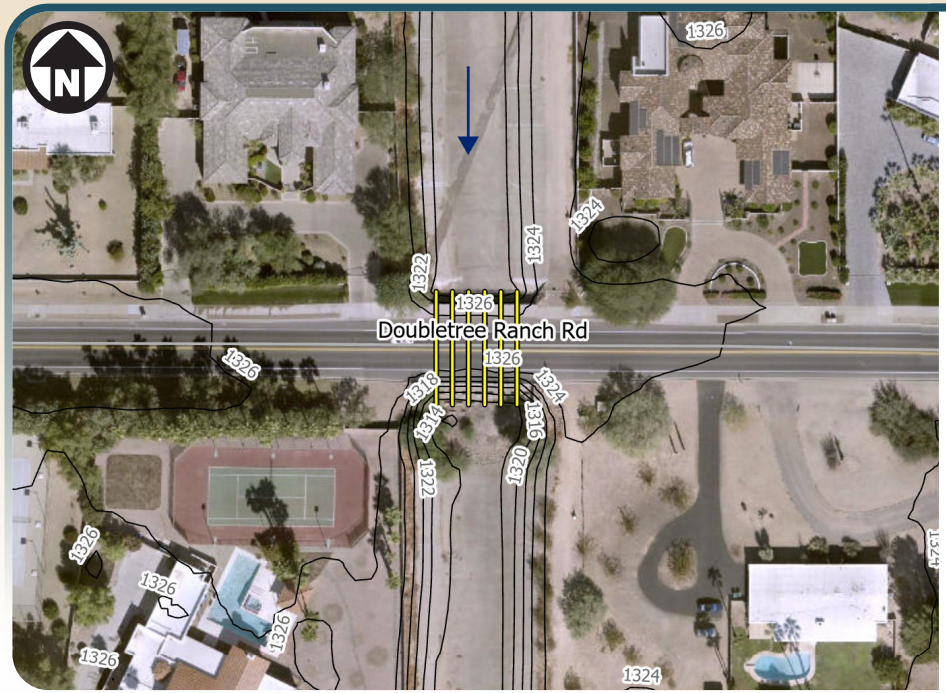
Inlet Photo

Upstream Photo

Outlet Photo

Downstream Photo

STRUCTURE ID: N-26



Number of Barrels: **6**
Barrel Height: **4 ft**
Barrel Width: **10 ft**
Culvert Type: **RCBC**
Culvert Length: **54 ft**

Location: **Along Berneil Ditch**
Juristiction: **Paradise Valley**

Inlet Sediment: **Clean**
Inlet Vegetation: **None**
Inlet Protection: **Concrete**
Inlet Scour: **None**
Inlet Invert: **1320.10**

Outlet Sediment: **Moderate**
Outlet Vegitation: **Little to none**
Outlet Protection: **Energy Dissipaters**
Outlet Scour: **None**
Outlet Invert: **1318.75**

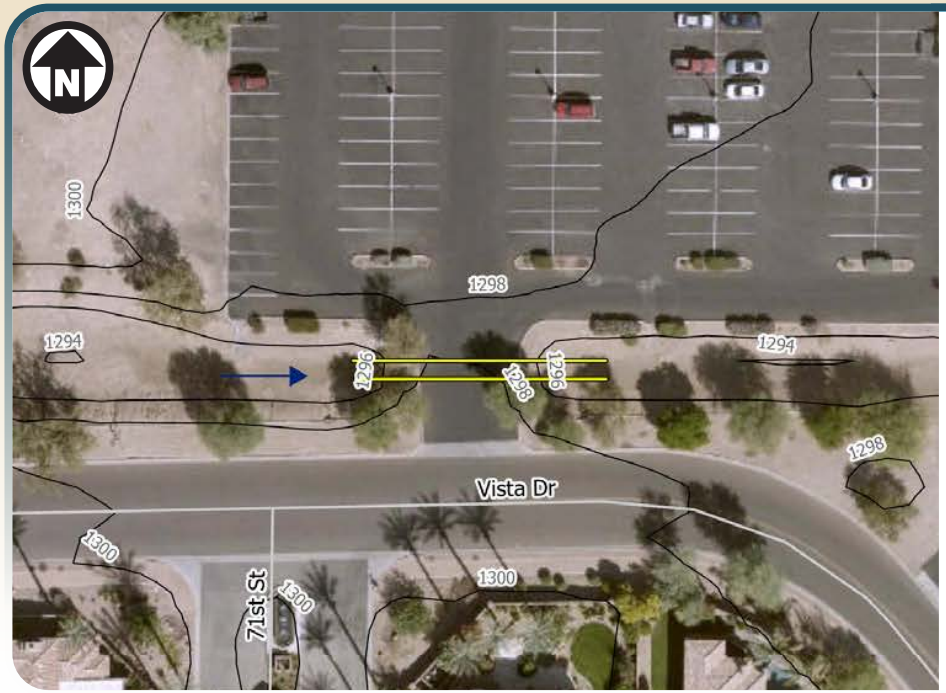
Inlet Photo

Upstream Photo

Outlet Photo

Downstream Photo

STRUCTURE ID: S-144



Number of Barrels: **2**
Barrel Height: **1.5 ft**
Barrel Width: **1.5 ft**
Culvert Type: **CMP**
Culvert Length: **99 ft**

Location: **Lincoln Drive & Scottsdale Road**
Juristiction: **Paradise Valley**

Inlet Sediment: **Moderate**
Inlet Vegetation: **None**
Inlet Protection: **Riprap**
Inlet Scour: **None**
Inlet Invert: **1294.18**

Outlet Sediment: **Moderate**
Outlet Vegitation: **None**
Outlet Protection: **Riprap**
Outlet Scour: **None**
Outlet Invert: **1294.08**

Inlet Photo

Upstream Photo

Outlet Photo

Downstream Photo

STRUCTURE ID: N-26

Number of Barrels: **3**
Barrel Height: **5.5 ft**
Barrel Width: **10 ft**
Cilvert Type: **RCBC**
Culvert Length: **99 ft**

Location: **Indian Bend Rd & Scottsdale Rd**
Juristiction: **Scottsdale**
Comment: **Inlet in closed off construction zone**

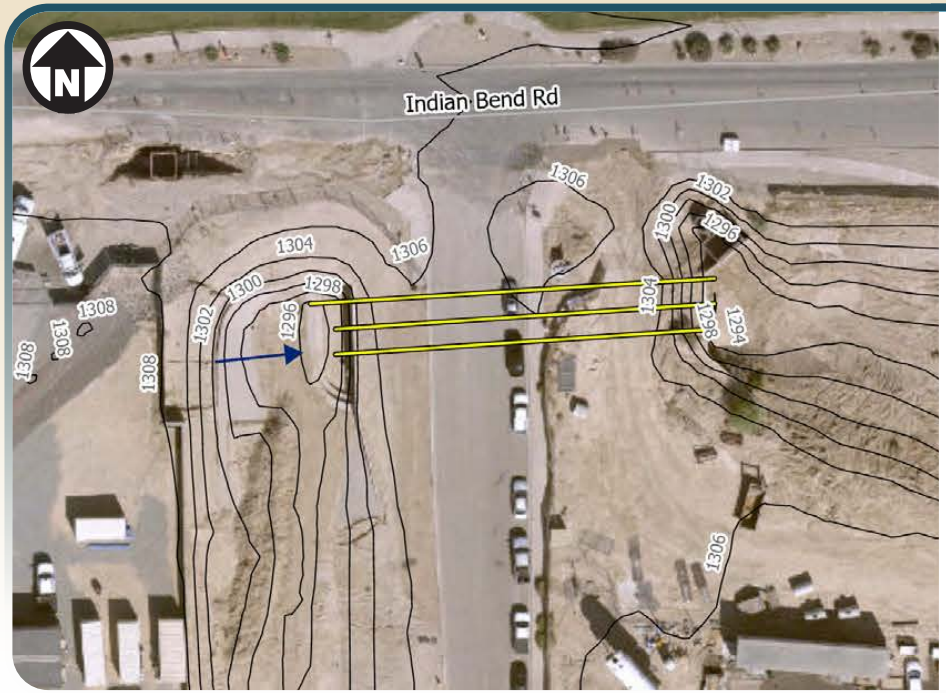
Inlet Sediment: **N/A**
Inlet Vegetation: **N/A**
Inlet Protection: **N/A**
Inlet Scour: **N/A**
Inlet Invert: **1291.40**

Outlet Sediment: **Little to none**
Outlet Vegitation: **Little**
Outlet Protection: **Grate**
Outlet Scour: **None**
Outlet Invert: **1291.10**

Outlet Photo

Downstream Photo

STRUCTURE ID: N-25



Number of Barrels: **3**
Barrel Height: **3 ft**
Barrel Width: **8 ft**
Cilvert Type: **RCBC**
Culvert Length: **156 ft**

Location: **Indian Bend Rodd & Palmerai Boulevard**
Juristiction: **Paradise Valley**
Comment: **Outlet in closed off construction zone**

Inlet Sediment: **None**
Inlet Vegetation: **None**
Inlet Protection: **Gabion Mattress**
Inlet Scour: **None**
Inlet Invert: **1294.50**

Outlet Sediment: **N/A**
Outlet Vegitation: **N/A**
Outlet Protection: **N/A**
Outlet Scour: **N/A**
Outlet Invert: **1293.80**

Inlet Photo

Inlet/Channel Protection

Upstream Photo

IV. EXISTING STORM WATER INFRASTRUCTURE EVALUATION

The results of the FLO-2D modeling were used to determine the level of protection provided by the existing drainage infrastructure within the Town. The hydraulic structures were considered existing if they were constructed or are currently contracted to be constructed. This assumption provides the most up to date modeling results. Basins, channels, storm drains, and culverts were evaluated for capacity limitations.

A. Storm Drain

The majority of storm drain in Town of Paradise Valley is north of Mummy Mountain and directs storm water to IBW. The largest storm drain system runs along or is connected to Doubletree Ranch Rd. The capacity of the outfall of this system was evaluated using PCSWMM and is shown on the storm drain outfall capacity figure in **Appendix B**. Storm drain that reduce flows to less than half a foot of water are considered to provide sufficient storm protection. All existing storm drain provide at least 2-year storm protection with the exception of four inlets along the Doubletree Ranch Road storm drain system. Identifying undersized inlets was also used to evaluate the capacity constraints of this storm drain system. Undersized inlets are defined as inlets where a maximum depth greater than 1 foot occurs during the 2-year storm. The 2-year storm was used as the basis of the assessment because of the frequency of occurrence. Three undersized inlets were identified in the storm drain system at Doubletree Ranch Road and one at the corner of Butler Road and 52nd Street. The undersized inlets are shown on the Storm Drain Undersized Inlet figure in **Appendix B.**

B. Culverts

Culverts in the public right-of-way are located throughout the Town, with a large concentration in the southwest quadrant, conveying runoff from the Phoenix Mountain Preserve and ultimately to CCW. Culverts typically convey flow under roadways with culverts sized for smaller storm events resulting in flood flows overtopping the road during larger storms.

Existing culvert capacity was evaluated based on several criteria. A culvert was initially considered undersized if during the 10-year storm, the roadway was overtopped by 0.5 ft of water or more. This criterion was developed based on culvert design guidance from the Maricopa County Drainage Policies and Standards. Based on these standards, culverts should be designed to convey, at a minimum, the storm frequency peak discharge listed below for each street classification with no flow overtopping the roadway. (FCDMC, 2018).

- Arterial and All-Weather Access Streets: 50-year design storm
- Collector Streets: 25-year frequency
- Local Streets: 10-year storm frequency

Based on these criteria, any culvert that overtops during a 10-year storm would be classified as undersized. The threshold depth of 0.5 feet for all streets was used because 0.5 feet of water will reach the bottom of most passenger cars and can cause loss of control. A map of undersized culverts throughout the Town can be seen below.

Impacts to surrounding structures and emergency access restrictions due to road overtopping were also assessed. Culverts with flood flows that overtop the road by more than 3 feet during a 100-year storm were considered undersized due to potential emergency vehicle access impacts. The threshold of three feet was chosen because according to the depth-velocity relationship curve discussed in the Potential Risk to Passenger Vehicles section of this report, depths greater than 3 feet are indicative of a high danger zone where all vehicles cannot safely pass. Additionally, culverts that caused a backwater water surface elevation during a 100-year storm event of at least 0.5 feet against adjacent structures were also catalogued as undersized. The figures on Pages 18-20 show culvert sizes and levels of storm protection throughout the Town with additional maps in **Appendix B.** Undersized culverts and their potential impacts are also listed in **Table 2** below. Of the 195 culverts analyzed, 36 culverts were identified as undersized.

C. Basins

In the southern portion of the Town there is one major basin, the CCW outfall basin. This basin is sufficiently sized for the local watershed, as it effectively contains the 100-year, 6-hour storm event. There is no overtopping and flooding of adjacent structures. In the northern portion of the Town, there are no large basins. This is mainly because of the proximity of the IBW, which functions as the ultimate outfall for a large portion of north Paradise Valley.

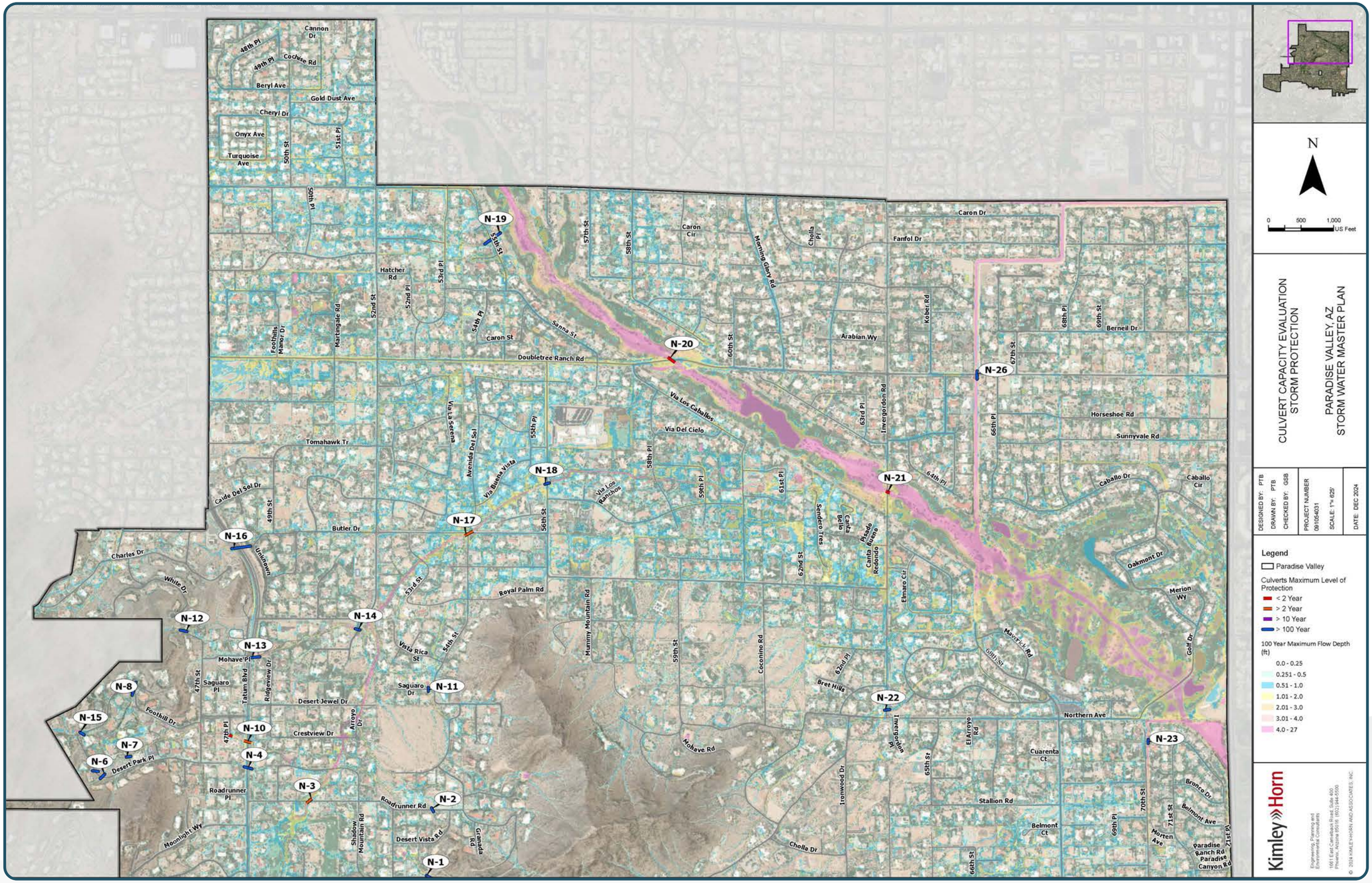
D. Channels

Channels are limited in the Town and flows tend to follow the paths of the existing washes. The largest manmade channel is the Berniel Ditch, a concrete lined channel within both the jurisdictions of City of Phoenix and the Town of Paradise Valley. The section of the ditch within the Town of Paradise Valley is approximately 2 miles long and outfalls into the IBW. This channel is sufficiently sized, as it contains the 100-year, 6-hour storm. It should be noted that yearly maintenance is necessary at the section of the channel just downstream of Double Tree Ranch Road. Excess sediment is deposited on the channel's energy dissipators at the downstream side of the culvert. Photos of this sedimentation can be found in the Site Assessment Data Sheets above.

Table 2: Under Sized Culvert Summary Table

Culvert ID	Depth Over Road for 10-Year Storm (ft)	Depth Over Road for 100-Year Storm (ft)	Road Classification	Impacts to Emergency Access	Structures Impacted by Backwater
S-1	>1	>1	Residential	No	No
S-2	>1	>1	Collector	No	No
S-3	>4	>4	Residential	Yes	No
S-4	>2	>3	Residential	Yes	No
S-5	>0.5	>1	Residential	No	Yes
S-6	>1	>2	Residential	No	No
S-7	>2	>3	Residential	Yes	Yes
S-8	>2	>3	Residential	Yes	Yes
S-9	>2	>3	Residential	Yes	No
S-10	>1	>1	Collector	No	No
S-11	>0.5	>1	Residential	No	No
S-12	>0.5	>1	*	No	Yes
S-13	>0.5	>1	*	No	No
S-14	>0.5	>1	Residential	No	No
S-15	>0.5	>0.5	Residential	No	No
N-16	>0.5	>1	Collector	No	No
S-17	>0.5	>0.5	Residential	No	Yes
S-18	>0.5	>1	Local	No	No
S-19	>0.5	>2	Collector	No	Yes
S-20	>0.5	>1	Residential	No	No
S-21	>0.5	>0.5	Residential	No	No
S-22	>1	>1	Residential	No	Yes
S-23	>0.5	>1	Residential	No	No
S-24	>0.5	>0.5	Residential	No	No
S-25	>0.5	>1	Residential	No	No
S-26	>0.5	>0.5	Residential	No	Yes
S-27	>0.5	>0.5	Collector	No	No
S-28	>0.5	>1	Residential	No	Yes
S-29	>1	>2	Residential	No	Yes
S-30	>0.5	>0.5	*	No	Yes
S-31	>1	>2	Collector	No	No
N-10	>1	>1	Collector	No	No
N-17	>1	>1	Collector	No	Yes
N-20	>1	>1	Collector	No	No
N-21	>4	>4	Collector	Yes	No
N-3	>1	>1	Residential	No	Yes

*Indicates a culvert that connects under a structure other than the road such as a wall or roadside covered ditch


N
0 500 1,000 US Feet
CULVERT CAPACITY EVALUATION
STORM PROTECTION
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER 091054031
SCALE: 1"= 625'
DATE: DEC 2024
Legend
Paradise Valley
Culverts Maximum Level of Protection
< 2 Year
> 2 Year
> 10 Year
> 100 Year
100 Year Maximum Flow Depth (ft)
0.0 - 0.25
0.251 - 0.5
0.51 - 1.0
1.01 - 2.0
2.01 - 3.0
3.01 - 4.0
4.0 - 27
Kimley»Horn
Engineering, Planning and Environmental Consultants
1661 East Camelback Road, Suite 400
Phoenix, Arizona 85016 (602) 944-5500
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48th Pl
49th Pl
Cochise Rd
Beryl Ave
Gold Dust Ave
Cheryl Dr
Onyx Ave
Turquoise Ave
50th St
51st Pl
50th Pl
Hatcher Rd
53rd Pl
52nd Pl
52nd St
Foothills Manor Dr
Martingale Rd
54th St
54th Pl
Sanna St
Caron St
Doubletree Ranch Rd
57th St
58th St
Caron Cir
Morning Glory Rd
Cholla Pl
Caron Dr
Fanfol Dr
Arabian Wy
60th St
Kober Rd
67th St
68th Pl
69th St
Berneil Dr
Horseshoe Rd
Sunnyvale Rd
Via Los Caballos
Via Del Cielo
63rd Pl
Invergordon Rd
66th Pl
64th Pl
Caballo Dr
Caballo Cir
Oakmont Dr
Merion Wy
Golf Dr
Maverick Rd
65th St
Bret Hills
Coconino Rd
59th St
62nd Pl
Mummy Mountain Rd
Vista Rica St
Saguaro Dr
Saguaro Pl
47th St
Tatum Blvd
Ridgeview Dr
Desert Jewel Dr
Foothill Dr
47th Pl
Crestview Dr
Arroyo Dr
Desert Park Pl
Roadrunner Pl
Roadrunner Rd
Moonlight Wy
Shadow Mountain Rd
Granada Rd
Desert Vista Rd
Mohave Pl
Mohave Rd
Cholla Dr
Ironwood Dr
Invergordon Pl
El Arroyo Rd
Cuarenta Ct
Stallion Rd
Belmont Ct
Northern Ave
65th St
66th St
69th Pl
70th St
71st St
71st Pl
Bronco Dr
Belmont Ave
Morten Ave
Paradise Ranch Rd
Paradise Canyon Rd
Tomahawk Tr
Caide Del Sol Dr
49th St
Butler Dr
Charles Dr
White Dr
Union Town
53rd St
Royal Palm Rd
54th St
56th St
55th Pl
Avenida Del Sol
Via Buena Vista
Via Los Rancheros
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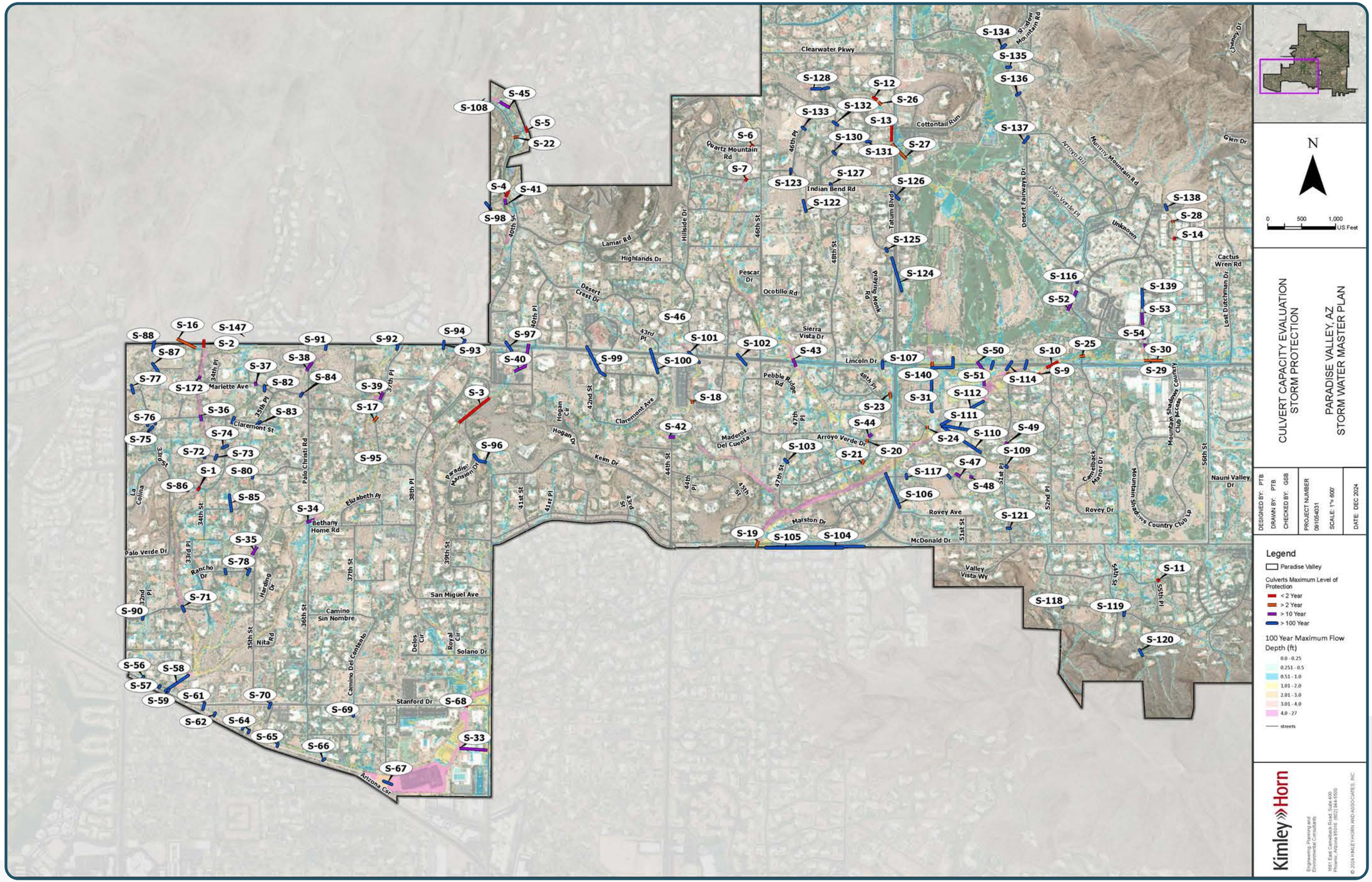
61st Pl
62nd St
Sendero Tres
Canta Bello
Canta Bueno
Pisado Redondo
Elmaro Cir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Quartz Mountain Rd
Cottontail Run
Arroyo Rd
Nunnery Mountain Rd
Glen Dr
Desert Fairways Dr
Polo Verde Pl
Unknown
Cactus Wren Rd
Lost Dutchman Dr
Indian Bend Rd
Tatum Blvd
Lamar Rd
Highlands Dr
Hillside Dr
46th St
48th St
Pescar Dr
Ocotillo Rd
Desert Crest Dr
Palo Verde Rd
Sierra Vista Dr
Lincoln Dr
Pebble Ridge Rd
48th Pl
Arroyo Verde Dr
Madeira Del Cuenta
Cameback Manor Dr
Mountain Shadows Country Club Acres
56th St
Nauni Valley Dr
Rovey Ave
Rovey Dr
Marston Dr
McDonald Dr
Valley Vista Wy
54th St
55th Pl
Marlette Ave
34th Pl
35th Pl
Claremont St
Hogan Cir
42nd St
Claremont Ave
Keim Dr
Paradise Mansion Dr
44th St
41st St
41st Pl
45th St
47th St
47th Pl
44th Pl
43rd Pl
40th Pl
40th St
39th Pl
38th Pl
37th St
36th St
35th St
34th St
33rd Pl
32nd Pl
Palo Christi Rd
La Colina
Elizabeth Pl
Bethany Home Rd
Palo Verde Dr
Rancho Dr
Harding Dr
Camino Sin Nombre
Nita Rd
Camino Del Contento
Delos Cir
Royal Cir
Solano Dr
San Miguel Ave
Stanford Dr
Arizona Cir
Hayden Peak Rd
Monk
Lost Dutchman Dr
Chaney Dr
N
0
500
1,000
US Feet
CULVERT CAPACITY EVALUATION
STORM PROTECTION
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER
091054031
SCALE: 1"= 800'
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Culverts Maximum Level of Protection
< 2 Year
> 2 Year
> 10 Year
> 100 Year
100 Year Maximum Flow Depth (ft)
0.0 - 0.25
0.251 - 0.5
0.51 - 1.0
1.01 - 2.0
2.01 - 3.0
3.01 - 4.0
4.0 - 27
streets
Kimley»Horn
Engineering, Planning and Environmental Consultants
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Phoenix, Arizona 85016 (602) 944-5500
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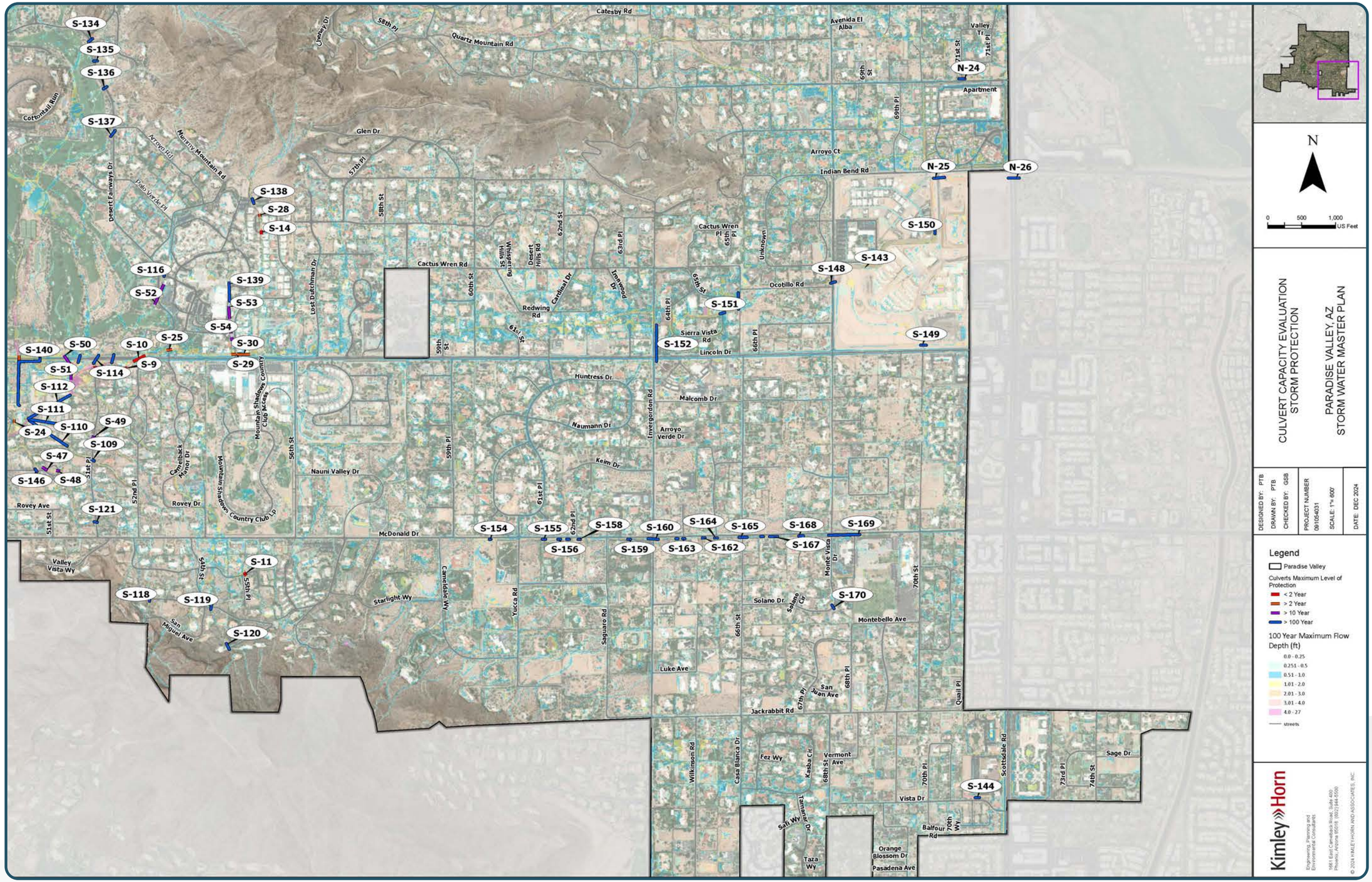
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Quartz Mountain Rd
Avenida El Alba
Valley Tr
71st St
71st Pl
69th St
69th Pl
Apartment
Cottontail Run
Arroyo Rd
Mummy Mountain Rd
Desert Fairways Dr
Palo Verde Pl
Glen Dr
57th Pl
58th St
Arroyo Ct
Indian Bend Rd
Cactus Wren Rd
Lost Dutchman Dr
60th St
Whispering Hills Cir
Desert Hills Rd
62nd St
63rd Pl
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65th Pl
Unknown
Cardinal Dr
Ironwood Dr
Redwing Rd
65th St
64th Pl
Ocotillo Rd
Sierra Vista Rd
Lincoln Dr
66th Pl
59th St
Huntress Dr
Malcomb Dr
Naumann Dr
Invergordon Rd
Arroyo Verde Dr
Keim Dr
Nauni Valley Dr
Mountain Shadows Country Club
Mountain Shadows Country Club Dr
Rovey Dr
Rovey Ave
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52nd Pl
56th St
59th Pl
61st Pl
62nd Pl
McDonald Dr
Valley Vista Wy
54th St
55th Pl
Starlight Wy
San Miguel Ave
Camelsdale Wy
Yucca Rd
Saguaro Rd
66th St
Monte Vista Dr
70th St
Solano Dr
Solano Cir
Montebello Ave
Luke Ave
San Juan Ave
67th Pl
68th Pl
Jackrabbit Rd
Quail Pl
Wilkinson Rd
Casa Blanca Dr
Fez Wy
Kaaba Cir
68th St
Vermont Ave
70th Pl
Vista Dr
Scottsdale Rd
73rd Pl
74th St
Sage Dr
Safi Wy
Tamarisk Dr
Taza Wy
Balfour Rd
70th Wy
Orange Blossom Dr
Pasadena Ave
N
0
500
1,000
US Feet
CULVERT CAPACITY EVALUATION
STORM PROTECTION
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER
091054031
SCALE: 1"= 800'
DATE: DEC 2024
Legend
Paradise Valley
Culverts Maximum Level of Protection
< 2 Year
> 2 Year
> 10 Year
> 100 Year
100 Year Maximum Flow Depth (ft)
0.0 - 0.25
0.251 - 0.5
0.51 - 1.0
1.01 - 2.0
2.01 - 3.0
3.01 - 4.0
4.0 - 27
streets
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V. FLOOD HAZARD ANALYSIS

Flood hazard analysis was conducted by developing maximum flow depth (ft), velocity (ft/s), and discharge (ft3/s) results datasets for the 2-year, 10-year, and 100-year storm events from the FLO-2D model results. These datasets, along with anecdotal data from Town staff and residents, served as the basis for the in-depth flood hazard analysis. The flood hazard analysis includes building inundation risk, erosion and sediment hazard potential, and passenger vehicle risk. The results of these analyses provide valuable insights to locations with the greatest flooding risk and were used to evaluate distinct flood hazards areas in the Town. The flood hazard analysis exhibits are included in **Appendix C.**

A. Building Inundation Analysis

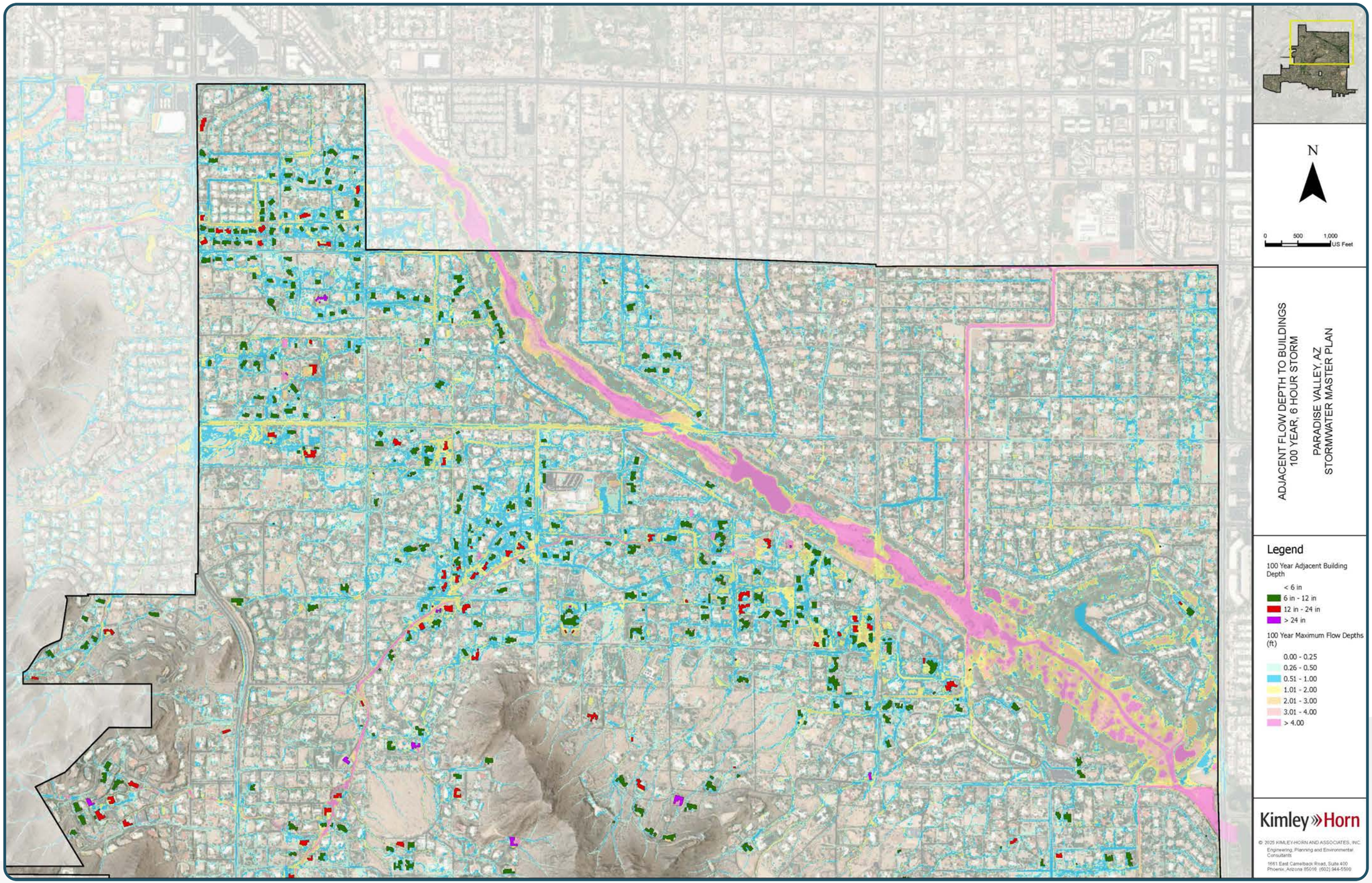
Utilizing the building footprint Geographic Information System (GIS) data provided by the Maricopa County Assessor, structures were assessed for flood risk potential based on adjacent flood depths per the FLO-2D modeling results. The GIS data was reviewed to ensure consistency with current aerial imagery. Within Paradise Valley, there are approximately 8,272 building structures classified as civil, commercial, education, outbuilding, religious, residential, and service. Flooding potential for each structure was assessed for the 100-year, 10-year, and 2-year storm events. The methodology applied to categorize structures for the three hypothetical storm events using the maximum flow depth modeling results and the building GIS data was as follows:

1. Building structures impacted by at least 0.5 feet of water depth for at least 20% of the building perimeter.
2. Building structures impacted by at least 1 foot of water depth for at least 15% of the building perimeter.
3. Building structures impacted by at least 2 feet of water depth for at least 10% of the building perimeter.

The 100-year results of these analyses are shown in exhibits on Pages 21-23 with 10-year and 2-year maps included in **Appendix C. Table 3** includes the number of buildings impacted for each criterion and storm event. It should be noted that the number of buildings identified for each scenario was refined manually to exclude structures where the flood potential is likely not accurately represented in the model results. These conditions include structures where adjacent flooding was associated with backyards or confined areas that are not near stream tributaries. In these cases, the hydraulic modeling falsely indicates trapped water where in practice flooding would likely not occur.

Table 3: Building Inundation Summary Table

Methodology	Number of Buildings Impacted Per Storm Event		
	2-Year	10-Year	100-Year
>0.5 feet of flow depth for at least 20% of the building	43	304	857
>1 foot of flow depth for at least 15% of the building	11	43	283
>2 feet of flow depth for at least 10% of the building	6	9	52
Total Structures Impacted	60	356	1,192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US Feet
ADJACENT FLOW DEPTH TO BUILDINGS
100 YEAR, 6 HOUR STORM
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
Legend
100 Year Adjacent Building Depth
< 6 in
6 in - 12 in
12 in - 24 in
> 24 in
100 Year Maximum Flow Depths (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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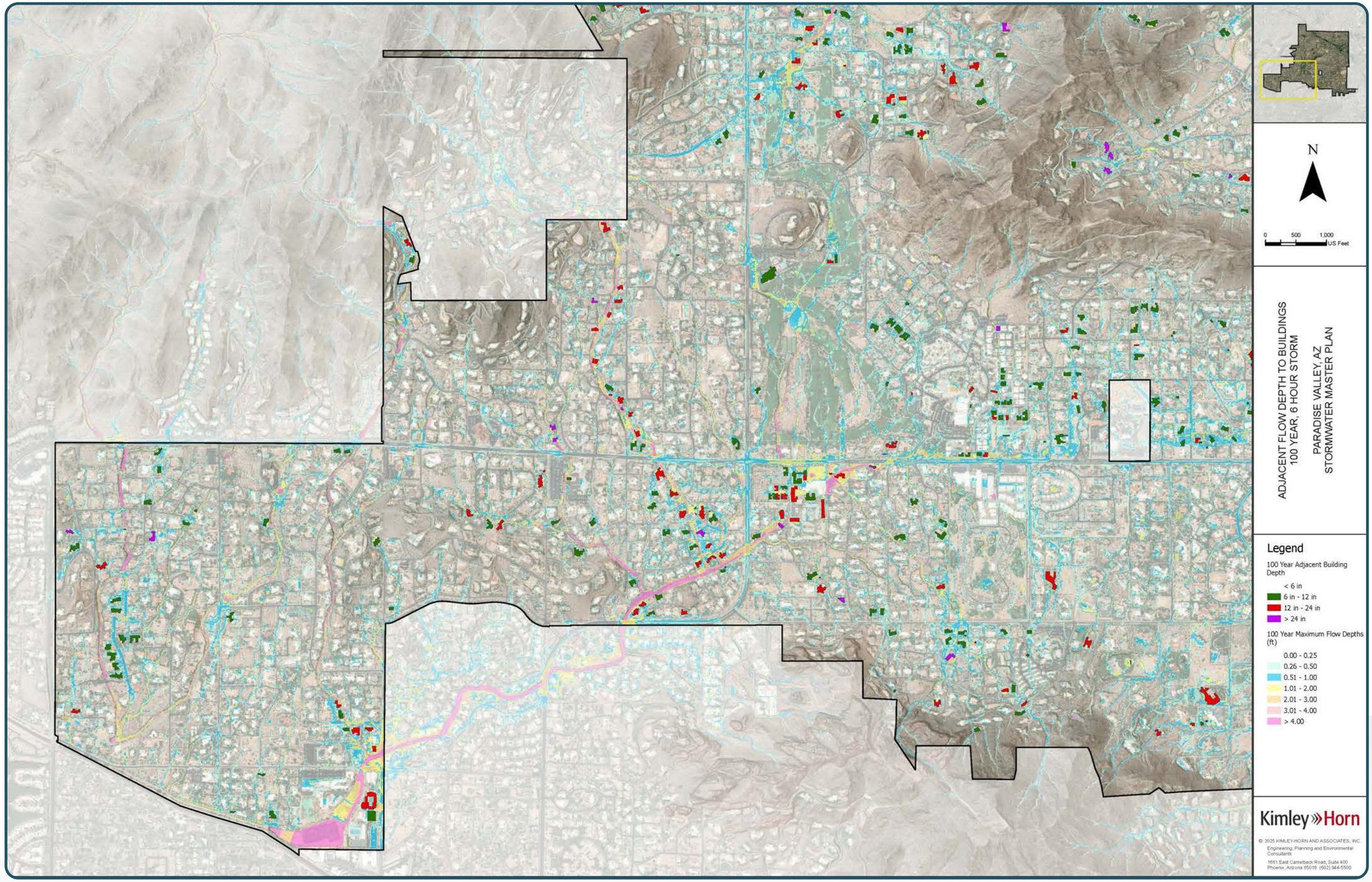
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ADJACENT FLOW DEPTH TO BUILDINGS
100 YEAR, 6 HOUR STORM
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
Legend
100 Year Adjacent Building Depth
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6 in - 12 in
12 in - 24 in
> 24 in
100 Year Maximum Flow Depths (ft)
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2.01 - 3.00
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> 4.00
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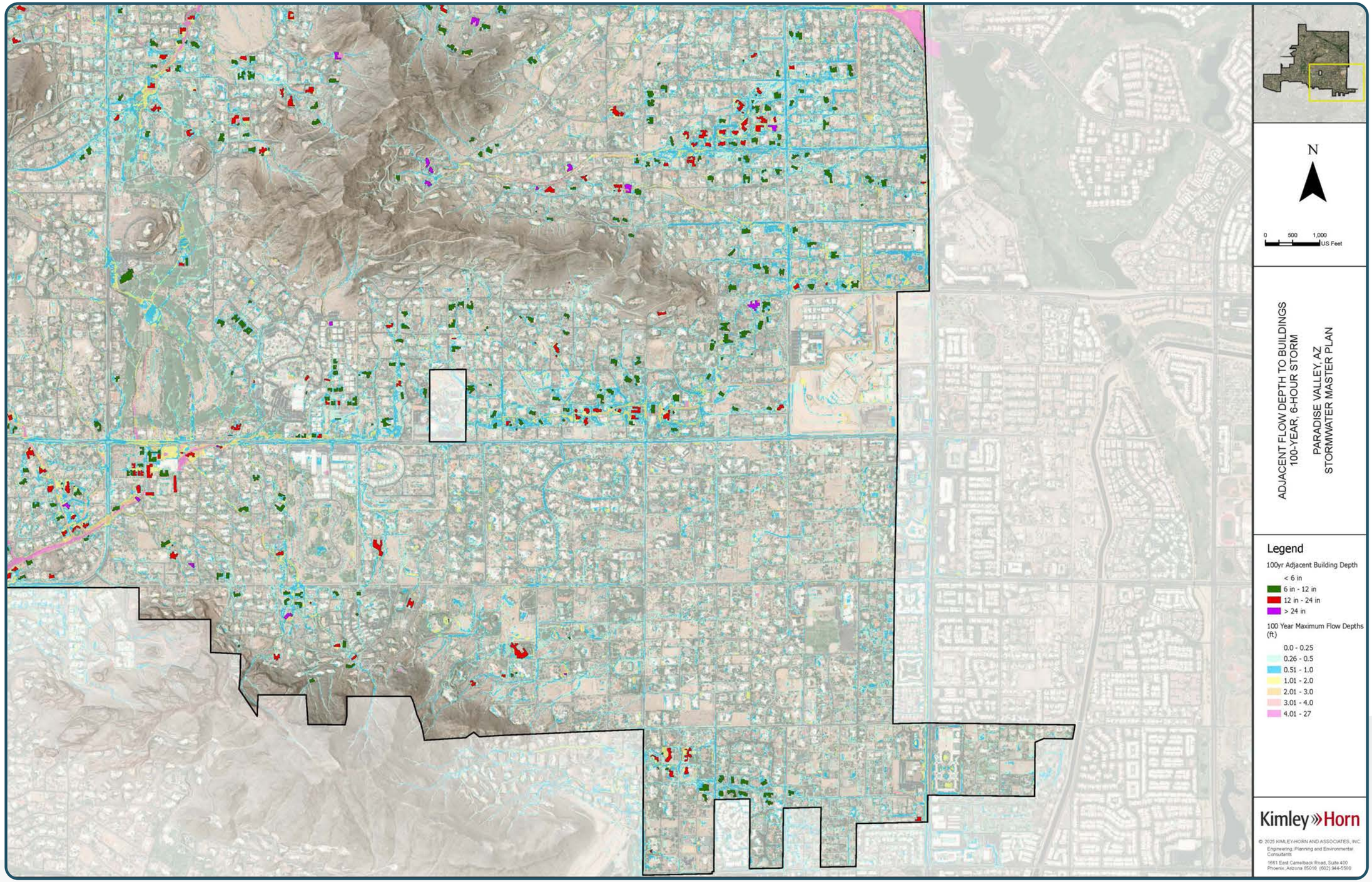
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ADJACENT FLOW DEPTH TO BUILDINGS
100-YEAR, 6-HOUR STORM
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
Legend
100yr Adjacent Building Depth
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6 in - 12 in
12 in - 24 in
> 24 in
100 Year Maximum Flow Depths (ft)
0.0 - 0.25
0.26 - 0.5
0.51 - 1.0
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2.01 - 3.0
3.01 - 4.0
4.01 - 27
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B. Erosion and Sediment Deposition Hazard

The methodologies used to identify sediment erosion and deposition potential are based on the procedure outlined in Hazard Risk Mapping: Detailed Description of Approach Memo written by West Consultants for the FCDMC in July of 2019 (West Consultants, Inc., 2019). The methodologies developed were deemed appropriate for the Paradise Valley Master Plan because the approach is based on the typical major storms that are specific to the south-central Arizona region, and the memo was written as part of the Carefree Area Drainage Master Plan. Additionally, the methodology similarly uses the same storm events, the 100-year, 6-hour and 10-year, 6-hour, as the basis of assessment.

The erosion hazard methodology provides predictions of the severity of damage and the types of erosion that are likely to take place. By associating ranges of numerical velocities with the likelihood of qualitative results, risks to residents and property can be more easily evaluated. The four categories of erosion potential and the associated velocity ranges in feet per second are listed below.

- Low Erosion Potential: Velocities between 1 and 2.5
  - 10% annual risk of some erosion of desert landscaping (scour of gravel surfaces, potential removal of small plants).
  - Minor scour to the downstream of culverts likely
  - Low risk of scour in washes
  - Low risk to roadways
  - Sand and fine gravel likely washed away during storm events with a recurrence interval > 2 years
- Moderate Erosion Potential: Velocities between 2.5 and 4
  - 10% annual risk of moderate erosion of desert landscaping (scour of sandy surfaces, some risk of damage to small plants).
  - Some scour downstream of culverts likely
  - Potential for scour in major washes
  - Larger gravel and short grass at risk of erosion during storm events with a recurrence interval > 2 years
  - Potential risk to gravel roadways and/or roads with unpaved shoulders during storm events with a recurrence interval > 2 year. Proceed with caution.
- High Erosion Potential: Velocities between 4 and 5.5
  - 10% annual risk of significant erosion of desert landscaping (gravel surfaces likely scoured, small plants likely damaged or removed, larger plants at risk).
  - 10% annual risk of significant scour downstream of culverts
  - High potential for ongoing scour and avulsions in major washes
  - Small cobbles and long grass are at risk of erosion during major storm events.
  - High risk to gravel roadways and/or roads with unpaved shoulders storm events with a recurrence interval> 10 years.
- Extreme Erosion Potential: Velocities greater than 5.5
  - 90% annual risk of significant erosion of desert landscaping (all plants in danger of removal, surface treatments likely scoured away).
  - 90% annual risk of significant scour downstream of culverts
  - Culvert installations in danger of failure during major storm events.
  - Wash instability likely due to significant scour and avulsion potential
  - All grass types likely scoured during large storm events.
  - Gravel roadway surfaces likely to fail and should be avoided during storm events with a recurrence interval> 10 years.

The 100-year result maps of each of the storm events' erosion hazard potential are included on Pages 26-28, with the 10-year and 2-year results maps in **Appendix C.** Extreme erosion potential is predicted within some washes, near some major roadways, and downstream of culverts within the Town. The number of road crossings on collector, arterial, and residential roads that are subject to extreme potential erosion hazards are summarized in **Table 4.**

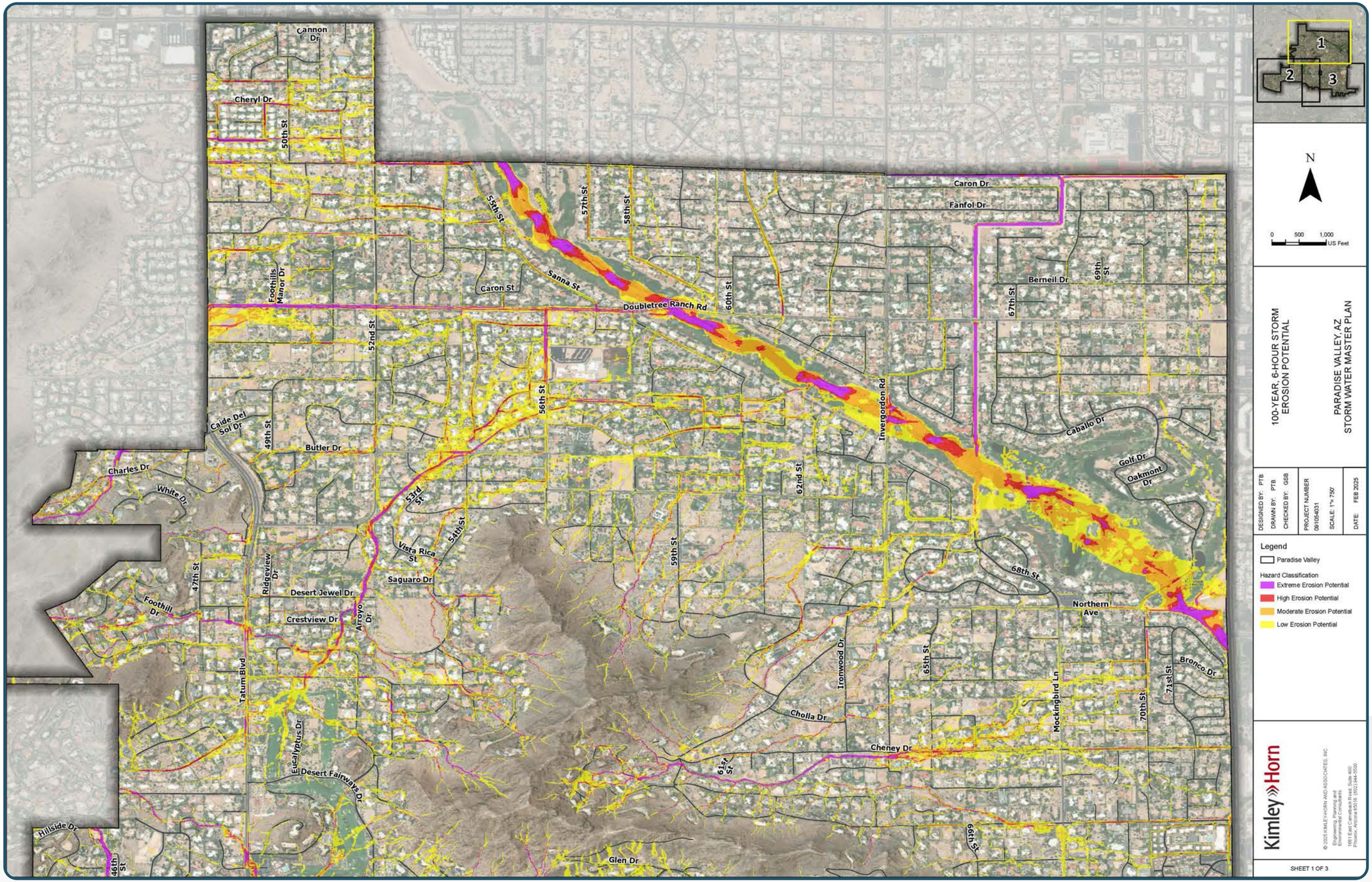
The sediment potential hazard methodology provides predictions of the severity of damage and the types of sedimentation that are likely to take place. Sedimentation potential is based on unit discharge of model cells, obtained by dividing each cell's maximum discharge by the size of the cell. By associating ranges of unit discharge with the likelihood of specific outcomes, risks to residents and property can be more easily understood. The four categories of sediment potential and the associated unit discharge ranges in cubic feet per second are listed below. It should be noted that unit discharges with a magnitude of less than 0.5 were excluded from the results.

- Low Deposition Potential (q > 10)
  - Low potential of significant deposition of silty sand.
  - Some deposition upstream of culverts may occur.
  - Low risk to roadways.
- Moderate Deposition Potential (10>q>7)
  - Moderate potential of significant deposition of sands, silts, and gravel.
  - Some deposition upstream of culverts is likely. Smaller culverts may clog.
  - Proceed with caution at roadways.

- High Deposition Potential (7>q >3)
  - High potential for sand and gravel deposition; moderate risk of cobble deposition.
  - Significant deposition of culverts likely. High clogging potential at all culverts.
  - Proceed with caution at roadways.
- Extreme Deposition Potential (3>q)
  - Extreme potential for deposition of sands, silts, gravels, and cobbles.
  - Culvert installation in danger due to likelihood of clogging.
  - Proceed with extreme caution at roadways.

The 100-year result maps of each of the storm events' deposition hazard potential are included on Pages 29-31, with the 10-year and 2-year results maps in **Appendix C**. Extreme sediment deposition potential is predicted within some washes, along some major roadways, and downstream of culverts within the Town. The number of road crossings on arterial, collector and residential roads that are subject to extreme potential deposition hazards are summarized in **Table 4.**

Storm Event	Street Type	Extreme Erosion Risk Locations	Extreme Sediment Risk Locations
100-Year	Arterial	6	28
	Collector	29	144
	Residential	245	989
10-Year	Arterial	2	14
	Collector	12	65
	Residential	92	352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Caron Dr
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Doubletree Ranch Rd
60th St
Berneil Dr
69th St
67th St
52nd St
56th St
Invergordon Rd
Caballo Dr
Caide Del Sol Dr
49th St
Butler Dr
Golf Dr
Oakmont Dr
Charles Dr
White Dr
53rd St
54th St
62nd St
Vista Rica St
59th St
68th St
Saguaro Dr
47th St
Ridgeview Dr
Desert Jewel Dr
Foothill Dr
Crestview Dr
Arroyo Dr
Northern Ave
Tatum Blvd
Ironwood Dr
65th St
Bronco Dr
71st St
Mockingbird Ln
70th St
Cholla Dr
Eucalyptus Dr
Cheney Dr
61st St
Desert Fairways Dr
Hillside Dr
66th St
46th St
Glen Dr
1
2
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N
0 500 1,000 US Feet
100-YEAR, 6-HOUR STORM EROSION POTENTIAL
PARADISE VALLEY, AZ STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER 091054031
SCALE: 1"= 750'
DATE: FEB 2025
Legend
Paradise Valley
Hazard Classification
Extreme Erosion Potential
High Erosion Potential
Moderate Erosion Potential
Low Erosion Potential
Kimley»Horn
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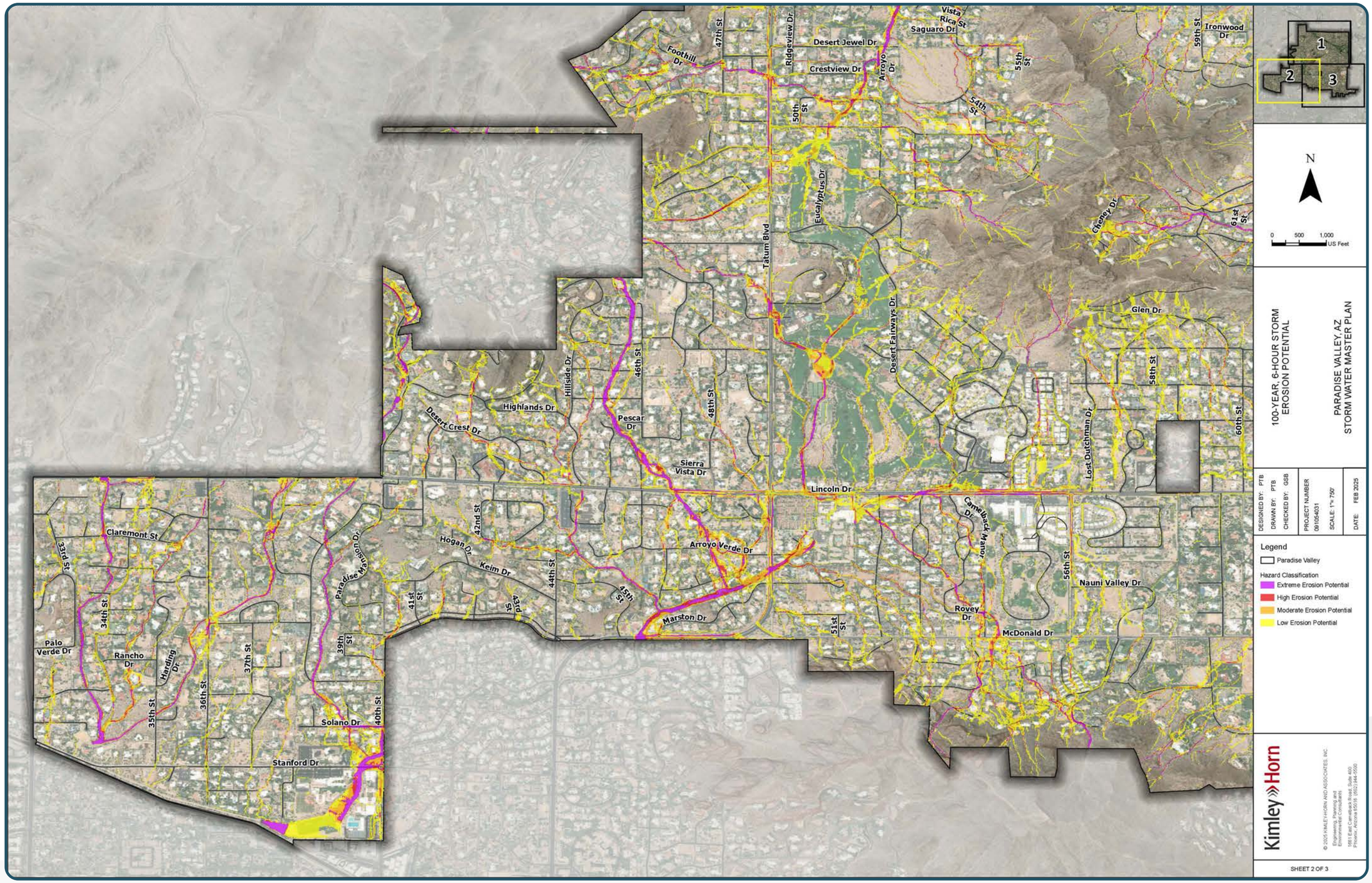
Phoenix, Arizona 85016 (602) 944-5500
SHEET 1 OF 3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Tatum Blvd
Cheney Dr
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Desert Crest Dr
Pescar Dr
Sierra Vista Dr
Lincoln Dr
Lost Dutchman Dr
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Hogan Dr
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Paradise Mansion Dr
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McDonald Dr
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US Feet
100-YEAR, 6-HOUR STORM
EROSION POTENTIAL
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER
069054031
SCALE: 1"= 750'
DATE: FEB 2025
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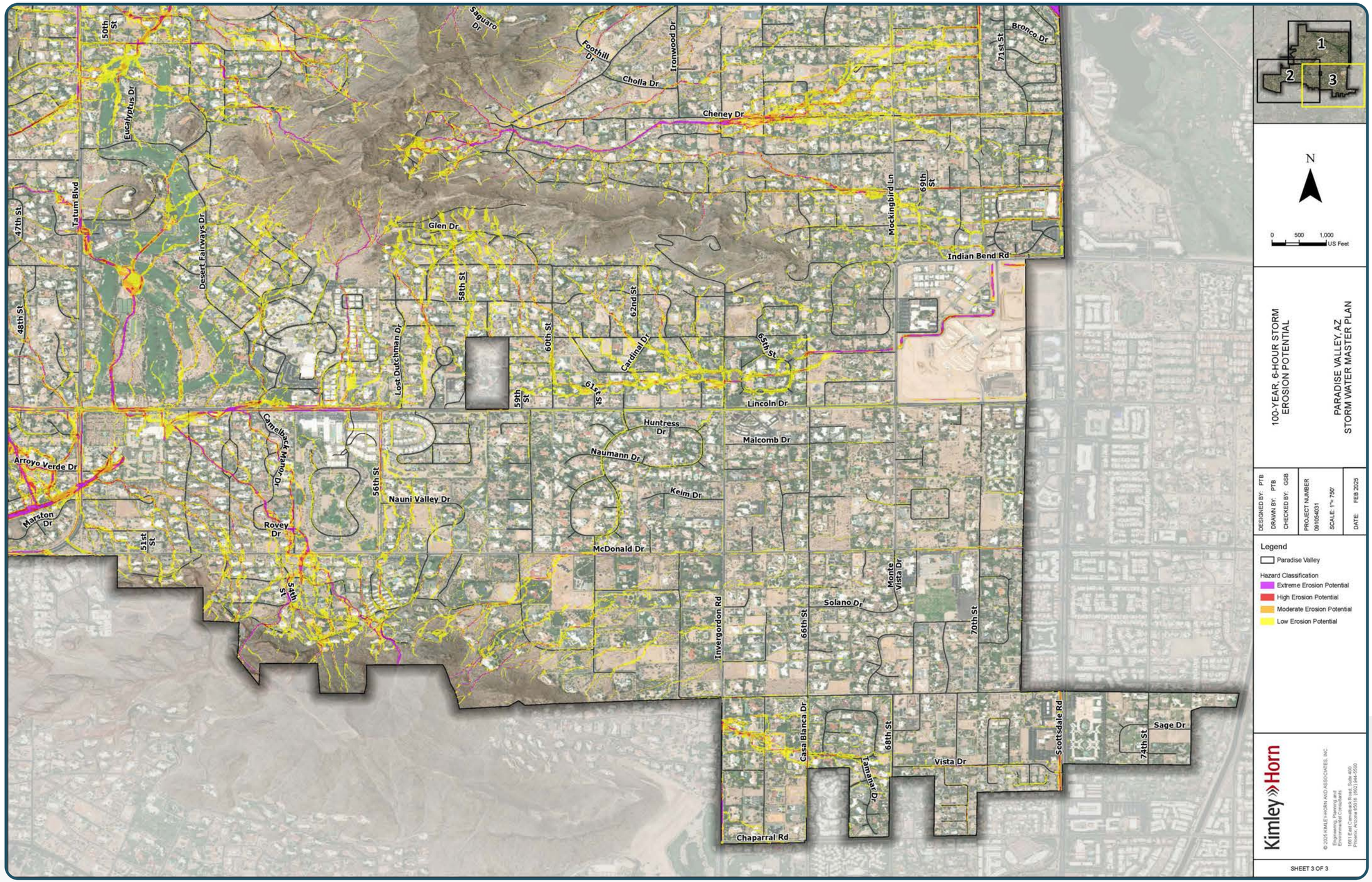
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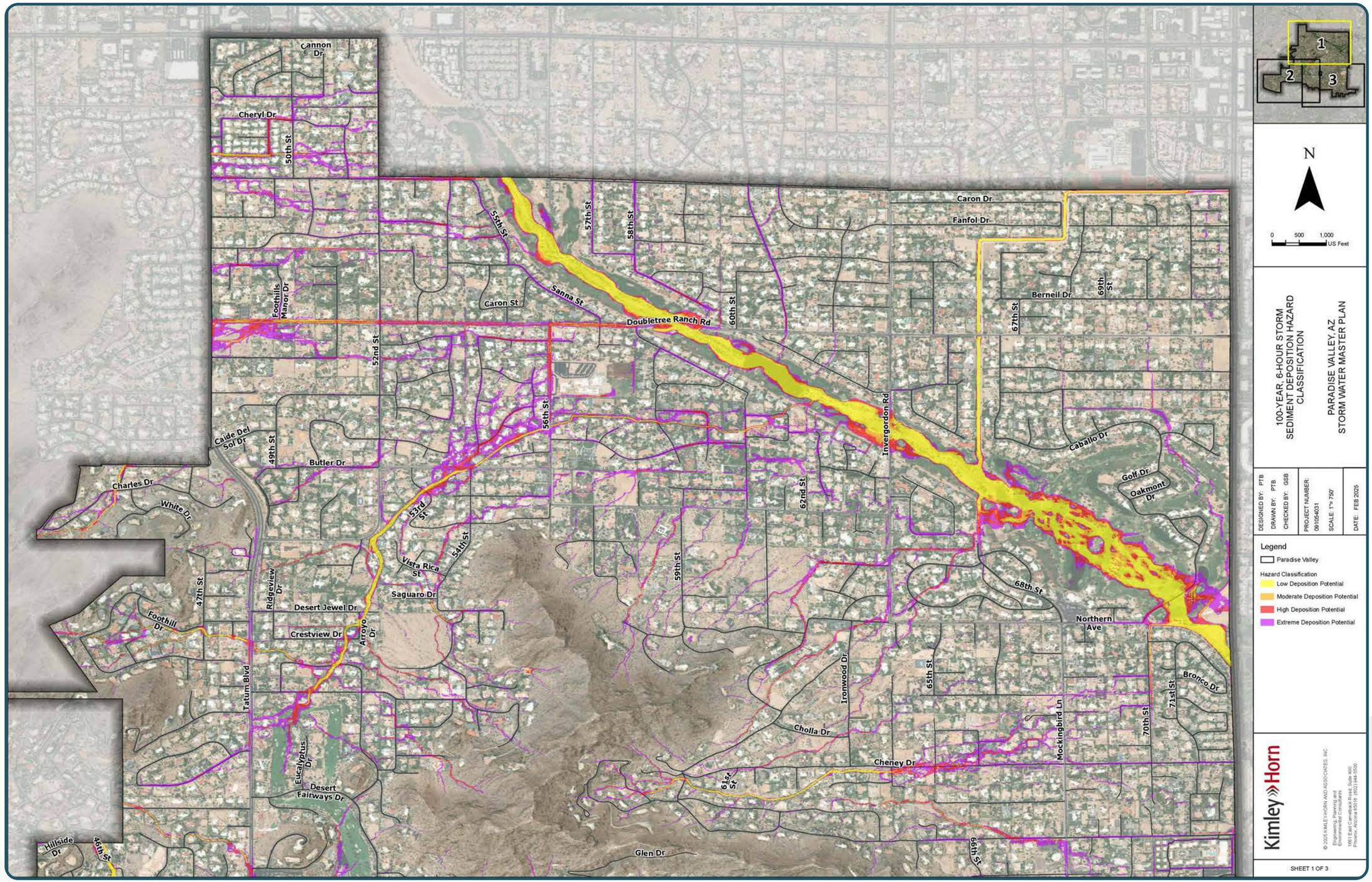
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100-YEAR, 6-HOUR STORM
SEDIMENT DEPOSITION HAZARD
CLASSIFICATION
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
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PROJECT NUMBER: 091054031
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Paradise Valley
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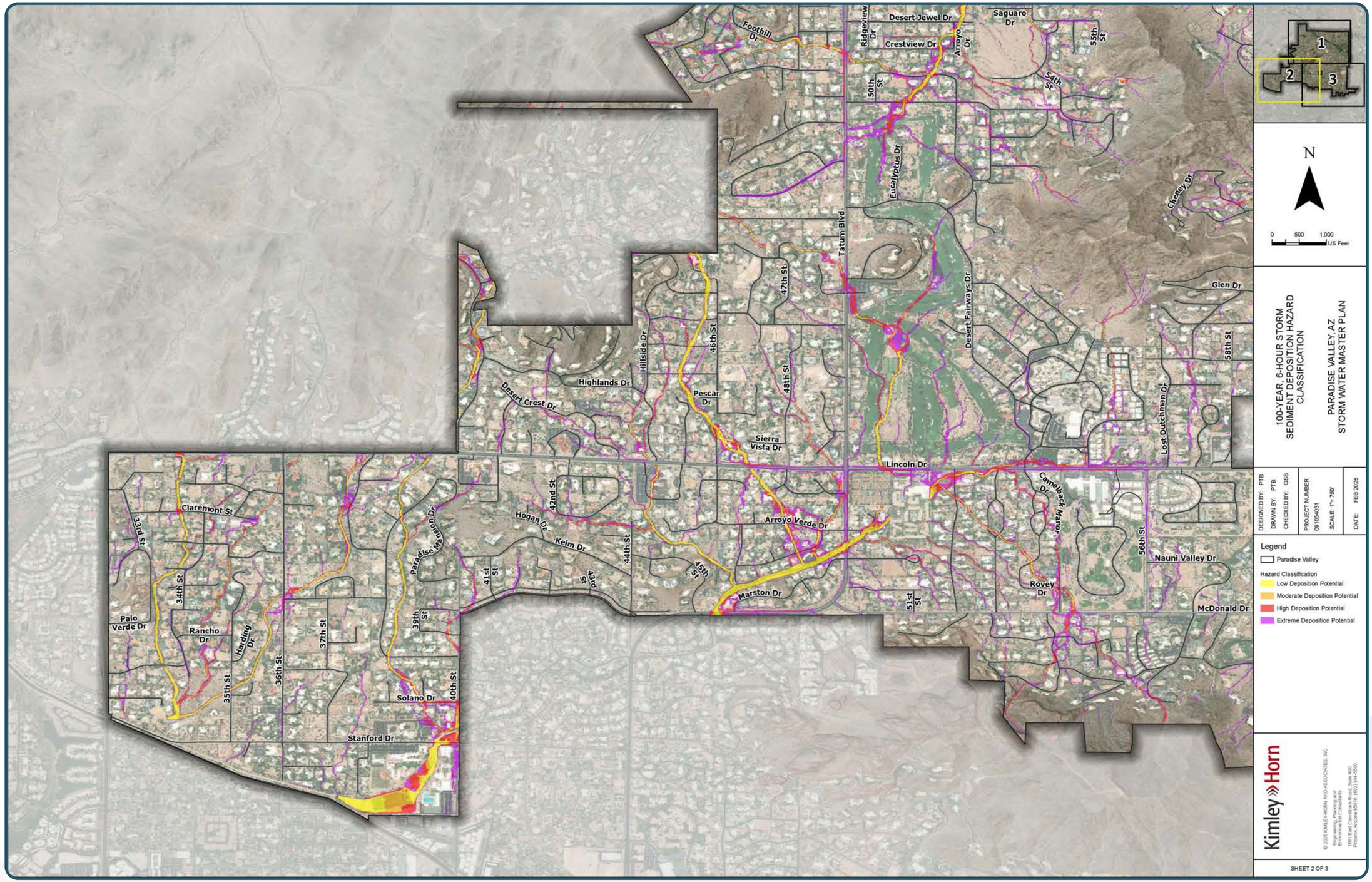
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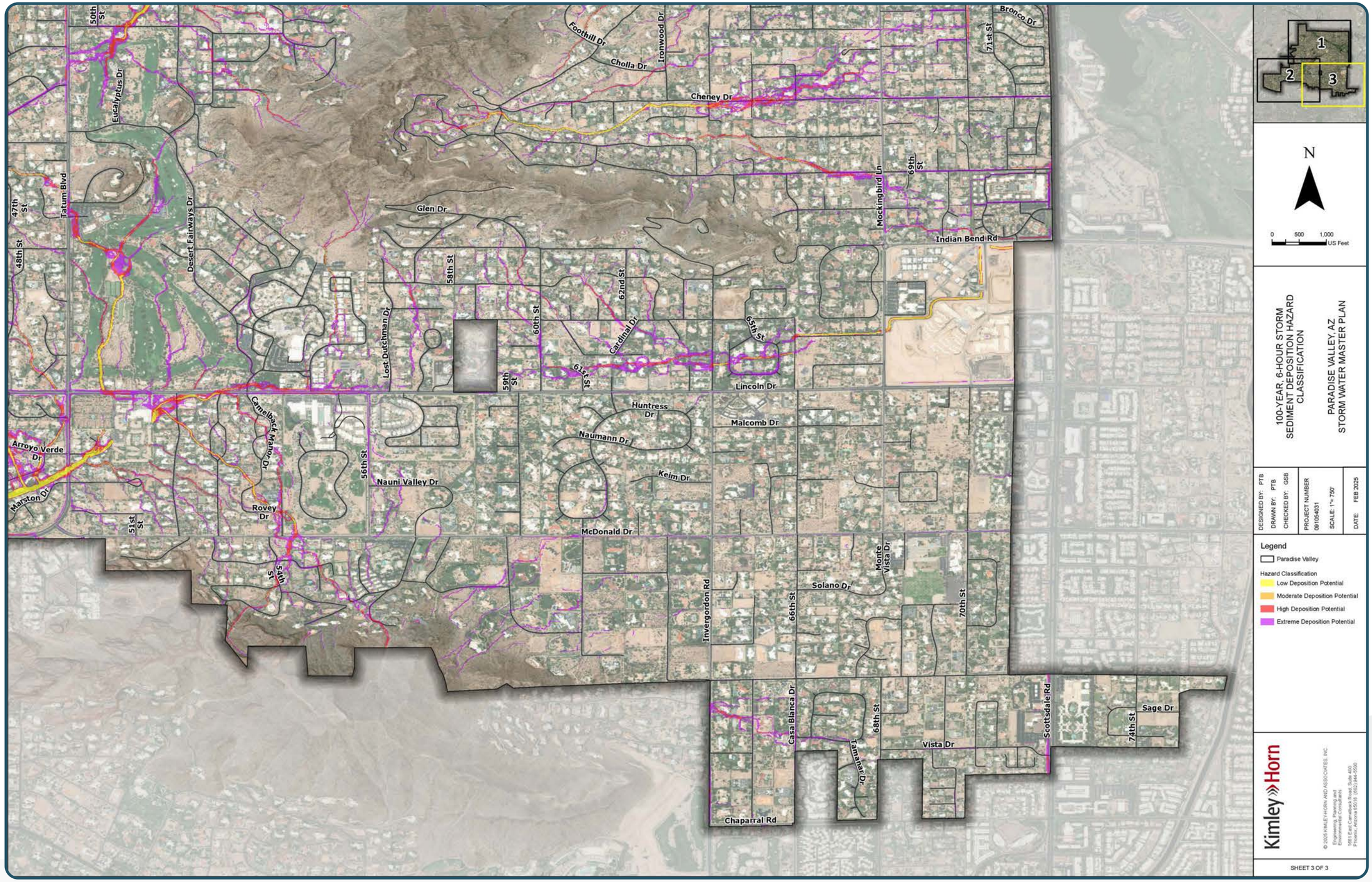
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Camelback Manor Dr
56th St
Nauni Valley Dr
Arroyo Verde Dr
Marston Dr
Rovey Dr
51st St
54th St
McDonald Dr
Invergordon Rd
66th St
Solano Dr
Monte Vista Dr
70th St
Casa Blanca Dr
68th St
Tamarisk Dr
Vista Dr
Scottsdale Rd
74th St
Sage Dr
Chaparral Rd
1
2
3
N
0 500 1,000 US Feet
100-YEAR, 6-HOUR STORM
SEDIMENT DEPOSITION HAZARD
CLASSIFICATION
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER
091064031
SCALE: 1"= 750'
DATE: FEB 2025
Legend
Paradise Valley
Hazard Classification
Low Deposition Potential
Moderate Deposition Potential
High Deposition Potential
Extreme Deposition Potential
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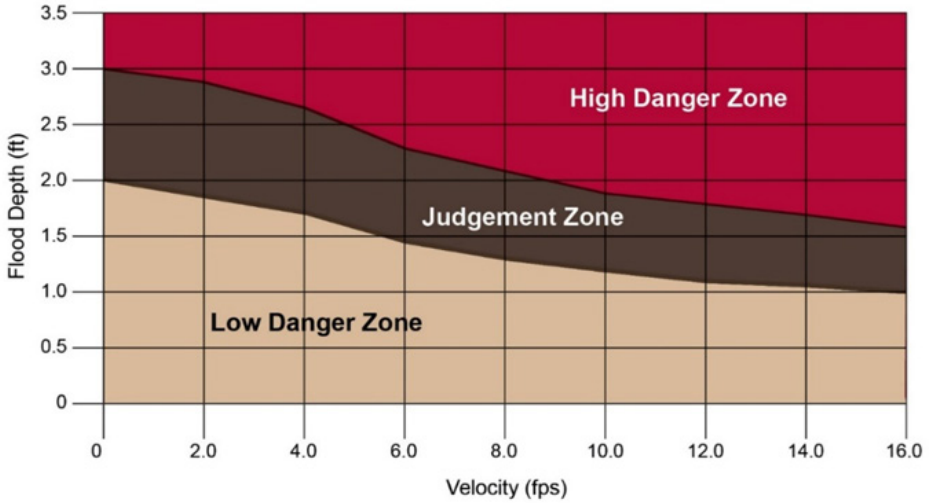
C. Potential Risk to Passenger Vehicles

During large storm events in Town of Paradise Valley, roads such as Doubletree Ranch Road and 40th Street have been closed for passenger vehicle safety. Data obtained from the Town revealed an incident in which a car had been swept off the road at the CCW low water crossing on 40th St. Given the issues identified, risk to passenger safety was an important hazard to evaluate in the Paradise Valley Master Plan.

The methodology used to identify potential risk to passenger vehicles is based on the depth-velocity flood danger level relationship for passenger vehicles developed in ACER Technical Memorandum No. 11: Downstream Hazard Classification Guidelines, (U.S. Department of the Interior Bureau of Reclamation, 1988). The memorandum presents the relationship, created between both the depth and velocity of flood water on a roadway, that is used to classify road conditions as a low danger zone, judgment zone, and high danger zone. **Figure 4** shows the graphical representation of this relationship. Each zone provides predictions of the severity of risk to passenger vehicles.

- **Low Danger Zone –** In this zone, almost all passenger vehicles can safely navigate on the road. The risk categorization is based on the ranges of the depth and velocity relationship shown in **Figure 4**. It should be noted that depths lower than 0.5 feet were removed from this zone due to the negligible effect on passenger vehicles. The depth of 0.5 feet was chosen as the minimum, because at this height, water will begin to reach the bottom of many passenger vehicles.
- **Judgement Zone –** In this zone, roadway flooding with a combination of depths and velocities shown in **Figure 4** present a highly significant hazard to most passenger vehicles. The ranges of depth outlined in this category are 2 to 3 feet of water. At these depths, emergency vehicles should proceed with caution, and passenger vehicles should be blocked from proceeding.
- **High Danger Zone –** In this zone, flood hazards are extreme for all passenger vehicles. The associated depths and velocities of this zone, shown in **Figure 4**, will block access to emergency vehicles.

Figure 4: Depth Times Velocity Graph for Passenger Vehicles (USBR 1988)



Analyses of passenger vehicular risk were conducted for the 10-year and 100-year storm events. Using modeling results, areas of the Town were categorized into each flood zone type. The resulting passenger vehicle flood hazard layer was intersected with the centerline of all roads within Paradise Valley. Two methodologies were utilized to display and quantify the results of the intersection. The polyline method serves to quantify what percentage of roads in the Town are located within the high danger zone risk category, while the point method quantifies the total number of roadway wash crossings subject to the same risk category.

The 100-year result maps of potential risk to passenger vehicles are shown on Pages 35-37, with the 10-year results maps included in **Appendix C**. Examples of the polyline and point methods are shown in **Figures 5 and 6. Table 5** contains the percentage and number of roadway segments that are located within high danger zones for passenger vehicles.

Figure 5: Example of Polyline Shapefile for Passenger Vehicles Risks

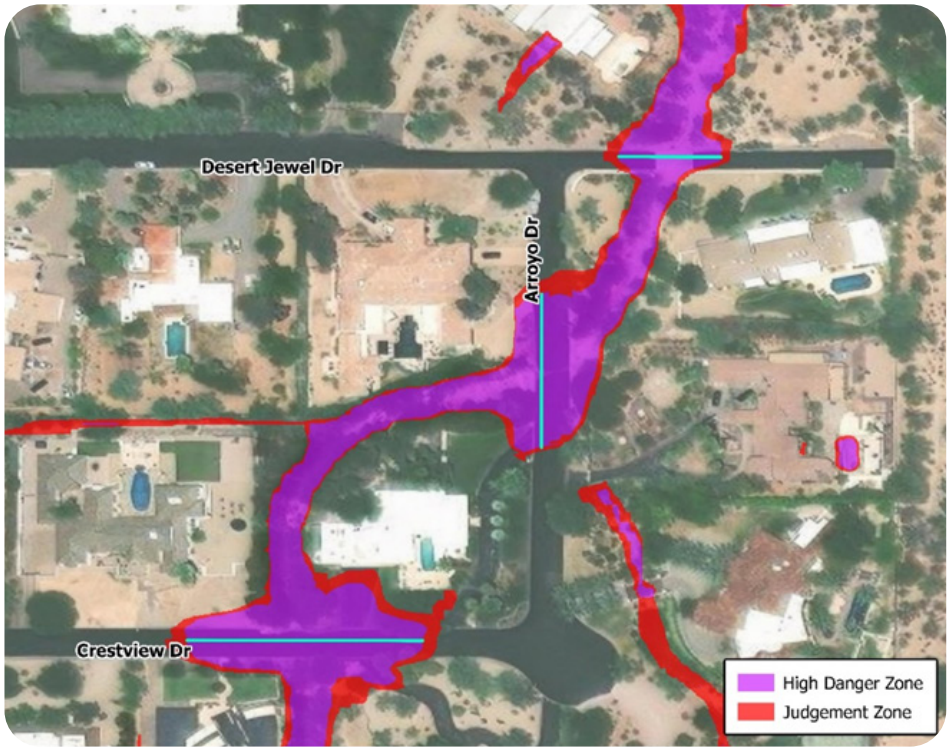


Figure 6: Example of Point Shapefile for Passenger Vehicles Risks

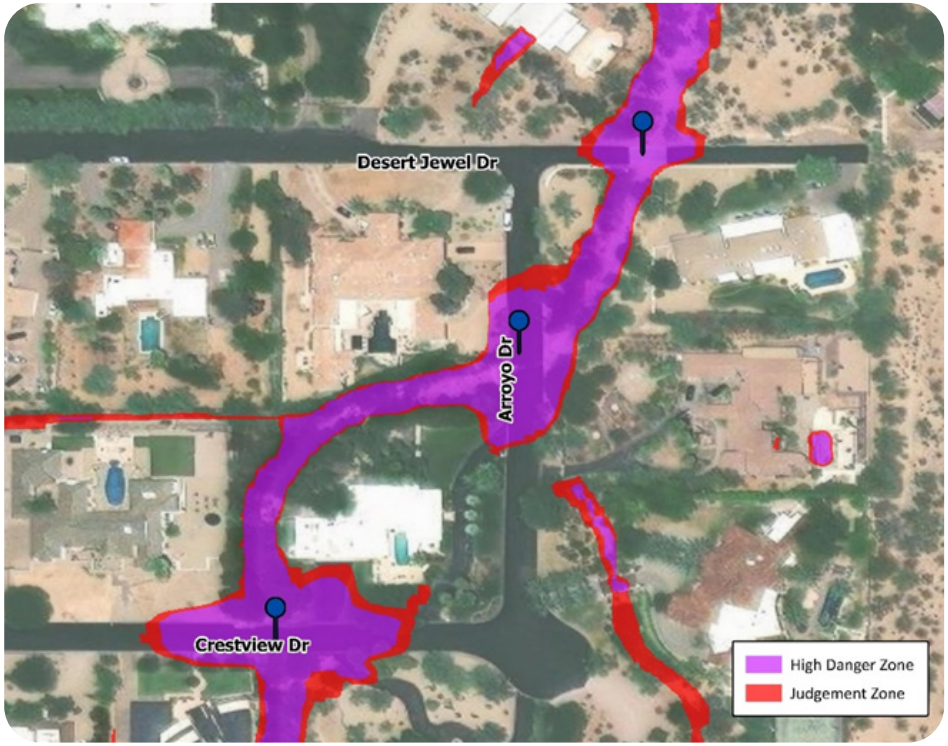
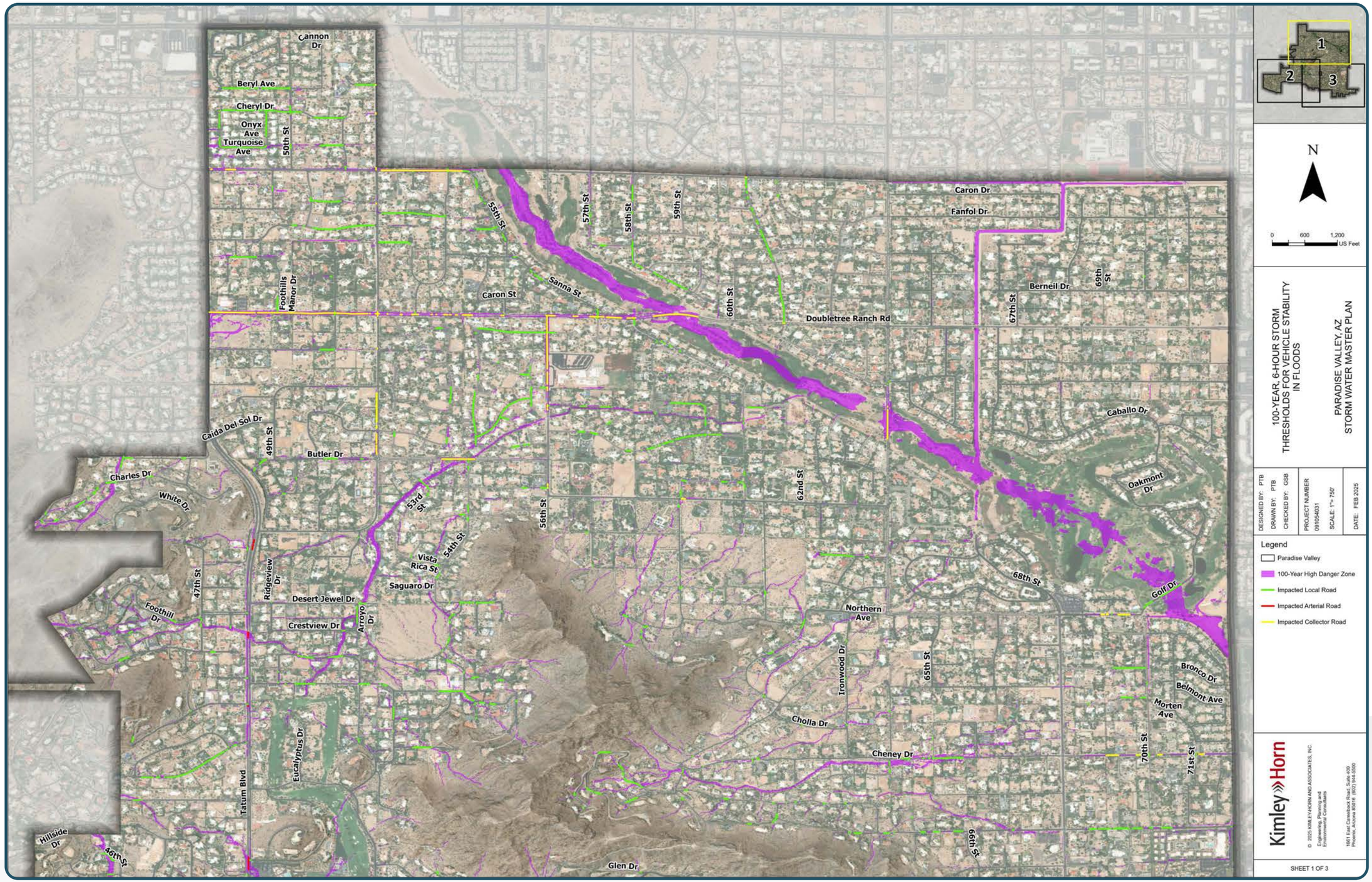


Table 5: Road Flooding Hazard Risk

Storm Event	Street Type	High Danger Zone for Passenger Vehicles
100-Year	Arterial	29 Crossings
		3.9% of Arterial Streets
	Collector	79 Crossings
		9.7% of Collector Streets
	Residential	931 Crossings
		7.0% of Residential Streets
10-Year	Arterial	12 Crossings
		1.2% of Arterial Streets
	Collector	29 Crossings
		3.4% of Collector Streets
	Residential	220 Crossings
		1.6% of Residential Streets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Beryl Ave
Cheryl Dr
Onyx Ave
Turquoise Ave
50th St
55th St
57th St
58th St
59th St
Caron Dr
Fanfol Dr
Foothills Manor Dr
Caron St
Sanna St
60th St
Doubletree Ranch Rd
67th St
Berneil Dr
69th St
Caballo Dr
Caida Del Sol Dr
49th St
Butler Dr
Charles Dr
White Dr
53rd St
56th St
62nd St
Oakmont Dr
Vista Rica St
54th St
Saguaro Dr
Desert Jewel Dr
Crestview Dr
Arroyo Dr
Ridgeview Dr
47th St
Foothill Dr
Tatum Blvd
Eucalyptus Dr
Hillside Dr
46th St
Glen Dr
Northern Ave
Ironwood Dr
65th St
68th St
Golf Dr
Bronco Dr
Belmont Ave
Morten Ave
Cholla Dr
Cheney Dr
70th St
71st St
69th St
1
2
3
N
0
600
1,200
US Feet
100-YEAR, 6-HOUR STORM
THRESHOLDS FOR VEHICLE STABILITY
IN FLOODS
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER
091004031
SCALE: 1"= 750'
DATE: FEB 2025
Legend
Paradise Valley
100-Year High Danger Zone
Impacted Local Road
Impacted Arterial Road
Impacted Collector Road
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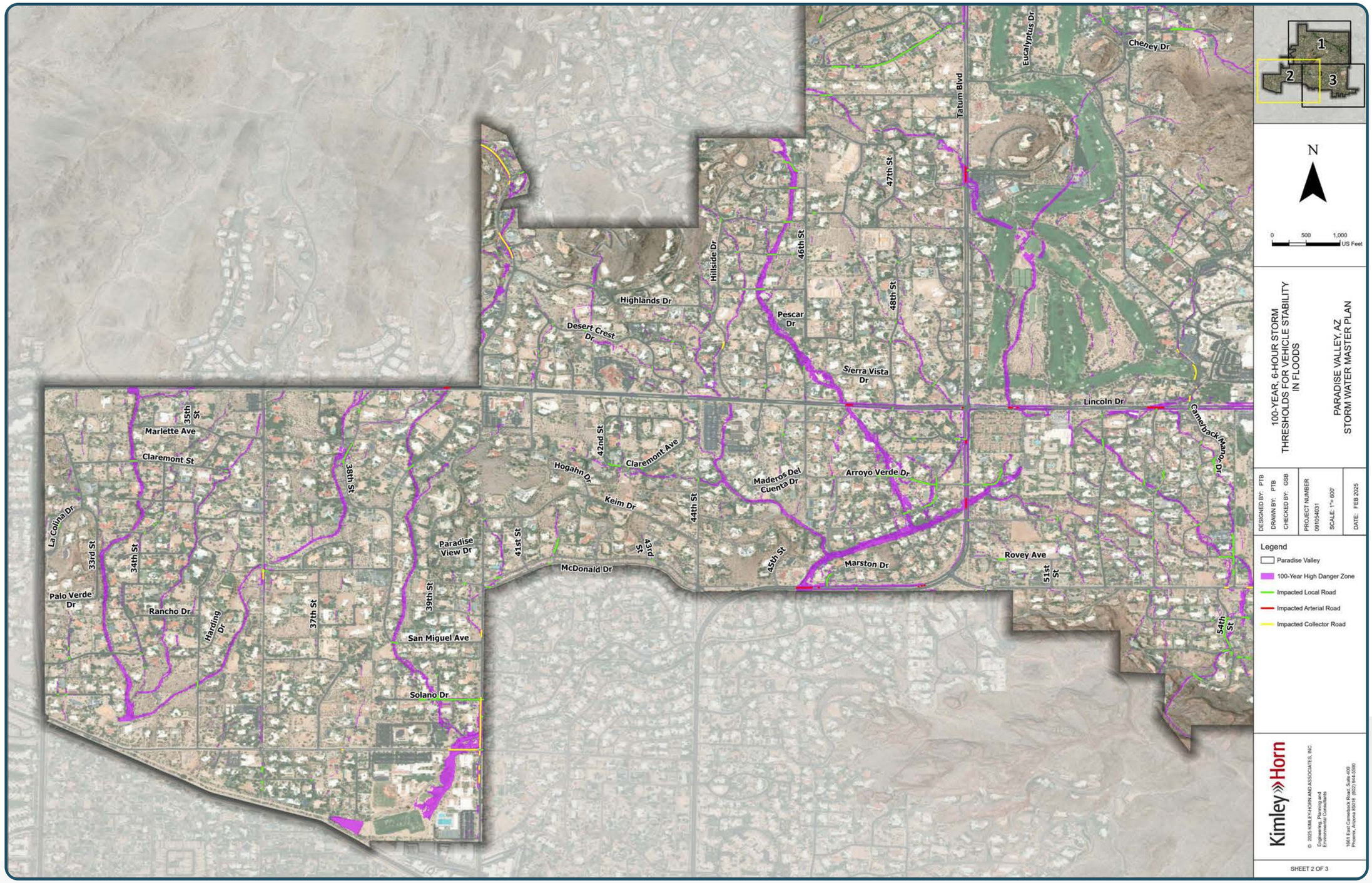
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Eucalyptus Dr
Cheney Dr
47th St
46th St
48th St
Hillside Dr
Highlands Dr
Desert Crest Dr
Pescar Dr
Sierra Vista Dr
Lincoln Dr
Camelback Manor Dr
35th St
Marlette Ave
Claremont St
38th St
42nd St
Claremont Ave
Hogahn Dr
Keim Dr
44th St
Maderos Del Cuenta Dr
Arroyo Verde Dr
La Colina Dr
33rd St
34th St
Palo Verde Dr
Rancho Dr
Harding Dr
37th St
39th St
Paradise View Dr
41st St
43rd St
McDonald Dr
San Miguel Ave
Solano Dr
45th St
Marston Dr
Rovey Ave
51st St
54th St
1
2
3
N
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500
1,000
US Feet
100-YEAR, 6-HOUR STORM
THRESHOLDS FOR VEHICLE STABILITY
IN FLOODS
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER
091004031
SCALE: 1"= 600'
DATE: FEB 2025
Legend
Paradise Valley
100-Year High Danger Zone
Impacted Local Road
Impacted Arterial Road
Impacted Collector Road
Kimley»Horn
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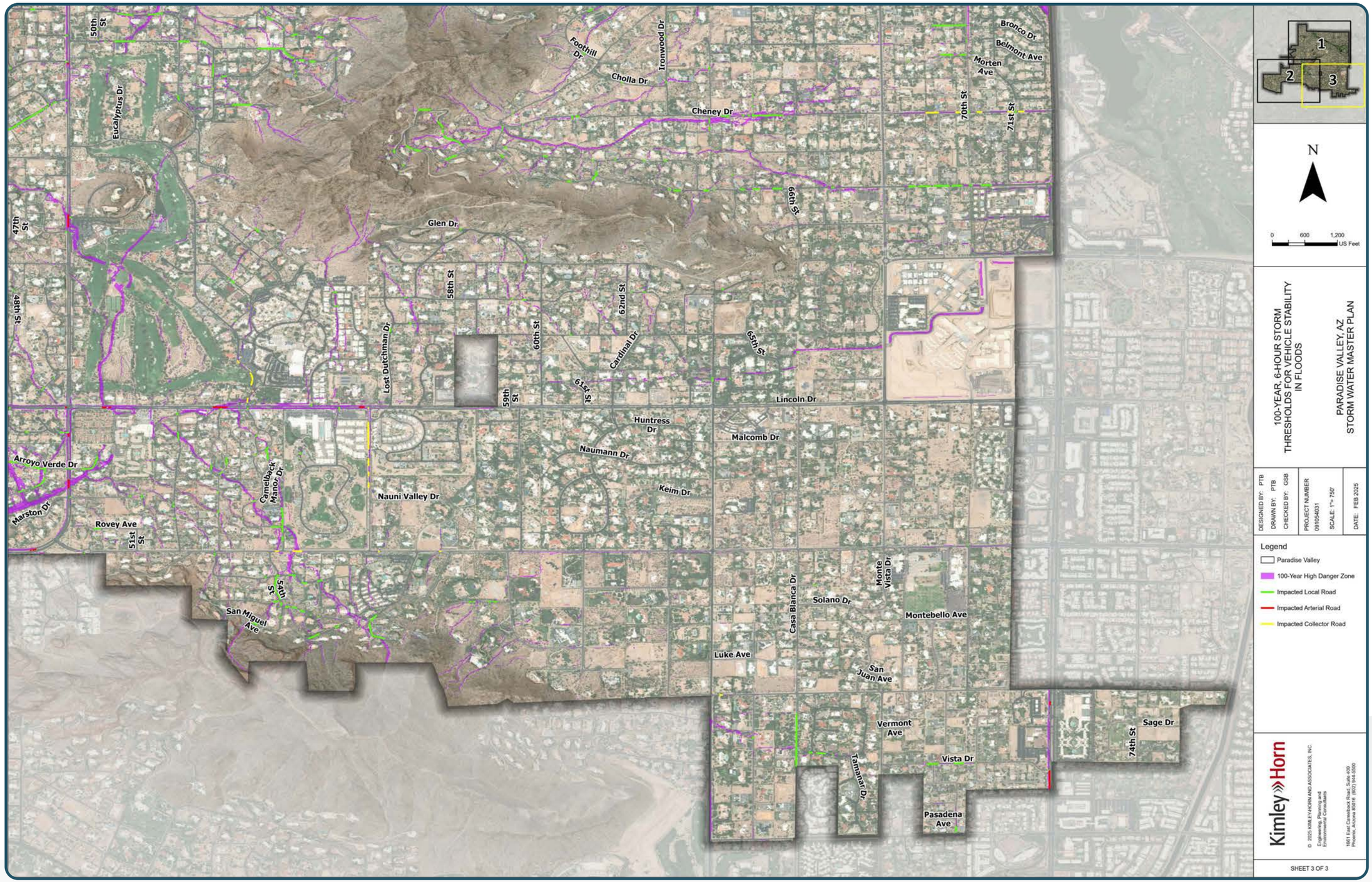
50th St
Eucalyptus Dr
Foothill Dr
Cholla Dr
Ironwood Dr
Cheney Dr
Bronco Dr
Belmont Ave
Morten Ave
70th St
71st St
66th St
47th St
Glen Dr
48th St
58th St
62nd St
60th St
Cardinal Dr
65th St
Lost Dutchman Dr
59th St
Lincoln Dr
Huntress Dr
Naumann Dr
Malcomb Dr
Arroyo Verde Dr
Camelback Manor Dr
Keim Dr
Nauni Valley Dr
Marston Dr
Rovey Ave
51st St
54th St
San Miguel Ave
Monte Vista Dr
Casa Blanca Dr
Solano Dr
Montebello Ave
Luke Ave
San Juan Ave
Vermont Ave
Tamanar Dr
Vista Dr
Pasadena Ave
74th St
Sage Dr
1
2
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600
1,200
US Feet
100-YEAR, 6-HOUR STORM
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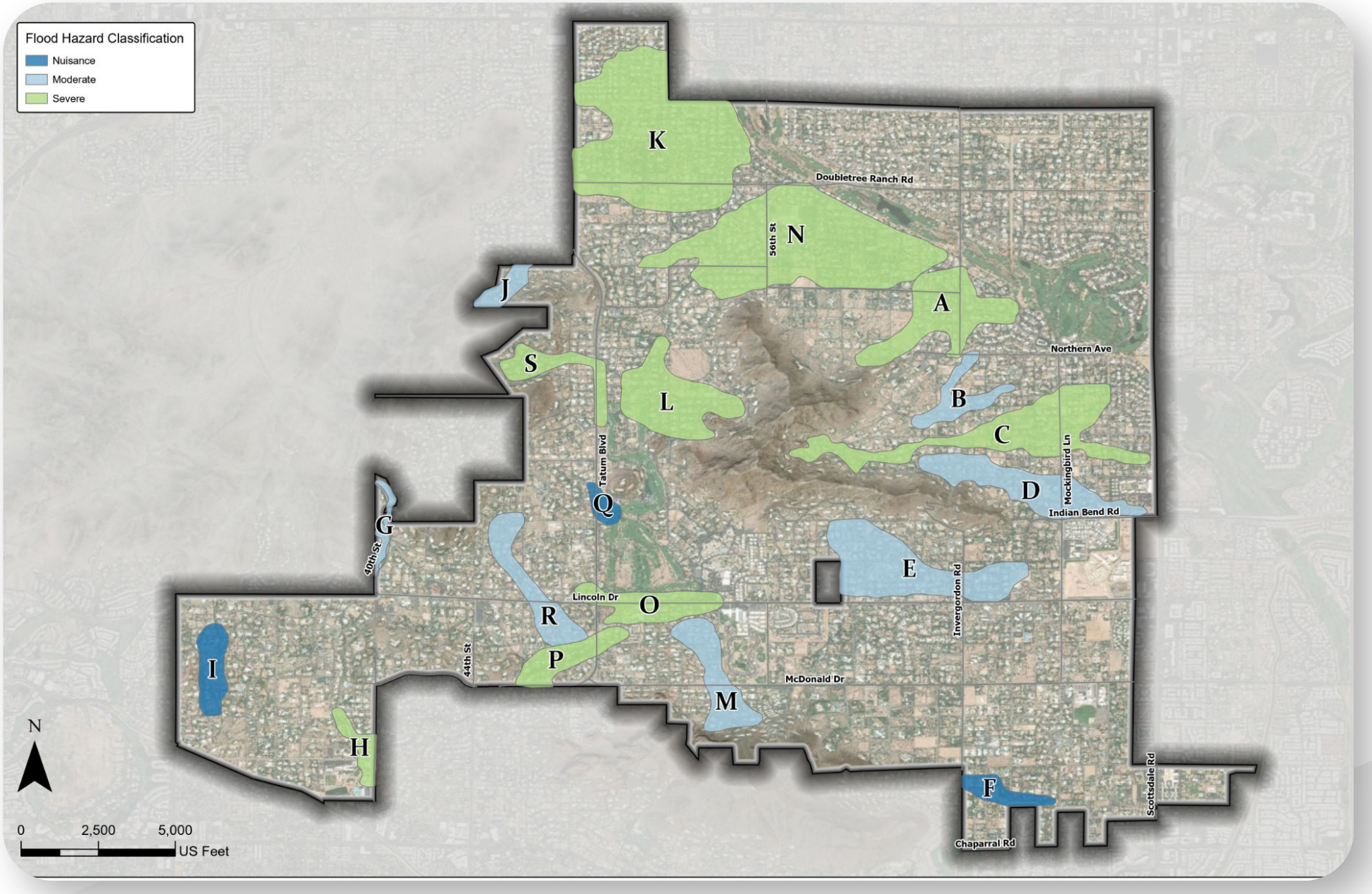
VI. FLOOD HAZARD AREA CLASSIFICATION

Areas of significant flood potential have been identified in several past studies as outlined in the Data Collection section of this report. Utilizing the updated town-wide comprehensive FLO-2D results, these areas were reevaluated and refined, with new areas added as applicable. Areas were either revalidated or added to the list of 'Flood Hazard Areas' based on a combination of factors. Actual reported flooding by Town staff and residents was evaluated against the town-wide modeling results to identify areas with a common flooding source, or areas with clusters of complaints. These areas could allow for mitigation solutions that would benefit multiple structures or roadways at a neighborhood level. In addition, the results of the flood hazard analysis as outlined in the previous section were also used.

Nineteen areas were identified as having some level of flood potential. These areas were further classified based on the potential level of flooding as nuisance, moderate and severe flooding. Areas were classified as nuisance flooding if modeling results showed approximately 0.5' to 1' of water depth along roads and against structures. Moderate flooding was designated if the area showed approximately 1' to 2' of water depth along roads and against structures. Severe flooding was designated to areas with greater than 2' at road and structures. **Figure 7** shows the flood classifications of each of the flood hazard areas.

Figure 7: Classifications of Flood Hazard Areas



Flood hazard areas with moderate and severe classifications were ranked in a decision matrix based on five criteria, as outlined in **Table 6**. Classification of the severity of flooding and the potential number of structures that could be benefited in the area were the criteria that were given the greatest weight within the matrix with a weighted score of 5. Structures that could be benefitted were defined as any structure with adjacent flood depths of 0.5 feet. The number of streets inundated with at least 0.5 feet of depth was another variable considered in the matrix and was given a weighted score of 4. Impacts to emergency access and the potential for multi-use opportunities were considered in the matrix as well with priority scores of 3 and 1, respectively. The results of the area decision matrix and area data sheets are provided in **Appendix D.**

Table 7 includes the location, the severity designation, the number of buildings impacted, and potential impacts to emergency access for each flood hazard area. Of the 16 areas classified as having severe or moderate flood potential, the top 9 were selected to develop flood mitigation alternatives. The three areas classified as having nuisance flooding potential were not included in the ranking, but can be evaluated further by Town maintenance or engineering staff as annual maintenance budgets allow.

Table 6: Flood Hazard Area Prioritization Criteria

Criteria	Scoring Criteria		Weighted Score	Highest Possible Score	Lowest Highest Score
Severity of Flooding	1-	Nuisance	5	15	5
	2-	Medium			
	3-	Severe			
Potential Structures Protected	1-	1 to 30 Structures	5	15	5
	2-	31-50 Structures			
	3-	>51 Structures			
Potential Streets Protected	1-	Local Street Benefits Only	4	12	4
	2-	Arterial/Collector Street or Multiple Local Streets Benefits			
	3-	Multiple arterial/collector & Local Street Benefits			
Restriction to Emergency Access	0-	No Impact to Emergency Access	3	6	0
	2-	Impacts to Emergency Access			
Multi-Use Opportunities	1-	No Opportunities	1	2	1

Table 7: Flood Hazard Area Ranking and Characteristics

Flood Hazard Area	Matrix Score	Severity of Flooding	Structures with Adjacent Depths of at Least 0.5 ft	Streets Impacted by at Least 0.5 ft Depths	Potential Impact to Emergency Access
N	49	Severe	123	2 Collector; 8 Local	Yes
A	45	Severe	43	2 Collector; 6 Local	Yes
O	45	Severe	22	2 Collector; 4 Local	Yes
K	43	Severe	141	2 Collector; 13 Local	No
L	41	Severe	35	0 Collector; 5 Local	Yes
H	40	Severe	9	2 Collector; 2 Local	Yes
P	39	Severe	17	1 Collector; 2 Local	Yes
C	39	Moderate	70	1 Collector; 2 Local	No
E	38	Moderate	52	2 Collector; 5 Local	No
S	36	Severe	14	1 Collector; 1 Local	Yes
R	36	Severe	27	1 Collector; 5 Local	Yes
D	33	Severe	20	2 Collector; 1 Local	No
G	32	Severe	2	0 Collector; 2 Local	Yes
M	25	Moderate	19	1 Collector; 6 Local	No
B	25	Moderate	4	1 Collector; 2 Local	No
J	21	Moderate	8	0 Collector; 3 Local	No

Flood Mitigation Alternatives Developed

VII. PROPOSED PROJECT ALTERNATIVES

For the nine flood hazard areas that scored highest, proposed project alternatives were developed. Previously identified conceptual projects from past studies were first evaluated, as many of these fell within the nine flood hazard areas. These projects were either classified as maintenance projects, medium sized projects, or large projects based on estimated construction costs. Maintenance project costs were less than 250,000 USD and were not considered for the alternatives evaluation as they typically do not mitigate wider spread flooding. Projects with construction costs between 250,000 and 1.3 million USD were designated as medium sized as they are eligible for FCDMC's Small Project Assistance Program (SPAP) as a cost share opportunity. Large projects were designated as having construction costs that exceed 1.3 million USD and could qualify for other grant programs like FCDMC's Capital Improvement Project Partnership Program (CIPPP) or other grant opportunities through the Federal Emergency Management Agency (FEMA). Medium and/or large projects were proposed for each of the nine areas. These projects were either previously proposed, previously proposed and further refined, or developed specifically for this master plan. Two or three alternatives were developed in each area. A decision matrix was used to select a recommended alternative for each area. The project variables and their weighted score are shown in **Table 8**. See **Appendix E** for the project alternatives decision matrix for each flood hazard area. It should be noted that because of the direction that all improvements should be confined within existing Town right-of-way, most alternatives are variations of storm drain or culvert configurations. Because of this, cost became the overwhelming determining factor in the scoring matrix for determining the recommended alternative.

Pages 43-76 detail the flood mitigation alternatives developed for each of the nine flood hazard areas studied. Each area has a description of the alternatives developed, including the project sizes (medium or large), and which is the recommended alternative. Schematics of the project alternatives are also included.

Table 8: Project Prioritization Criteria

Criteria	Scoring Criteria	Weighted Score	Highest Possible Score	Lowest Possible Score
Potential Structures Protected	1- 1 to 30 Structures	5	15	5
	2- 31 to 50 Structures			
	3- > 51 structures			
Design & Construction Cost/Benefit	1- Most Expensive	5	10	5
	2- Least Expensive			
Potential Streets Protected	1- Local Street Benefit Only	4	12	4
	2- Arterial/Collector Street or Local Streets Benefit			
	3- Multiple Arterial/Collector Streets and Local Streets Benefit			
Green Storm Water Infrastructure	1- No Opportunities	1	2	1
	2- Some Opportunities			
Project Partnership	1- Grant Funding or Partnerships Likely	4	12	4
	2- Local Partnership/Grant Eligible			
	3- Local and Federal Partnerships/Grant Eligible			
Multi-Use Opportunities	1- No Opportunities	2	4	2
	2- Some Opportunities			
Operation and Maintenance Costs	1- Maintenance After Every Storm Event	3	6	3
	2- Maintenance at Standard Intervals			
Utility Constraints	1- Major Constraints	3	6	3
	2- Minor Constraints			

A. Flood Hazard Area A – Invergordon Road and Mockingbird Lane

Summary and Description

The source of flooding in this area is runoff from the north and east side of Mummy Mountain, including Maverick Wash and Ironwood Wash flowing northeast toward IBW. Insufficient drainage infrastructure results in road and property flooding. The major roads affected by runoff include Northern Avenue, Invergordon Road, Maverick Road, and El Maro Circle. Invergordon Road has the greatest level of flooding, due to additional flooding from Cherokee Wash. During the 100-year storm, a maximum water depth of 3.7 feet per modeling results from this study occurs on Invergordon Road. This poses risks to emergency vehicle access, passenger vehicles, and to the adjacent properties. Maverick Road also has flooding issues 0.5-1-foot water depths for the length of the street between 62nd Place and Invergordon Road. Several smaller washes flow through private property and across public roads with inadequate conveyance capacity. Several residents south of El Maro Circle and north of Maverick Road on the east side of Invergordon Road, residents have reported property flooding. Flooding in this area has been documented in the Cheney Watershed Hazards Identification Report and the Lower Indian Bend Wash Area Drainage Master Study/Plan (LIBW ADMS/P).

Alternative 1 (Large, Recommended)

The first proposed alternative for this area consists of the implementation of new storm drain. 60" RCP storm drain would begin north of the intersection of Invergordon Road and Northern Avenue and have an inlet to capture a portion of the flows from Ironwood Wash. The inlet would be located on the left side of Invergordon Road to alleviate the magnitude of flows through the culvert crossing the road. The storm drain would extend north towards Mockingbird Lane and would connect to the existing 12' by 3' RCBC currently being designed and constructed as part of the Mockingbird Lane project. A 48" RCP lateral would extend west at Maverick Road to capture flows from Maverick Wash. Inlets would be placed at the cul-de-sac to account for the concentrated discharge. The design and construction cost of Alternative 1 is estimated to be **4,145,670 USD**. See **Appendix E** for a detailed cost estimate of the project.

Table 9: Alternative 1 Opportunities and Constraints

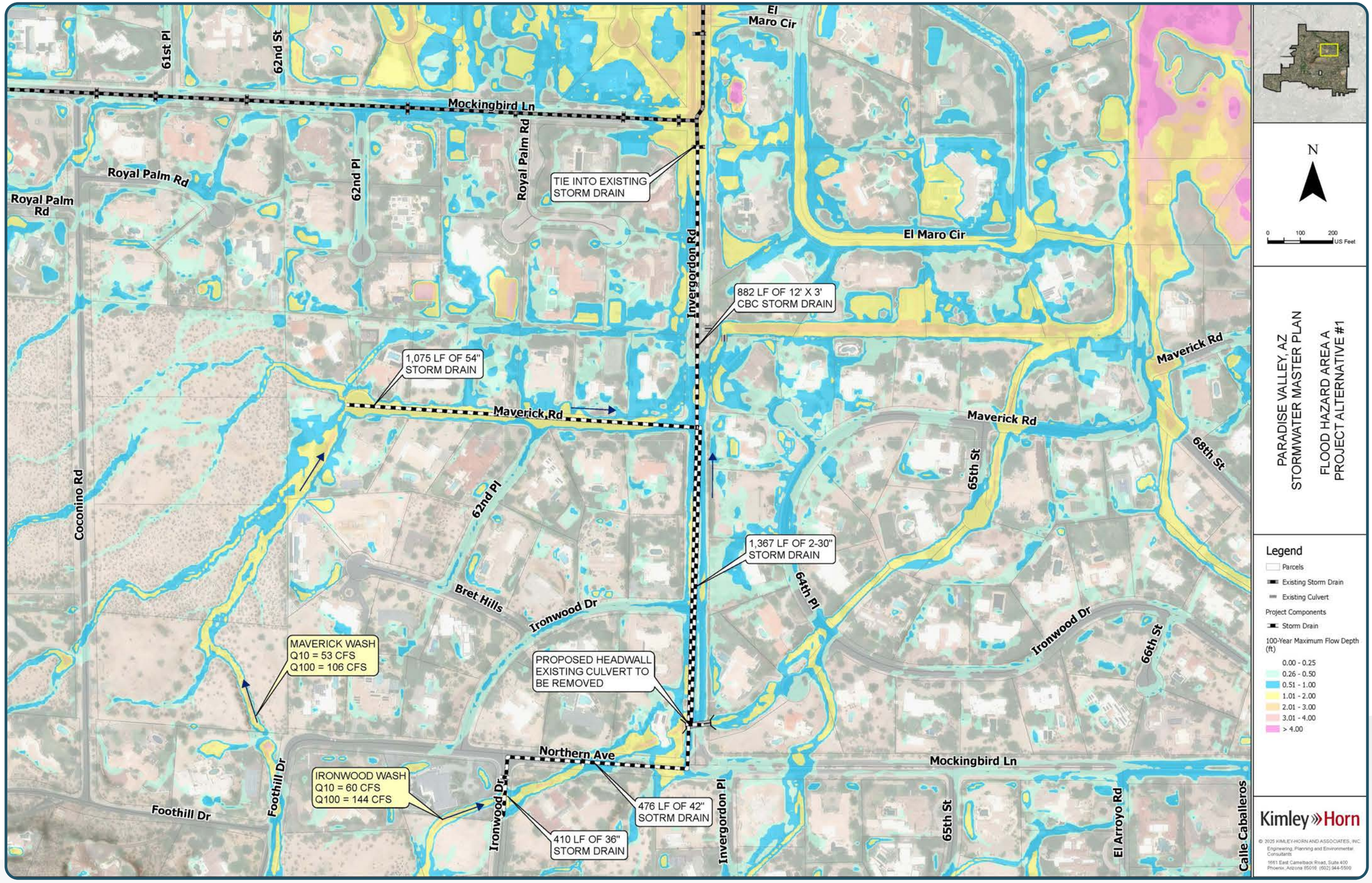
Alternative 1 Opportunities	Alternative 1 Constraints
Most Cost-effective alternative	Utility conflicts likely
Reduces discharge entering undersized existing channels that flow through private properties	Potential for sediment issues at Maverick Road that would require routine maintenance
Large area of flood mitigation	Major traffic disruptions to Invergordon Road

Alternative 2 (Large)

The second proposed alternative for Area A is also the implementation of new storm drain but in a different configuration. The proposed 48" RCP storm drain begins on Foothill Drive, where Maverick Wash overtops the road, and would continue north and turn east on Northern Avenue. Approximately two hundred feet of 48" RCP storm drain would be located on Ironwood Drive and would connect to the main line on Northern Avenue. This would intercept a portion of the discharge from Ironwood Wash. At Calle Caballeros, the storm drain would expand to 60" RCP and would continue east to outfall at the existing channel east of Golf Drive. The channel ultimately outfalls to IBW. The design and construction cost of Alternative 2 is estimated to be **7,083,913 USD**. See **Appendix E** for a detailed cost estimate of the project.

Table 10: Alternative 2 Opportunities and Constraints

Alternative 2 Opportunities	Alternative 2 Constraints
Captures flows from Ironwood Wash and Maverick Wash	Major traffic disruptions to Northern Avenue
Large area of flood mitigation	Utility conflicts likely
Reduce discharge entering undersized existing channels that flow through private property	More expensive alternative



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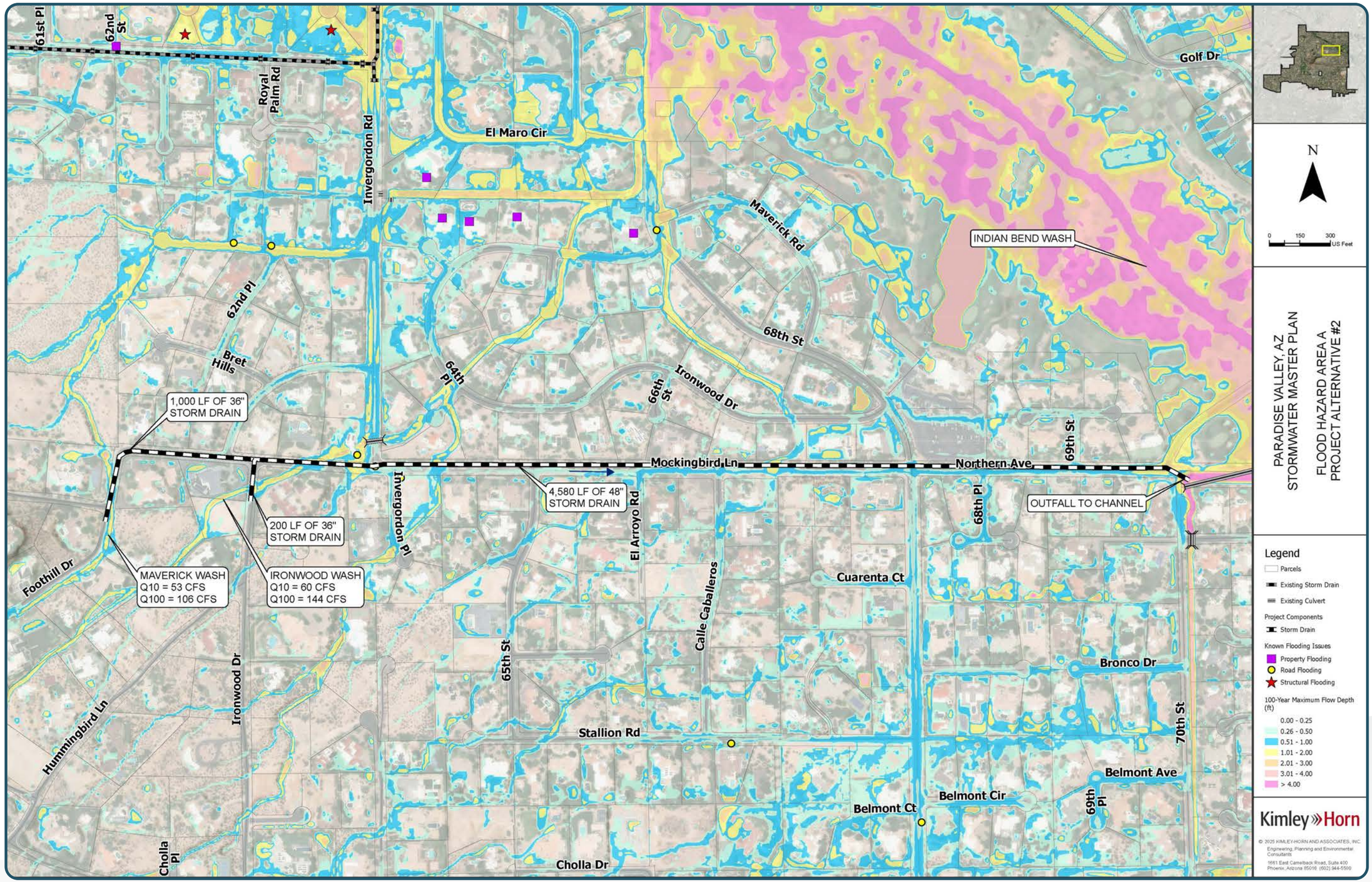
1661 East Camelback Road, Suite 400
Phoenix, Arizona 85016 (602) 944-5500



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Phoenix, Arizona 85016 (602) 944-5500

B. Flood Hazard Area C – Cheney Wash

Summary and Description

The source of flooding in this area is Cheney Wash. Runoff from the east side of Mummy Mountain flows east and parallel to Cheney Drive. Once the wash reaches Invergordon Road, there is no infrastructure to convey the discharge to an outfall. The water fans out onto the street and the adjacent neighborhood properties until it reaches Indian Bend Wash (IBW). As the water crosses Cheney Drive, a maximum water depth of 1.4 ft occurs during the 100-year storm event per the FLO-2D modeling results from this study. Town residents and staff have reported flooding issues in this area. The Lower Indian Bend Wash Area Drainage Master Study/Plan (LIBW ADMS/P) and Cheney Watershed Hazards Identification Report have also identified flood hazards in this area.

Alternative 1 (Large)

The first alternative proposed for Area C consists of storm drain to route runoff from Cheney Wash to IBW. Runoff from Cheney Wash will be intercepted by a 60" storm drain routed from Invergordon Road to 68th Street. Large inlets are proposed at Invergordon Road, as this area contains the highest concentration of discharge. A sediment basin was initially recommended for this alternative, as it would facilitate controlled discharge release. However, large capacity inlets were selected because a sediment basin would require a significant acquisition of land. A 36" lateral of storm drain along 66th Street will connect from the north to the 60" storm drain trunkline along Cheney Drive. The storm drain size increases to 78" at the intersection of Cheney Drive and 68th Street and is routed north until it reaches Northern Avenue. East along Northern Avenue, a 72" storm drain will carry flows east towards 70th Street where it then outfalls into the existing channel running parallel to the IBW. A catch basin and bubble-up structure are proposed at the 70th Street discharge location to dissipate the high discharges in the shallow channel. The design and construction cost of Alternative 1 is estimated to be **14,251,950 USD**. See **Appendix E** for a detailed cost estimate of the project.

Table 11: Alternative 1 Opportunities and Constraints

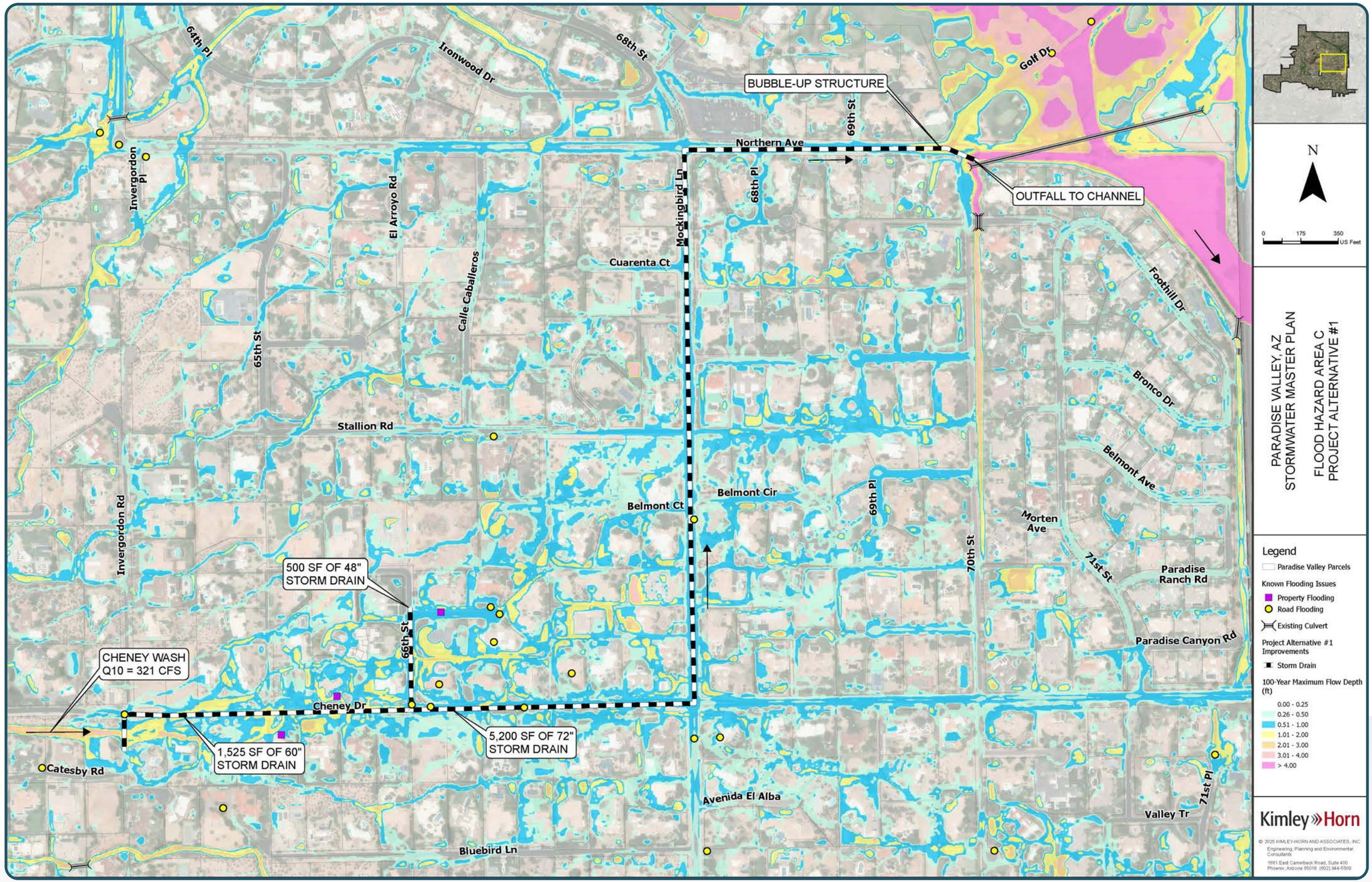
Alternative 1 Opportunities	Alternative 1 Constraints
No major land acquisition required	Utility conflicts likely
Intercepts additional flow on Northern Avenue	Cost exceeds 15 million USD
Improvements would benefit a large area of streets and structures	Potential for sediment issues at Invergordon Road that would require routine maintenance

Alternative 2 (Large, Recommended)

The second alternative proposed for this area is similar to the first alternative. The 60" storm drain begins at the same location as Alternative 1, Cheney Drive, but extends past 70th Street to the existing channel west of Scottsdale Road. Along this section of storm drain there are two laterals. As in Alternative 1, a 36" lateral is located on 66th Street. On 68th Street, a 36" lateral also extends 1,250 feet to Stallion Road. At 70th Street, the storm drain on Cheney Drive splits off towards two outfalls. 72" storm drain is directed north on 70th Street where it outfalls into the existing channel on the east side of the road. That channel continues north, ultimately outfalling to Indian Bend Wash. The second outfall is located at the existing channel on the west side of Scottsdale Road. The design and construction cost of Alternative 2 is estimated to be **11,177,860 USD**. See **Appendix E** for a detailed cost estimate of the project.

Table 12: Alternative 2 Opportunities and Constraints

Alternative 2 Opportunities	Alternative 2 Constraints
Improvements would benefit a large area of streets and structures	Potential for sediment issues at Invergordon Road that would require routine maintenance
Most cost-effective alternative	Utility conflicts likely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Ironwood Dr
68th St
Golf Dr
BUBBLE-UP STRUCTURE
69th St
Northern Ave
Invergordon Pl
El Arroyo Rd
Calle Caballeros
Mockingbird Ln
68th Pl
OUTFALL TO CHANNEL
Cuarenta Ct
Foothill Dr
65th St
Bronco Dr
Stallion Rd
Belmont Ave
Belmont Cir
Belmont Ct
69th Pl
Morten Ave
70th St
71st St
Paradise Ranch Rd
Invergordon Rd
500 SF OF 48" STORM DRAIN
66th St
Paradise Canyon Rd
CHENEY WASH Q10 = 321 CFS
Cheney Dr
1,525 SF OF 60" STORM DRAIN
5,200 SF OF 72" STORM DRAIN
Catesby Rd
Avenida El Alba
71st Pl
Valley Tr
Bluebird Ln
N
0 175 350 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
FLOOD HAZARD AREA C
PROJECT ALTERNATIVE #1
Legend
Paradise Valley Parcels
Known Flooding Issues
Property Flooding
Road Flooding
Existing Culvert
Project Alternative #1 Improvements
Storm Drain
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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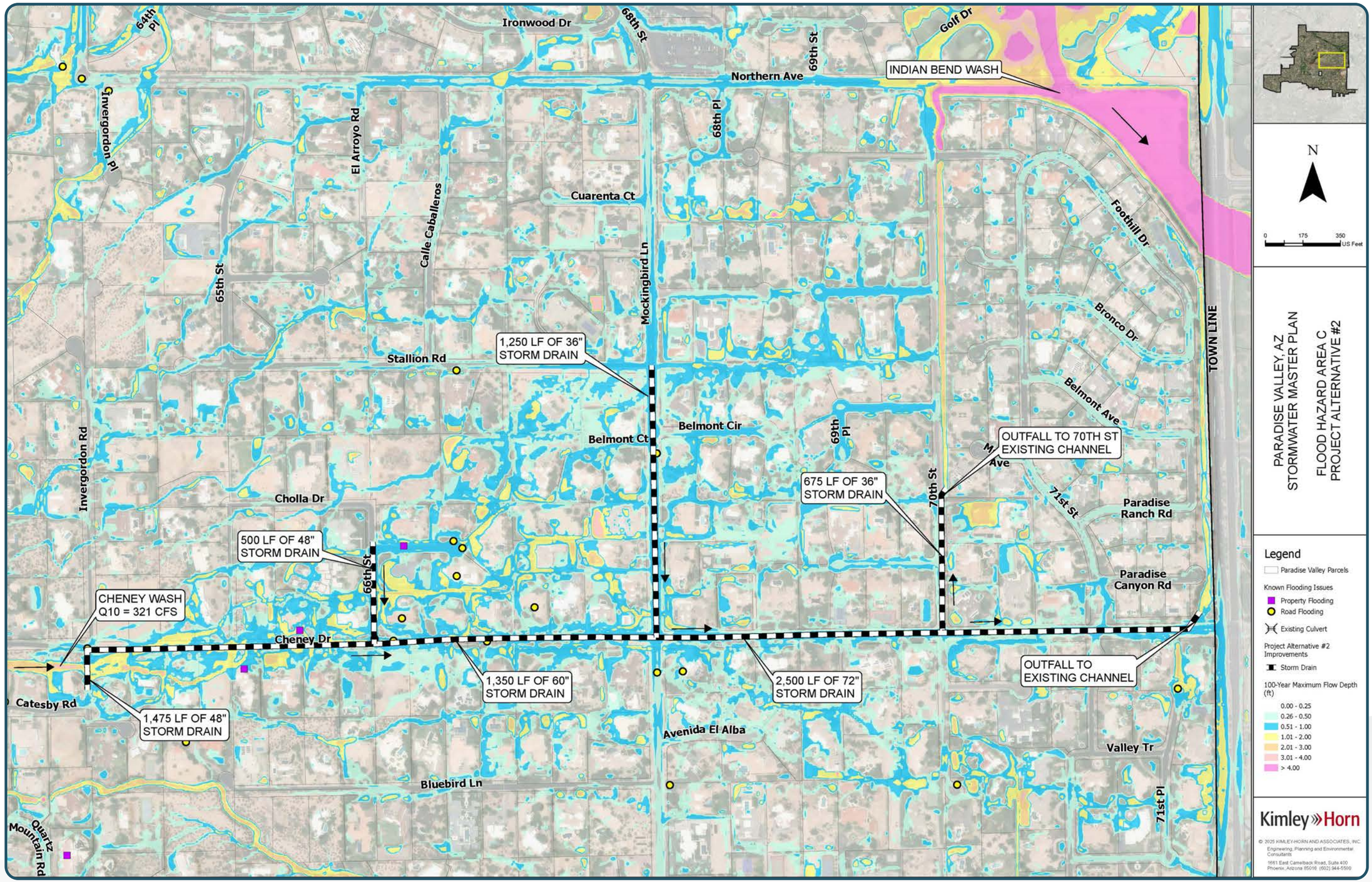
Phoenix, Arizona 85016 (602) 944-5500


Ironwood Dr
64th Pl
68th St
69th St
Golf Dr
Northern Ave
INDIAN BEND WASH
Invergordon Pl
El Arroyo Rd
Calle Caballeros
68th Pl
Cuarenta Ct
Foothill Dr
65th St
Mockingbird Ln
Bronco Dr
TOWN LINE
1,250 LF OF 36" STORM DRAIN
Stallion Rd
Belmont Ave
Belmont Cir
Belmont Ct
69th Pl
OUTFALL TO 70TH ST EXISTING CHANNEL
Invergordon Rd
675 LF OF 36" STORM DRAIN
70th St
71st St
Cholla Dr
Paradise Ranch Rd
500 LF OF 48" STORM DRAIN
66th St
Paradise Canyon Rd
CHENEY WASH Q10 = 321 CFS
Cheney Dr
OUTFALL TO EXISTING CHANNEL
1,350 LF OF 60" STORM DRAIN
2,500 LF OF 72" STORM DRAIN
Catesby Rd
1,475 LF OF 48" STORM DRAIN
Avenida El Alba
Valley Tr
Bluebird Ln
71st Pl
Quartz Mountain Rd
N
0 175 350 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
FLOOD HAZARD AREA C
PROJECT ALTERNATIVE #2
Legend
Paradise Valley Parcels
Known Flooding Issues
Property Flooding
Road Flooding
Existing Culvert
Project Alternative #2 Improvements
Storm Drain
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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C. Flood Hazard Area E – Lincoln Wash

Summary and Description

The source of flooding in this area is Lincoln Wash. The areas of interest are located north of Lincoln Drive, between 60th Street and Mockingbird Lane. The wash overtops several roads as flow moves towards Indian Bend Wash (IBW) to the east. Routine maintenance of these streets is required after major storm events. A maximum depth of 1.2 ft occurs at Invergordon Road during the 100-year storm event per FLO-2D model results from this study. The Lower Indian Bend Wash Area Drainage Master Study/Plan (LIBW ADMS/P) has also identified this area as a flooding issue.

Alternative 1 (Large)

The first alternative proposed for Area E consists of storm drain located from 60th Street to Mockingbird Lanew along Lincoln Drive. Lateral storm drains would be placed along roads north of Lincoln Drive to capture flow from Lincoln Wash. Three laterals extend north from Lincoln Drive at 60th Street, 61st Street, and Invergordon Road to intercept flows that overtop these roads. At the intersection of Lincoln Drive and Mockingbird Lane, a diversion structure splits the flow towards the two outfalls identified in this alternative. One outfall is located east of the diversion structure, where flow enters an existing 90" storm drain system along Scottsdale Road. A second outfall is located north of the diversion structure. Once the water level in the system reaches a certain height at the structure, flow will spill north to a storm drain system along Mockingbird Lane and towards the second outfall at the Ritz-Carlton Channel. The design and construction cost of Alternative 1 is estimated to be **14,912,386 USD**. See **Appendix E** for a detailed cost estimate of the project.

Table 14: Alternative 1 Opportunities and Constraints

Alternative 1 Opportunities	Alternative 1 Constraints
Partially in Scottsdale boundaries	Utility conflicts likely
Improvements would benefit a large area of streets and structures	Cost exceeds 14 million USD
	Least cost-effective alternative

Alternative 2 (Large)

The second alternative proposed for Area E is similar to Alternative 1. The storm drain along Lincoln Drive would have the same configuration as in Alternative 1 but would differ at the intersection of Mockingbird Lane and Lincoln Drive. In this alternative, storm drain will not turn north along Mockingbird Lane to outfall towards the Ritz-Carlton Channel. Rather, the storm drain turns north along Casa Blanca Drive to outfall into the Ritz-Carlton Channel parallel to Ocotillo Road. This alternative does not call for a diversion structure, and all flow would be routed along Casa Blanca Drive via storm drain to the Channel. The design and construction cost of Alternative 2 is estimated to be **9,523,912 USD**. See **Appendix E** for a detailed cost estimate of the project.

Table 15: Alternative 2 Opportunities and Constraints

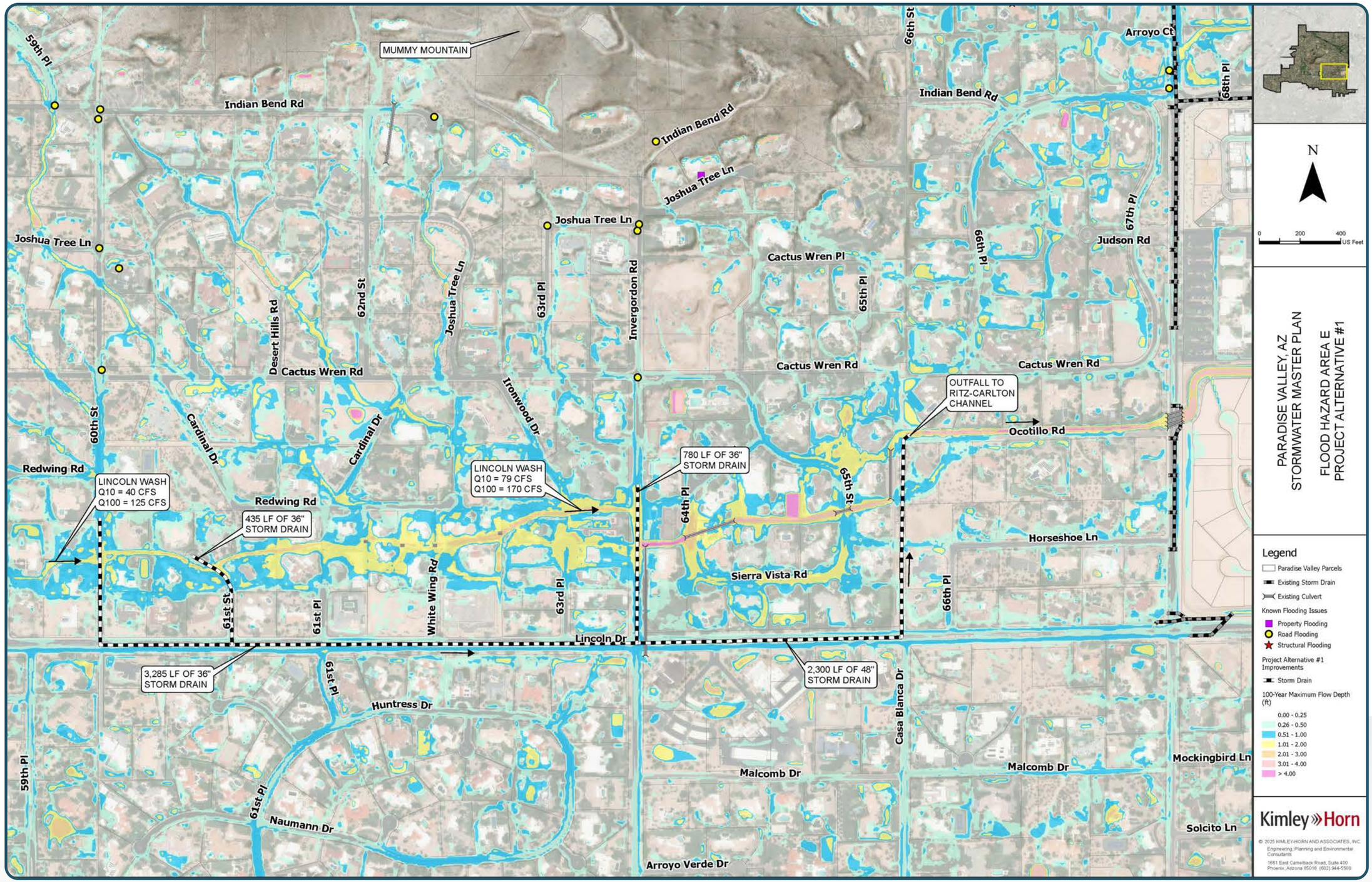
Alternative 2 Opportunities	Alternative 2 Constraints
Improvements would benefit a large area of streets and structures	Cost analysis exceeds 9 million USD
Fully within the Town's boundaries as compared to Alternative 1	Utility conflicts likely
More cost-effective alternative compared to Alternative 1	

Alternative 3 (Medium/Large, Recommended)

The third alternative proposed for Area E is different from Alternatives 1 & 2, because it focuses on utilizing Green Stormwater Infrastructure (GSI) rather than storm drain. North of Lincoln Drive, all sections of neighborhood pavement that are inundated by at least half a foot of water in the 100-year storm event would be replaced with permeable pavement. Therefore, as the wash overtops roads, water will naturally seep into the pavement, reducing the volume of runoff. Periodic vacuum sweep maintenance is necessary to improve infiltration rates, although less maintenance is required for cracks and potholes in comparison to traditional pavements (NPDES, 2021). The lifespan of permeable pavement is on par with that of traditional pavements and can serve as a durable, low-maintenance alternative to conventional impermeable pavements. The design and construction cost of Alternative 2 is estimated to be **1,358,798 USD**. See **Appendix E** for a detailed cost estimate of the project.

Table 16: Alternative 3 Opportunities and Constraints

Alternative 3 Opportunities	Alternative 3 Constraints
Improvements would benefit a large area of streets and structures	May not be as effective
Most cost-effective alternative	Requires specialized maintenance
Utilizes GSI	


MUMMY MOUNTAIN
59th Pl
Indian Bend Rd
Joshua Tree Ln
Desert Hills Rd
62nd St
Cactus Wren Rd
Joshua Tree Ln
63rd Pl
Invergordon Rd
Ironwood Dr
Cardinal Dr
60th St
Redwing Rd
LINCOLN WASH
Q10 = 40 CFS
Q100 = 125 CFS
435 LF OF 36" STORM DRAIN
LINCOLN WASH
Q10 = 79 CFS
Q100 = 170 CFS
780 LF OF 36" STORM DRAIN
61st St
61st Pl
White Wing Rd
64th Pl
65th St
Lincoln Dr
3,285 LF OF 36" STORM DRAIN
2,300 LF OF 48" STORM DRAIN
Huntress Dr
Naumann Dr
Arroyo Verde Dr
66th St
Arroyo Ct
68th Pl
Indian Bend Rd
67th Pl
66th Pl
Judson Rd
Cactus Wren Pl
65th Pl
Cactus Wren Rd
OUTFALL TO RITZ-CARLTON CHANNEL
Ocotillo Rd
Horseshoe Ln
Sierra Vista Rd
66th Pl
Casa Blanca Dr
Malcomb Dr
Mockingbird Ln
Solcito Ln
N
0 200 400 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
FLOOD HAZARD AREA E
PROJECT ALTERNATIVE #1
Legend
Paradise Valley Parcels
Existing Storm Drain
Existing Culvert
Known Flooding Issues
Property Flooding
Road Flooding
Structural Flooding
Project Alternative #1 Improvements
Storm Drain
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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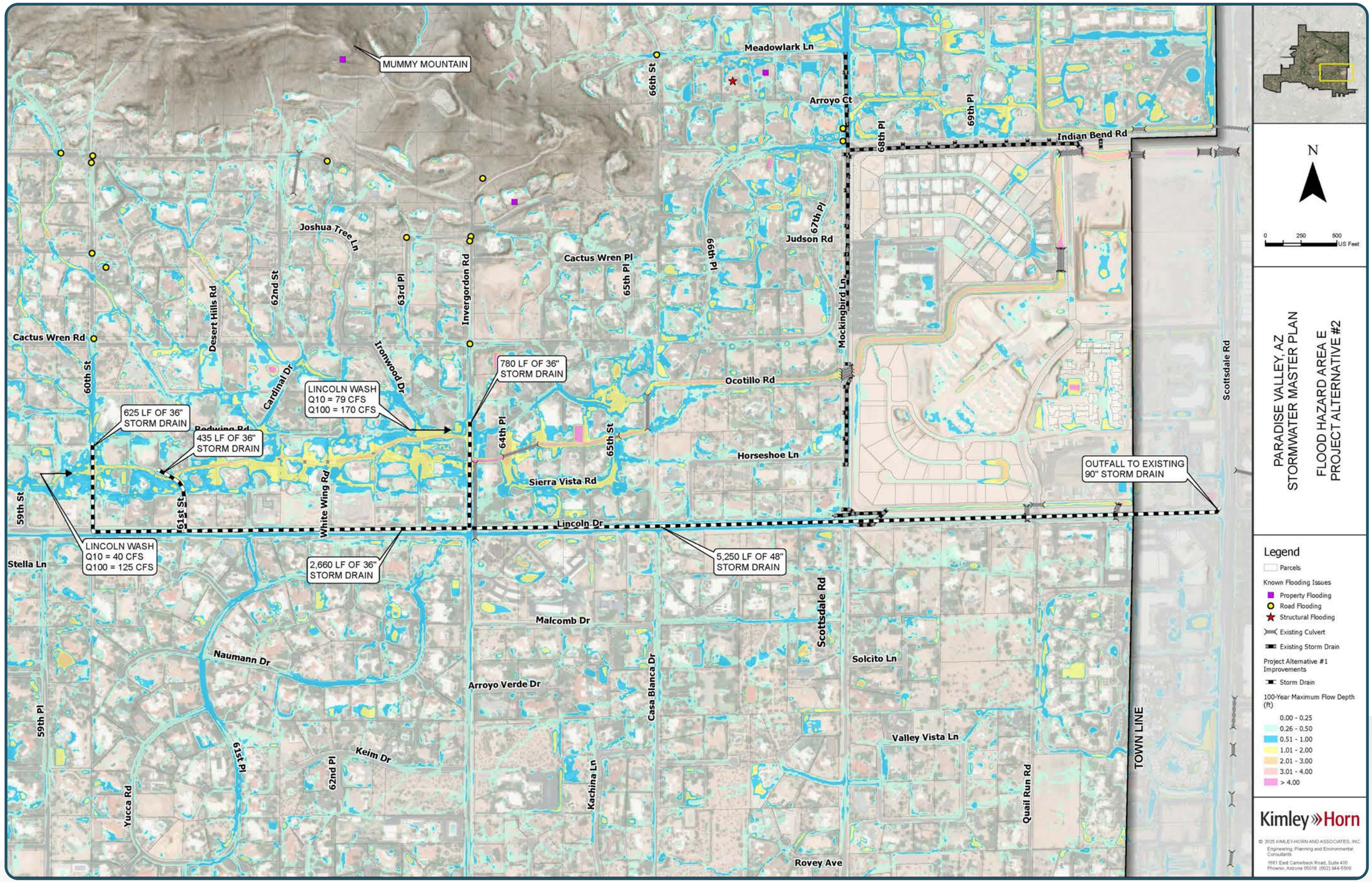
MUMMY MOUNTAIN
Meadowlark Ln
66th St
Arroyo Ct
68th Pl
69th Pl
Indian Bend Rd
Joshua Tree Ln
Desert Hills Rd
62nd St
63rd Pl
Invergordon Rd
Cactus Wren Pl
65th Pl
66th Pl
67th Pl
Judson Rd
Mockingbird Ln
Scottsdale Rd
Cactus Wren Rd
60th St
Cardinal Dr
Ironwood Dr
780 LF OF 36" STORM DRAIN
LINCOLN WASH Q10 = 79 CFS Q100 = 170 CFS
Ocotillo Rd
625 LF OF 36" STORM DRAIN
Redwing Rd
435 LF OF 36" STORM DRAIN
64th Pl
65th St
Horseshoe Ln
Sierra Vista Rd
OUTFALL TO EXISTING 90" STORM DRAIN
59th St
61st St
White Wing Rd
Lincoln Dr
LINCOLN WASH Q10 = 40 CFS Q100 = 125 CFS
2,660 LF OF 36" STORM DRAIN
5,250 LF OF 48" STORM DRAIN
Stella Ln
Malcomb Dr
Naumann Dr
Arroyo Verde Dr
Casa Blanca Dr
Solcito Ln
Valley Vista Ln
59th Pl
61st Pl
62nd Pl
Keim Dr
Yucca Rd
Kachina Ln
Quail Run Rd
TOWN LINE
Rovey Ave
N
0 250 500 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
FLOOD HAZARD AREA E
PROJECT ALTERNATIVE #2
Legend
Parcels
Known Flooding Issues
Property Flooding
Road Flooding
Structural Flooding
Existing Culvert
Existing Storm Drain
Project Alternative #1 Improvements
Storm Drain
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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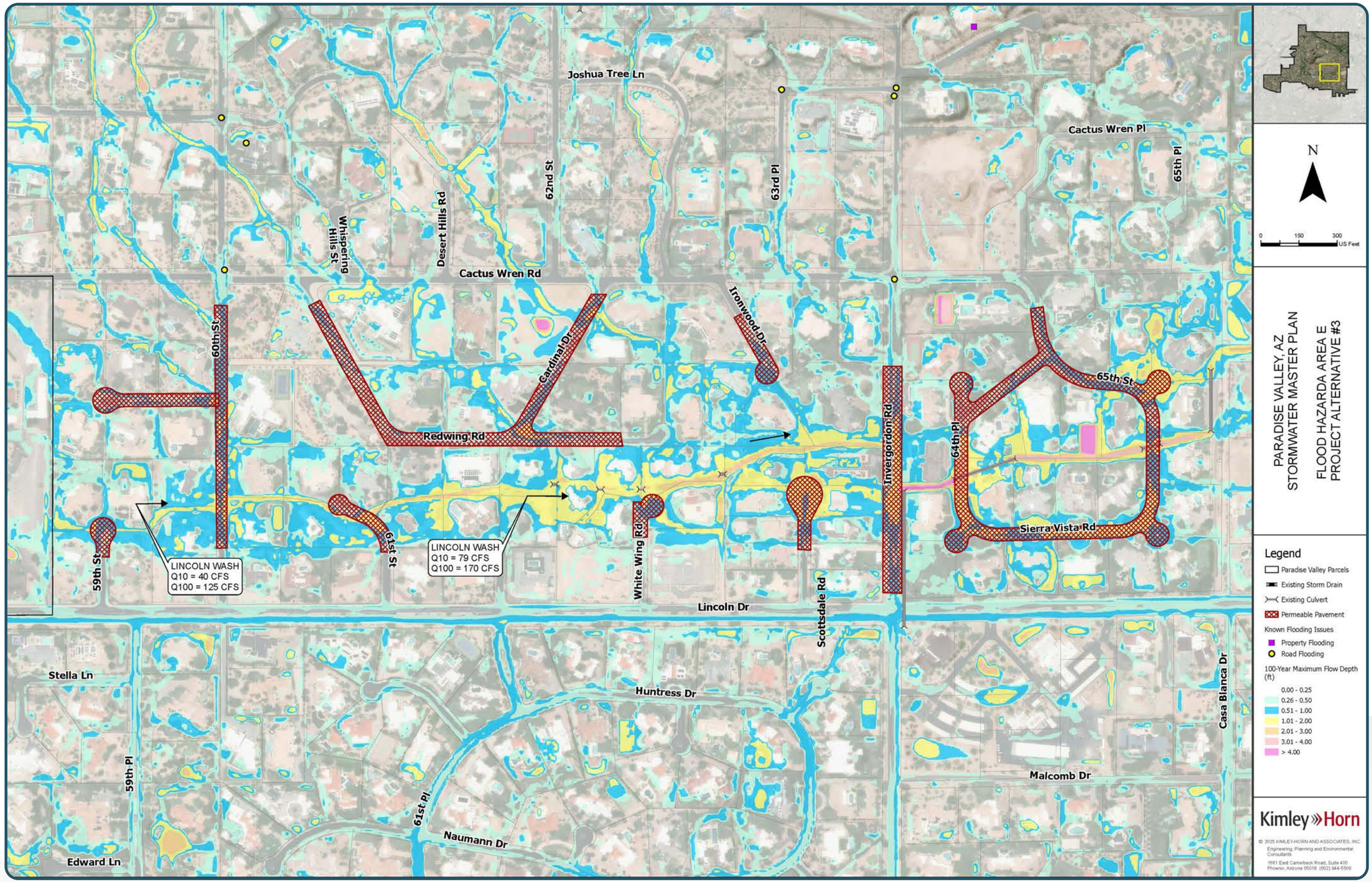
Joshua Tree Ln
Cactus Wren Pl
65th Pl
62nd St
63rd Pl
Desert Hills Rd
Whispering Hills St
Cactus Wren Rd
60th St
Gardinal Dr
Ironwood Dr
65th St
Redwing Rd
Invergordon Rd
64th Pl
Sierra Vista Rd
LINCOLN WASH
Q10 = 40 CFS
Q100 = 125 CFS
61st St
LINCOLN WASH
Q10 = 79 CFS
Q100 = 170 CFS
White Wing Rd
59th St
Lincoln Dr
Scottsdale Rd
Stella Ln
Huntress Dr
Casa Blanca Dr
59th Pl
61st Pl
Malcomb Dr
Naumann Dr
Edward Ln
N
0 150 300
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
FLOOD HAZARDA AREA E
PROJECT ALTERNATIVE #3
Legend
Paradise Valley Parcels
Existing Storm Drain
Existing Culvert
Permeable Pavement
Known Flooding Issues
Property Flooding
Road Flooding
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
Kimley»Horn
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D. Flood Hazard Area H – 40th Street and Stanford Drive

Summary Description

The source of flooding in this area is Cudia City Wash (CCW). The existing low water crossing at 40th Street is consistently inundated during storm events, with a maximum depth of approximately 5 ft during the 100-year storm event. The roadway flooding leads to road closures that significantly disrupt traffic and impact emergency vehicle access. The crossing poses a hazard to passenger vehicles with at least one vehicle having been swept off the road and into the bollards downstream of 40th Street in a past storm event. The bollards on the downstream side of the crossing build up significant debris after storms and require routine maintenance. The existing curb inlet at Stanford Drive is also a flooding issue. The capacity of the inlet is limited and leads to ponding on the road. Town residents and staff have reported flooding issues in this area. The CCW Area Drainage Master Study/Plan (ADMS/P) and the CCW Design Concept Report (DCR) have also documented this flood hazard. Alternatives 2 and 3 have been studied in detail and proposed as part of the CCW DCR.

Alternative 1 (Medium)

The first project alternative consists of improvements to existing roadway drainage infrastructure. The existing combination curb and grate inlet at Stanford Drive lacks the capacity required to alleviate roadway ponding. This alternative proposes removing this inlet and replacing the outlet with a 36" pipe to allow for larger draining capacity. The existing inlet is a combination curb opening and grate type and sediment often clogs the opening of the grate. It is recommended that the grate inlet be replaced with a larger curb and gutter type inlet. Bollards at the 40th Street crossing would be removed and replaced with safety rails that will continue to prevent cars from entering the wash, while allowing sediment and debris to pass. The implementation of a safety rail will reduce the need for maintenance after storms. For public safety, it is also recommended that a "Do Not Enter When Flooded" warning sign be placed on the north side of the wash, as there is currently only a sign on the south side of the wash. A staff gage is proposed to be placed along the wash to further discourage passenger vehicles and pedestrians from attempting to cross during storms. The design and construction cost of Alternative 1 is estimated to be 68,232 USD. See **Appendix E** for a detailed cost estimate of the project.

Table 17: Alternative 1 Opportunities and Constraints

Alternative 1 Opportunities	Alternative 1 Constraints
Improves existing roadway drainage infrastructure	The level of flood mitigation is limited in comparison to Alternative 2 &3
Improvements would reduce sedimentation on 40th Street	
Least expensive alternative	

Alternative 2 (Medium, Recommended)

This project alternative involves modifying the curb inlet at Stanford Drive, improving the inlet capacity for the culvert crossing under Stanford Drive, and installing a flood control basin on the corner of Stanford Drive and 40th Street. Alternative 2 consists of all items proposed in Alternative 1 including warning signs and safety railing on 40th Street, as well as inlet modifications on Stanford Drive. In tandem with the aforementioned improvements, an offline flood control basin on the northwest corner of Standard Drive and 40th Street is also proposed. A diversion weir is proposed to facilitate overtopping into the basin once water surface elevations exceed a desired height. A 48" drain pipe on the southeast corner of the basin will release stormwater back into Cudia City Wash north of Stanford Drive. The FCDMC owns this parcel of land, so land acquisition would not be required. The design and construction cost of Alternative 2 is estimated to be 880,650 USD. See **Appendix E** for a detailed cost estimate of the project.

Table 18: Alternative 2 Opportunities and Constraints

Alternative 2 Opportunities	Alternative 2 Constraints
Improvements would improve flood conditions for Stanford Drive and 40th Street	Maintenance of the flood control basin may be required after every major storm event
Basin area owned by FCDMC	
This alternative may qualify for the Small Project Assistance Program (SPAP) grant	

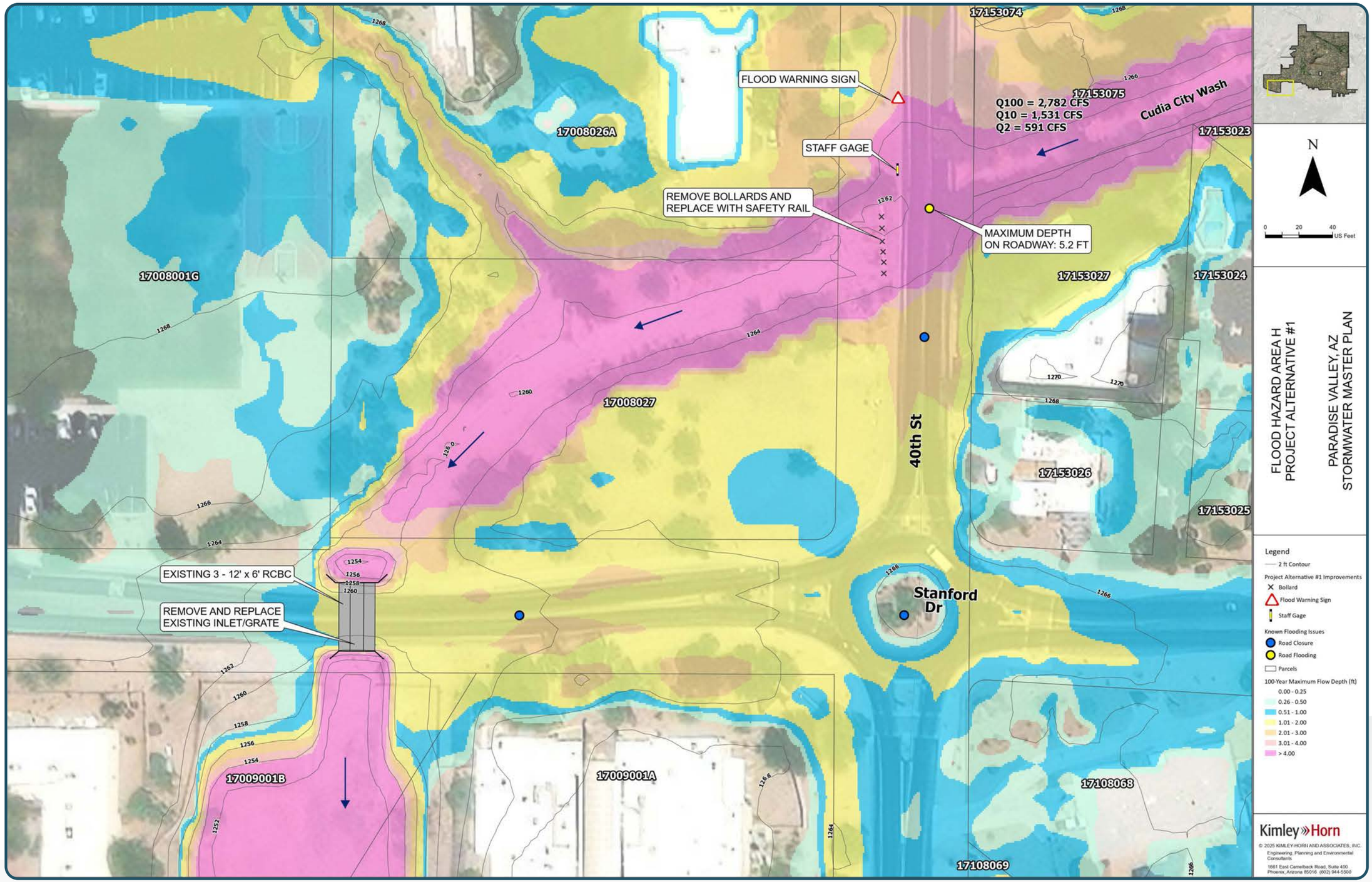
Alternative 3 (Large)

Alternative 3 proposes the replacement of the low water crossing at 40th Street with a concrete box culvert to convey Cudia City Wash under the road. Analysis

cited in the CCW DCR determined the optimal culvert configuration under 40th Street to be a six barrel 12' x 4' reinforced concrete box culvert. This configuration is wider than the channel bottom and would only partially convey the 100-year storm discharge. This culvert design would effectively convey the 25-year storm. The City of Phoenix's drainage standards require box culverts to have a height of 6 feet due to maintenance considerations. A six barrel 12' x 6' configuration would be required, with two feet of the barrels being buried below the channel invert. Roadwork at 40th Street would be required for this configuration to raise the road. This alternative also proposes modifying the inlet on Stanford Drive (as in Alternative 1) to reduce roadway flooding. The design and construction cost of Alternative 3 is estimated to be 2,240,419 USD. See **Appendix E** for a detailed cost estimate of the project.

Table 19: Alternative 3 Opportunities and Constraints

Alternative 3 Opportunities	Alternative 3 Constraints
Improvements would improve flood conditions for Standford Drive and 40th Street	The culvert can only convey the 25-year storm event and Stanford Drive flooding may still occur
40th Street would no longer need to be closed during storm events	Backwater effects would cause a rise in water surface elevation for the 100-year storm event upstream and east of 40th Street


FLOOD WARNING SIGN
STAFF GAGE
REMOVE BOLLARDS AND REPLACE WITH SAFETY RAIL
MAXIMUM DEPTH ON ROADWAY: 5.2 FT
EXISTING 3 - 12' x 6' RCBC
REMOVE AND REPLACE EXISTING INLET/GRATE
Q100 = 2,782 CFS
Q10 = 1,531 CFS
Q2 = 591 CFS
Cudia City Wash
40th St
Stanford Dr
17153074
17153075
17153023
17153027
17153024
17153026
17153025
17008026A
17008001G
17008027
17009001B
17009001A
17108068
17108069
N
0 20 40 US Feet
FLOOD HAZARD AREA H
PROJECT ALTERNATIVE #1
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
Legend
2 ft Contour
Project Alternative #1 Improvements
Bollard
Flood Warning Sign
Staff Gage
Known Flooding Issues
Road Closure
Road Flooding
Parcels
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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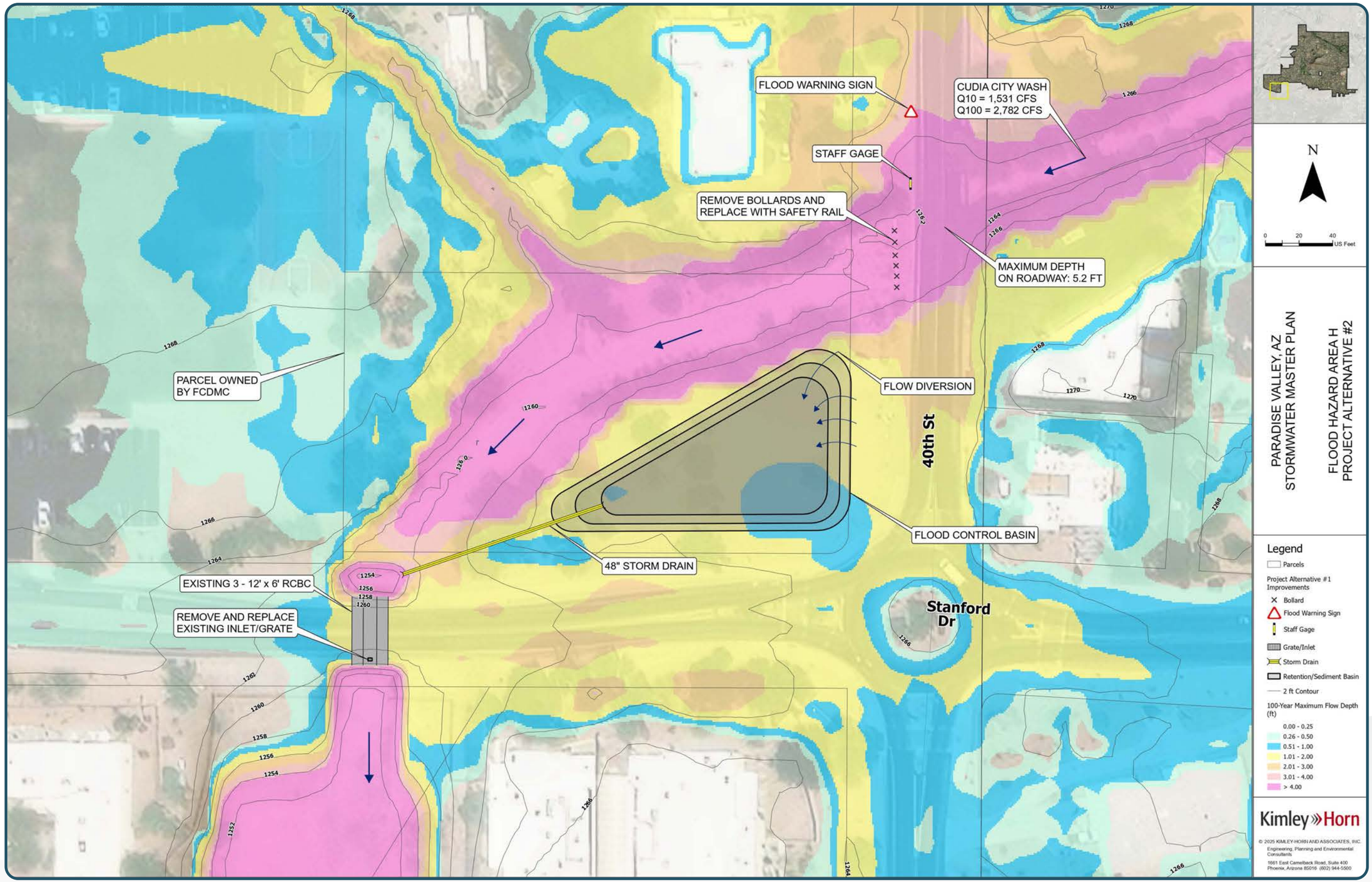
FLOOD WARNING SIGN
CUDIA CITY WASH
Q10 = 1,531 CFS
Q100 = 2,782 CFS
STAFF GAGE
REMOVE BOLLARDS AND
REPLACE WITH SAFETY RAIL
MAXIMUM DEPTH
ON ROADWAY: 5.2 FT
PARCEL OWNED
BY FCDMC
FLOW DIVERSION
40th St
48" STORM DRAIN
FLOOD CONTROL BASIN
EXISTING 3 - 12' x 6' RCBC
REMOVE AND REPLACE
EXISTING INLET/GRATE
Stanford
Dr
N
0 20 40
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
FLOOD HAZARD AREA H
PROJECT ALTERNATIVE #2
Legend
Parcels
Project Alternative #1
Improvements
Bollard
Flood Warning Sign
Staff Gage
Grate/Inlet
Storm Drain
Retention/Sediment Basin
2 ft Contour
100-Year Maximum Flow Depth
(ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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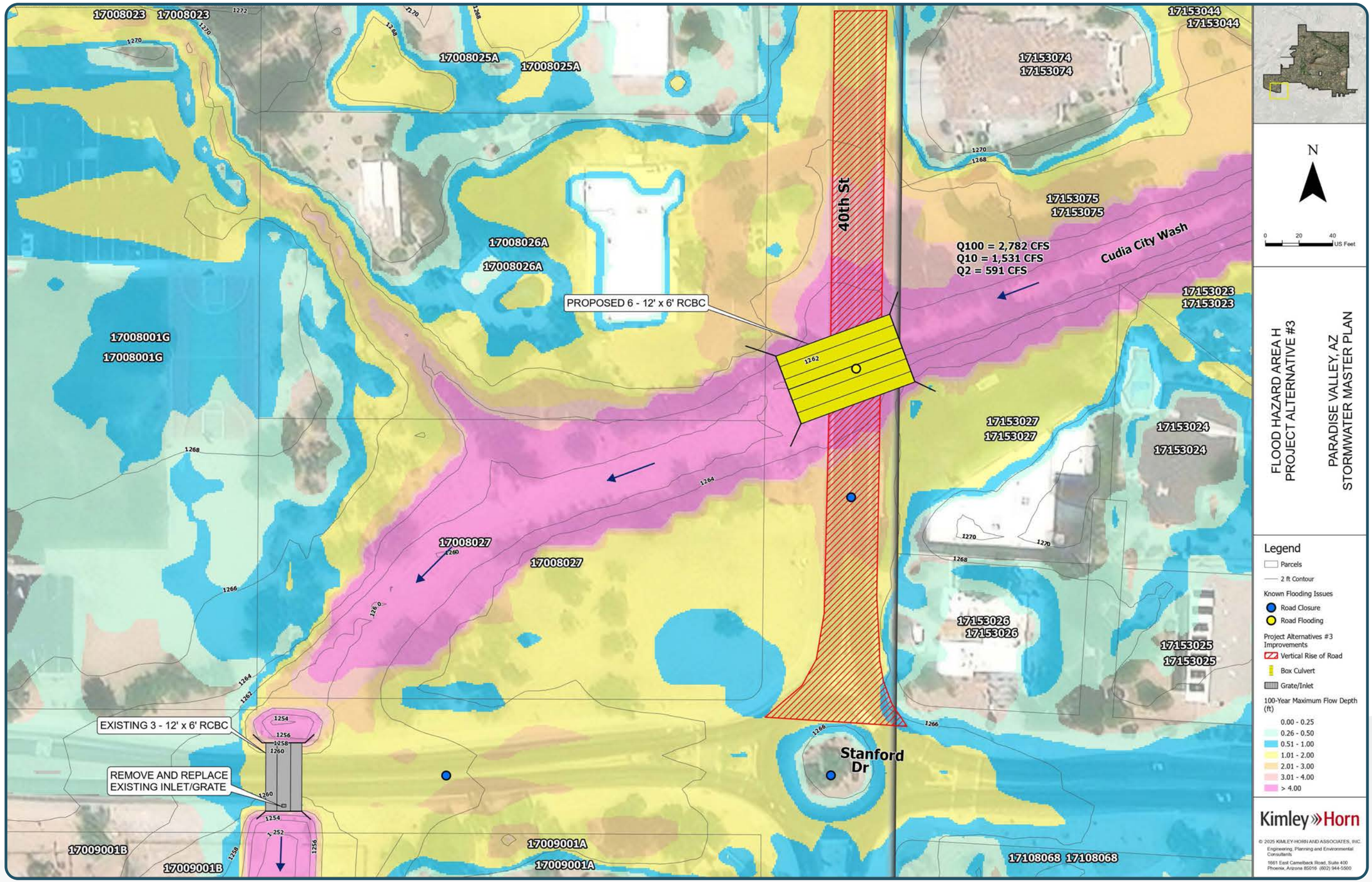
17008023
17008023
17008025A
17008025A
17008026A
17008026A
17008001G
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17008027
17008027
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17009001B
17009001A
17009001A
17153044
17153044
17153074
17153074
17153075
17153075
17153023
17153023
17153027
17153027
17153024
17153024
17153026
17153026
17153025
17153025
17108068
17108068
40th St
Cudia City Wash
Stanford Dr
PROPOSED 6 - 12' x 6' RCBC
EXISTING 3 - 12' x 6' RCBC
REMOVE AND REPLACE EXISTING INLET/GRATE
Q100 = 2,782 CFS
Q10 = 1,531 CFS
Q2 = 591 CFS
N
0 20 40 US Feet
FLOOD HAZARD AREA H
PROJECT ALTERNATIVE #3
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
Legend
Parcels
2 ft Contour
Known Flooding Issues
Road Closure
Road Flooding
Project Alternatives #3 Improvements
Vertical Rise of Road
Box Culvert
Grate/Inlet
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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E. Flood Hazard Area K – Mountain View Road

Summary and Description

The source of flooding in this area is runoff from the east side of the Phoenix Mountain Preserve. Runoff flows east past Tatum Boulevard and breaks out into the neighborhood on the east side of Tatum Boulevard, resulting in flood hazards to roads and private parcels. This occurs both at Mountain View Road and Doubletree Ranch Road. Existing storm drain along Doubletree Ranch Road mitigates flooding, while Mountain View Road lacks the required infrastructure to alleviate flooding issues. In particular, Turquoise Avenue is subject to water depths of up to 2.4 feet during the 100-year storm per FLO-2D modeling results from this study, posing a potential hazard to passenger vehicles and residents. The area has been identified by Town staff and residents as a flood hazard to the road, property, and homes.

Alternative 1 (Large)

Alternative 1 consists of the construction of a storm drain system to reduce flooding on local and collector roads. The storm drain begins on Tatum Blvd and is routed east on Mountain View Road to ultimately outfall to IBW. Additional laterals would extend north along 50th Street and 51st Place, and south along 53rd Place. The likely storm drain sizes would be 36", 48", and 60" RCP, increasing progressively in size. The design and construction cost of Alternative 1 is estimated to be **7,472,758 USD**. See **Appendix E** for a detailed cost estimate of the project.

Table 20: Alternative 1 Opportunities and Constraints

Alternative 1 Opportunities	Alternative 1 Constraints
Large area of flood mitigation	Utility conflicts likely
Improvements reduce flood hazards to roads and passenger vehicles	More expensive alternative
	Major traffic disruptions to Tatum Boulevard and Mountain View Road

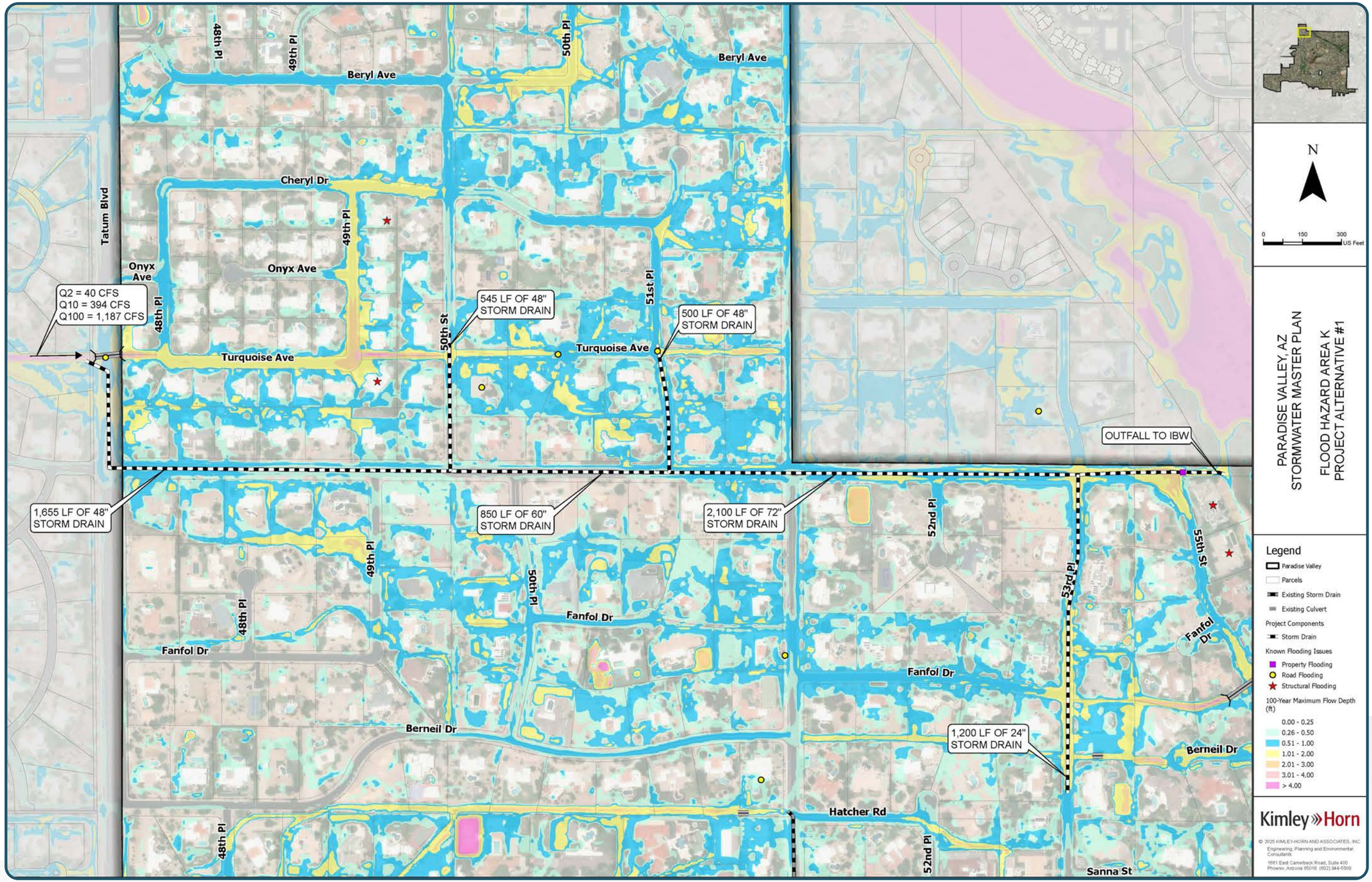
Alternative 2 (Large, Recommended)

The second proposed alternative for Area K is the implementation of a detention or retention basin prior to the channel breakout on the upstream side of Tatum Boulevard. The basin is proposed on parcel 168-15-128 and is owned by Rancho Alta Vida Homeowners Association. This parcel is upstream of the channel breakout on Tatum Boulevard and would assist in reducing discharge through the existing culvert on Tatum Boulevard. The design and construction cost of Alternative 2 is estimated to be **2,192,073 USD**. See **Appendix E** for a detailed cost estimate of the project.

Table 21: Alternative 2 Opportunities and Constraints

Alternative 2 Opportunities	Alternative 2 Constraints
Most cost-effective alternative	Requires easement from the homeowner's association
Reduces discharge at Tatum Boulevard	Outside of Paradise Valley boundaries

*The recommended alternative may not be feasible due to the property constraints. It is recommended because of effectiveness and cost. Further evaluation may be required before advancing to a design concept or design phase.


48th Pl
49th Pl
Beryl Ave
50th Pl
Beryl Ave
Cheryl Dr
Tatum Blvd
Onyx Ave
Onyx Ave
49th Pl
48th Pl
Q2 = 40 CFS
Q10 = 394 CFS
Q100 = 1,187 CFS
50th St
545 LF OF 48" STORM DRAIN
51st Pl
500 LF OF 48" STORM DRAIN
Turquoise Ave
Turquoise Ave
OUTFALL TO IBW
1,655 LF OF 48" STORM DRAIN
850 LF OF 60" STORM DRAIN
2,100 LF OF 72" STORM DRAIN
52nd Pl
55th St
53rd Pl
49th Pl
48th Pl
50th Pl
Fanfol Dr
Fanfol Dr
Fanfol Dr
Fanfol Dr
Berneil Dr
1,200 LF OF 24" STORM DRAIN
Berneil Dr
Hatcher Rd
48th Pl
52nd Pl
Sanna St
N
0
150
300
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
FLOOD HAZARD AREA K
PROJECT ALTERNATIVE #1
Legend
Paradise Valley
Parcels
Existing Storm Drain
Existing Culvert
Project Components
Storm Drain
Known Flooding Issues
Property Flooding
Road Flooding
Structural Flooding
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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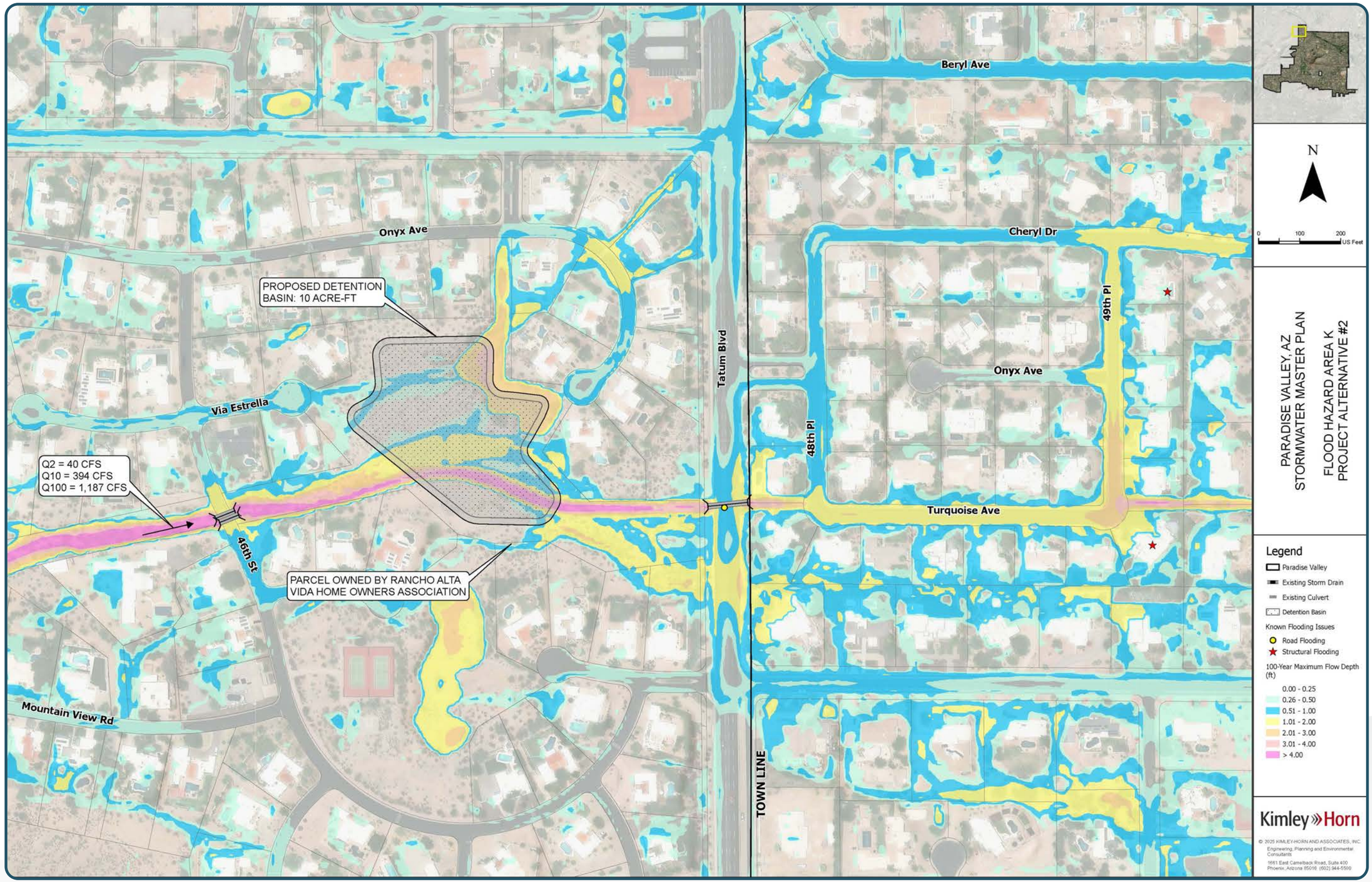
PROPOSED DETENTION
BASIN: 10 ACRE-FT
Q2 = 40 CFS
Q10 = 394 CFS
Q100 = 1,187 CFS
PARCEL OWNED BY RANCHO ALTA
VIDA HOME OWNERS ASSOCIATION
Onyx Ave
Via Estrella
Mountain View Rd
46th St
Tatum Blvd
TOWN LINE
Beryl Ave
Cheryl Dr
Onyx Ave
Turquoise Ave
48th Pl
49th Pl
N
0
100
200
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
FLOOD HAZARD AREA K
PROJECT ALTERNATIVE #2
Legend
Paradise Valley
Existing Storm Drain
Existing Culvert
Detention Basin
Known Flooding Issues
Road Flooding
Structural Flooding
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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F. Flood Hazard Area L – Upstream Cherokee Wash

Summary and Description

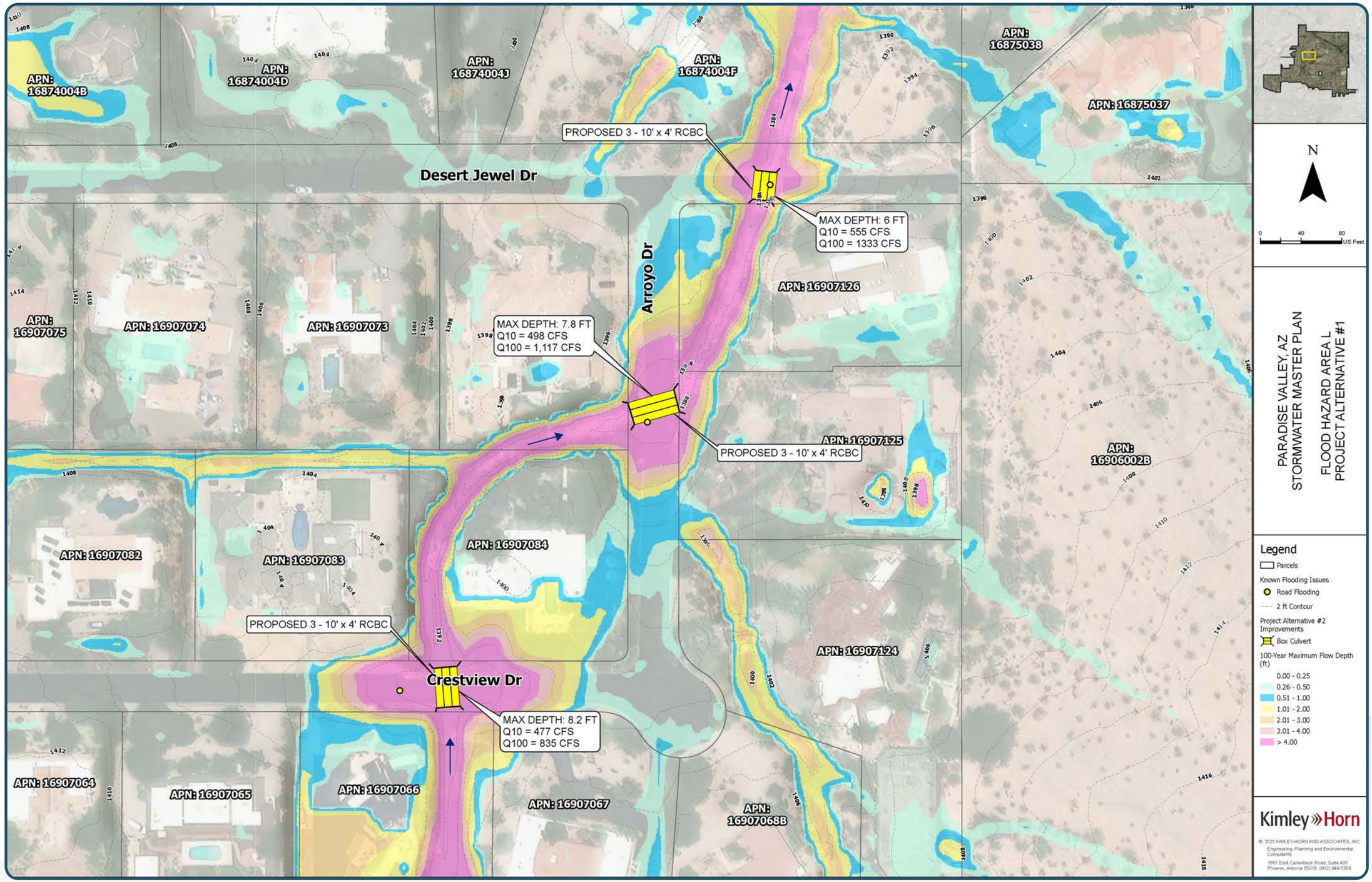
The source of flooding in Area L is runoff from the west side of Mummy Mountain and from the east of the Phoenix Mountain Preserve. This area is the collection point of discharges that contribute to the beginning of Cherokee Wash. The wash is routed through private parcels and crosses several roads over existing low water crossings in multiple areas. These crossings are undersized resulting in the deposition of sediment and debris that requires maintenance after each storm event. The maximum water depth at road crossings during the 100-year storm in this area is 8.2 feet per FLO-2D modeling results, affecting emergency vehicle access and posing a safety risk to residents and property. Area L has been identified as an issue in the Identified Drainage Problem Areas Technical Memorandum (Michael Baker, 2019). It has also been identified by Town staff and residents as a flood prone area who live adjacent to Cherokee Wash.

Alternative 1 & 2 (Large/Medium, Both Recommended Depending on the Desired Level of Protection)

The alternatives proposed for Area L consist of the replacement of low water crossings with culverts to convey Cherokee Wash under three roads. There are three low water crossings that would be replaced: crossings at Crestview Drive, Arroyo Drive, and Desert Jewel Drive. Alternative 1 proposes that at each crossing, a three barrel 10' by 4' reinforced concrete box culvert would be constructed. This culvert configuration would provide the necessary capacity for the 50-year storm event. Alternative 2 proposes the same improvements as Alternative 1, only varying in the configuration size of the culvert to a two barrel 10' by 4' culvert, providing 10-year storm event protection. In both alternatives, road improvements would be required to accommodate the culvert size. The design and construction cost of Alternative 1 and 2 is estimated to be **1,467,265 USD** and **1,163,369 USD**, respectively. See **Appendix E** for a detailed cost estimate of the project.

Table 22: Alternative 1&2 Opportunities and Constraints

Alternative 1 & 2 Opportunities	Alternative 1 & 2 Constraints
Reduces safety hazards to residents, passenger vehicles, and emergency vehicles	Construction would be disruptive for residents
Protects existing flow path of Cherokee Wash	Small overall area of mitigation impact
Reduces maintenance issues due to sediment deposition	


PROPOSED 3 - 10' x 4' RCBC
MAX DEPTH: 6 FT
Q10 = 555 CFS
Q100 = 1333 CFS
Desert Jewel Dr
Arroyo Dr
MAX DEPTH: 7.8 FT
Q10 = 498 CFS
Q100 = 1,117 CFS
PROPOSED 3 - 10' x 4' RCBC
PROPOSED 3 - 10' x 4' RCBC
Crestview Dr
MAX DEPTH: 8.2 FT
Q10 = 477 CFS
Q100 = 835 CFS
APN: 16874004B
APN: 16874004D
APN: 16874004J
APN: 16874004F
APN: 16875038
APN: 16875037
APN: 16907126
APN: 16907075
APN: 16907074
APN: 16907073
APN: 16907125
APN: 16906002B
APN: 16907082
APN: 16907083
APN: 16907084
APN: 16907124
APN: 16907064
APN: 16907065
APN: 16907066
APN: 16907067
APN: 16907068B
N
0 40 80 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
FLOOD HAZARD AREA L
PROJECT ALTERNATIVE #1
Legend
Parcels
Known Flooding Issues
Road Flooding
2 ft Contour
Project Alternative #2 Improvements
Box Culvert
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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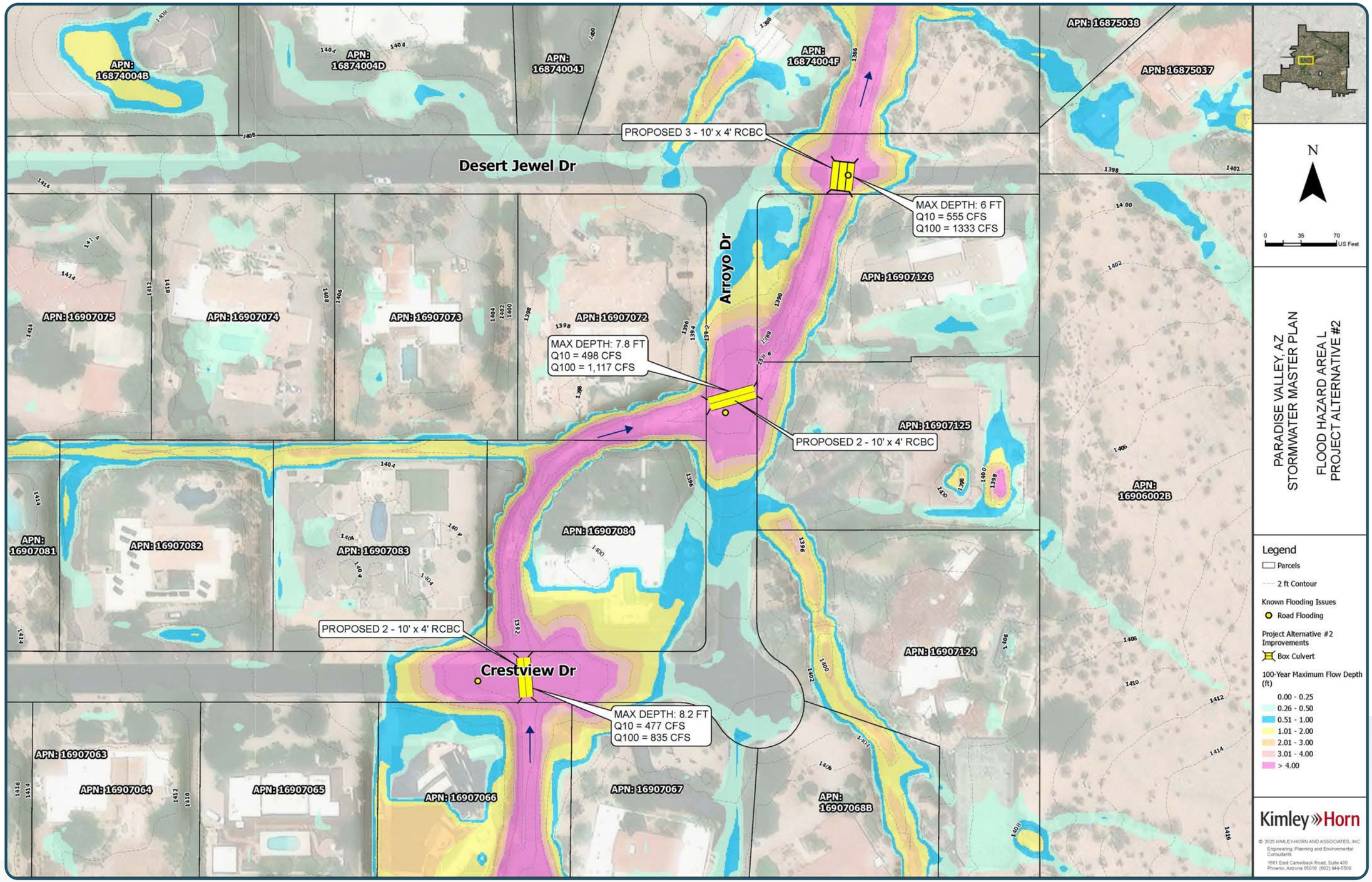
APN: 16874004B
APN: 16874004D
APN: 16874004J
APN: 16874004F
APN: 16875038
APN: 16875037
Desert Jewel Dr
PROPOSED 3 - 10' x 4' RCBC
MAX DEPTH: 6 FT
Q10 = 555 CFS
Q100 = 1333 CFS
Arroyo Dr
APN: 16907126
APN: 16907075
APN: 16907074
APN: 16907073
APN: 16907072
MAX DEPTH: 7.8 FT
Q10 = 498 CFS
Q100 = 1,117 CFS
APN: 16907125
PROPOSED 2 - 10' x 4' RCBC
APN: 16906002B
APN: 16907081
APN: 16907082
APN: 16907083
APN: 16907084
PROPOSED 2 - 10' x 4' RCBC
Crestview Dr
APN: 16907124
MAX DEPTH: 8.2 FT
Q10 = 477 CFS
Q100 = 835 CFS
APN: 16907063
APN: 16907064
APN: 16907065
APN: 16907066
APN: 16907067
APN: 16907068B
N
0 35 70 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
FLOOD HAZARD AREA L
PROJECT ALTERNATIVE #2
Legend
Parcels
2 ft Contour
Known Flooding Issues
Road Flooding
Project Alternative #2 Improvements
Box Culvert
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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G. Flood Hazard Area N – Downstream Cherokee Wash

Summary and Description

The source of flooding in Area N is Cherokee Wash. Runoff from Mummy Mountain and the Phoenix Mountain Preserve contribute to Cherokee Wash. The wash flows northeast, turning east and at 56th Street ultimately outfalling IBW. The wash is routed through private parcels and crosses several roads. During large storm events, Cherokee Wash does not have the full capacity required to contain flows, thereby resulting in road overtopping and property flooding. The low water crossings at 58th Place, 59th Place, Morning Glory Road, and 61st Place are inundated during storms, resulting in flooding hazards to residents and passenger vehicles. In particular, the crossing at Morning Glory Road is subject to water depths of up to 5.3 feet during the 100-year storm per FLO-2D modeling results from this study, posing a potential hazard for emergency vehicle access. Area N potential flooding conditions have been modeled in the Middle Indian Bend Wash Area Drainage Master Study/Plan (MIBW ADMS/P) (Gavin & Barker, 2017) and the Lower Indian Bend Wash Area Drainage Master Study/Plan (LIBW ADMS/P) (Kimley-Horn, 2019). The area has also been identified by Town staff and residents as a flooding hazard to the road, property, and homes.

Alternative 1 (Large, Recommended)

The first alternative proposed for this area is the construction of multiple reinforced concrete box culverts where Cherokee Wash over tops roads coupled with corresponding channel improvements. Low water crossings at 58th Place, 59th Place, Morning Glory Road, and 61st Place would be replaced with four barrel 10' by 4' reinforced concrete box culverts. Grouted riprap would be placed on the downstream side of the culverts to reduce erosion potential. At each of the four locations, road improvements will be required to accommodate the culvert. Downstream of the proposed culverts on 58th Place and 59th Place, channel improvements including clearing vegetation and grading would be required to increase conveyance. Drainage easements have been previously acquired at these locations and improvements would remain within the boundaries of the easement. Channel improvements are needed at these two locations to mitigate channel breakouts that could potentially flood the adjacent homes. The design and construction cost of Alternative 1 is estimated to be **2,800,333 USD**. See **Appendix E** for a detailed cost estimate of the project.

Table 23: Alternative 1 Opportunities and Constraints

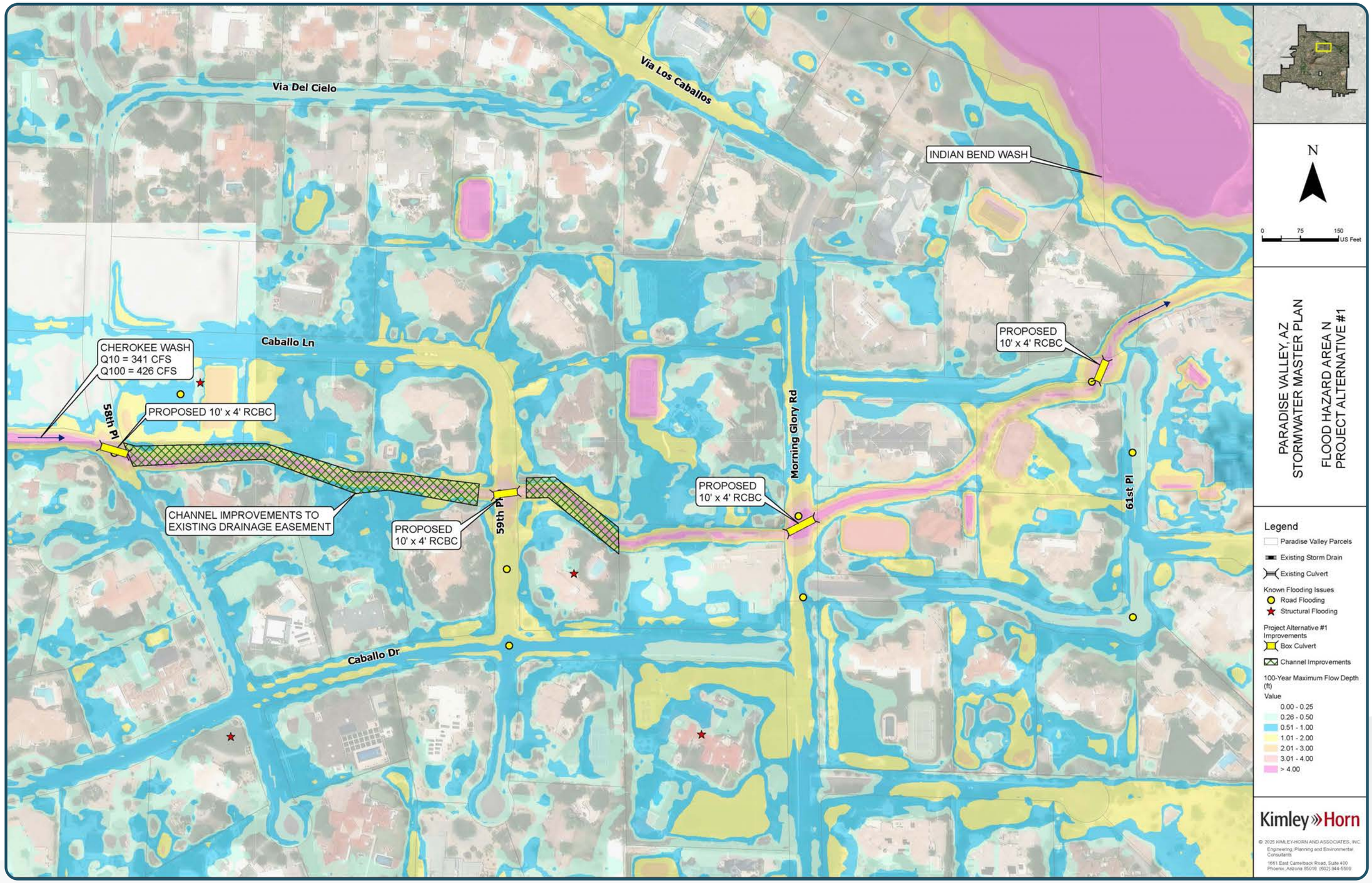
Alternative 1 Opportunities	Alternative 1 Constraints
More cost-effective alternative	Construction could be disruptive for residents
Reduces flood hazards to residents, passenger vehicles, and emergency vehicles	The total area of flood mitigation is smaller than that of Alternative 2
Provides safe road crossings during runoff event	Utility conflicts likely

Alternative 2 (Large)

Alternative 2 for Area N consists of several small storm drain systems designed to reduce flooding on local streets. This flooding is mostly attributed to overflow from Cherokee Wash or runoff from Mummy Mountain as it flows towards Cherokee Wash. Strom drains would likely ranges in size from 36" to 48". Outfalls would further downstream along Cherokee Wash from breakout points, or at existing drainage corridors. This alternative would also include channel conveyance improvements along Cherokee Wash where existing ROW or improvements are in place. Refer to the Area N Alternative #2 exhibit on the following. The design and construction cost of Alternative 2 is estimated to be **3,956,897 USD**. See **Appendix E** for a detailed cost estimate of the project.

Table 24: Alternative 2 Opportunities and Constraints

Alternative 2 Opportunities	Alternative 2 Constraints
Larger overall area of flood mitigation in comparison to Alternative 1	More expensive alternative
Reduces flood hazards to residents, passenger vehicles, and emergency vehicles	Road crossings at Cherokee Wash may still be impassable during storm events
	Utility conflicts likely


Via Del Cielo
Via Los Caballos
INDIAN BEND WASH
PROPOSED
10' x 4' RCBC
Caballo Ln
CHEROKEE WASH
Q10 = 341 CFS
Q100 = 426 CFS
58th Pl
PROPOSED 10' x 4' RCBC
CHANNEL IMPROVEMENTS TO
EXISTING DRAINAGE EASEMENT
PROPOSED
10' x 4' RCBC
59th Pl
Morning Glory Rd
PROPOSED
10' x 4' RCBC
61st Pl
Caballo Dr
N
0 75 150
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
FLOOD HAZARD AREA N
PROJECT ALTERNATIVE #1
Legend
Paradise Valley Parcels
Existing Storm Drain
Existing Culvert
Known Flooding Issues
Road Flooding
Structural Flooding
Project Alternative #1 Improvements
Box Culvert
Channel Improvements
100-Year Maximum Flow Depth (ft)
Value
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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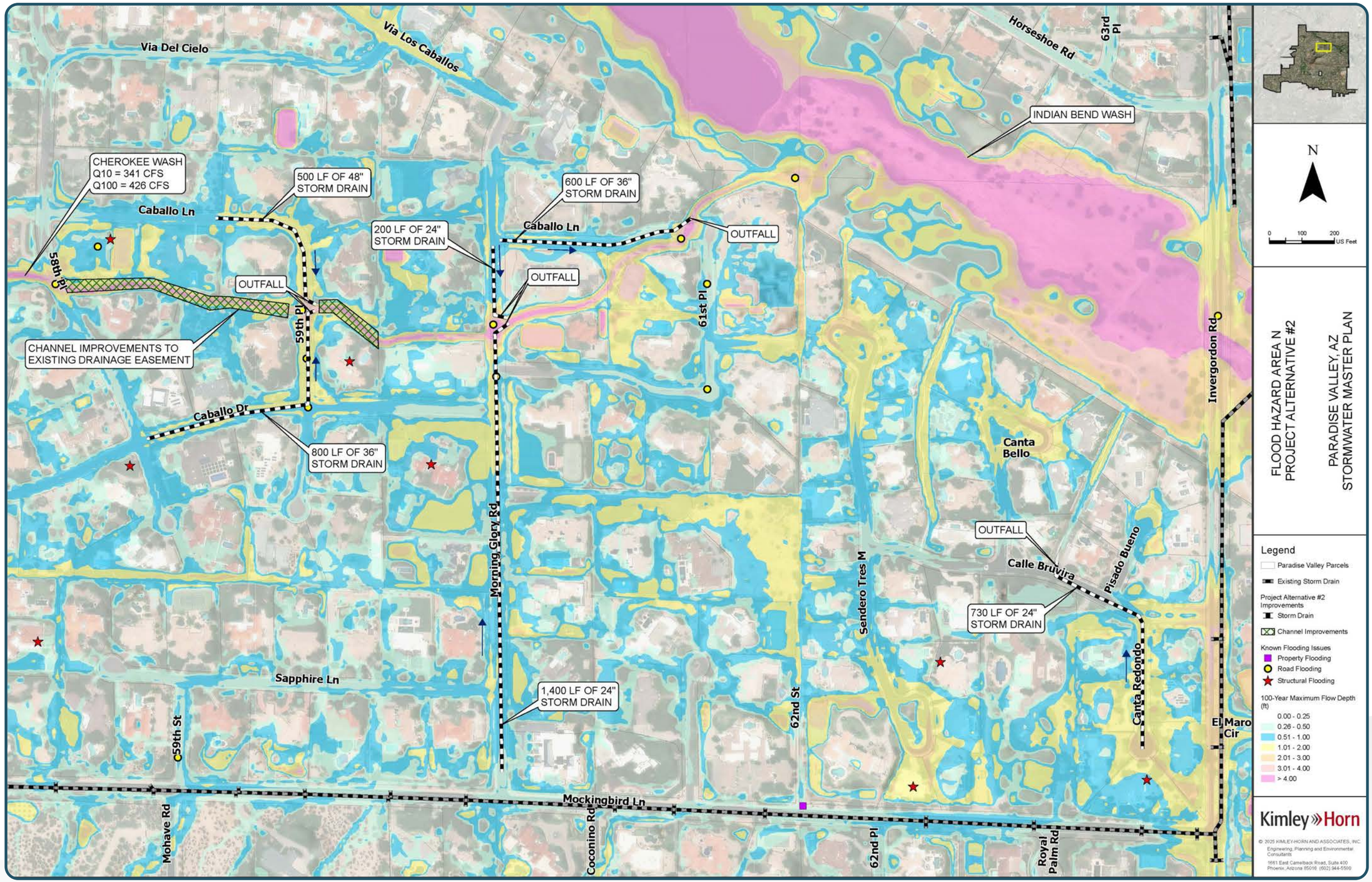
Via Del Cielo
Via Los Caballos
Horseshoe Rd
63rd Pl
INDIAN BEND WASH
CHEROKEE WASH
Q10 = 341 CFS
Q100 = 426 CFS
500 LF OF 48"
STORM DRAIN
Caballo Ln
200 LF OF 24"
STORM DRAIN
600 LF OF 36"
STORM DRAIN
Caballo Ln
OUTFALL
58th Pl
OUTFALL
59th Pl
OUTFALL
61st Pl
CHANNEL IMPROVEMENTS TO
EXISTING DRAINAGE EASEMENT
Caballo Dr
800 LF OF 36"
STORM DRAIN
Invergordon Rd
Canta
Bello
Morning Glory Rd
OUTFALL
Calle Bruvira
Pisado Bueno
730 LF OF 24"
STORM DRAIN
Sendero Tres M
Canta Redondo
Sapphire Ln
1,400 LF OF 24"
STORM DRAIN
C59th St
62nd St
El Maro
Cir
Mockingbird Ln
Mohave Rd
Cocoinino Rd
62nd Pl
Royal
Palm Rd
N
0 100 200
US Feet
FLOOD HAZARD AREA N
PROJECT ALTERNATIVE #2
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
Legend
Paradise Valley Parcels
Existing Storm Drain
Project Alternative #2
Improvements
Storm Drain
Channel Improvements
Known Flooding Issues
Property Flooding
Road Flooding
Structural Flooding
100-Year Maximum Flow Depth
(ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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H. Flood Hazard Area O – Lincoln Drive

Summary and Description

The source of flooding in Area O is the runoff from the south side of Mummy Mountain contributing runoff to the upstream reach of Cudia City Wash (CCW). Runoff flows southwest from Mummy Mountain, through existing development, towards Lincoln Drive. Once the water reaches Lincoln Drive from the north, it flows under the road through existing culverts. Some culverts along Lincoln Drive do not have the required capacity to contain discharge, and the road overtops at 52nd Place with depths greater than 1 foot during the 100-year storm per the FLO-2D modeling results from this study. South of Lincoln Drive, water flows west across private parcels and under 51st Place through an existing culvert. This culvert is undersized and a maximum water depth of 4 feet occurs per modeling results. The crossing poses a hazard to passenger vehicles and impacts emergency vehicle access. Town residents and staff have reported flooding issues in this area. The CCW Area Drainage Master Study/Plan (ADMS/P) has also identified flood hazards in this area.

Alternative 1 (Large)

The first alternative proposed for Area O consists of improvements to existing roadway drainage infrastructure on Lincoln Drive. The existing culvert at Lincoln Drive and 52nd Place lacks the capacity required to prevent roadway flooding during a 100-year event. This alternative proposes a new storm drain along Lincoln Drive at 52nd Place to the outfall of three existing culverts just east of the Omni Resort on the south side of Lincoln Drive. The storm drain inlet would be adjacent to the existing culvert's inlet north of Lincoln Drive and 52nd Place, and would redirect a portion of the discharge to a separate outfall. Curb and gutter inlets would also be placed at this location to capture discharge coming from the east along Lincoln Drive. At the outfall, discharges would be captured by an existing culvert and routed south to ultimately outfall to Cudia City Wash. The design and construction cost of Alternative 1 is estimated to be **2,321,033 USD**. See **Appendix E** for a detailed cost estimate of the project.

Table 25: Alternative 1 Opportunities and Constraints

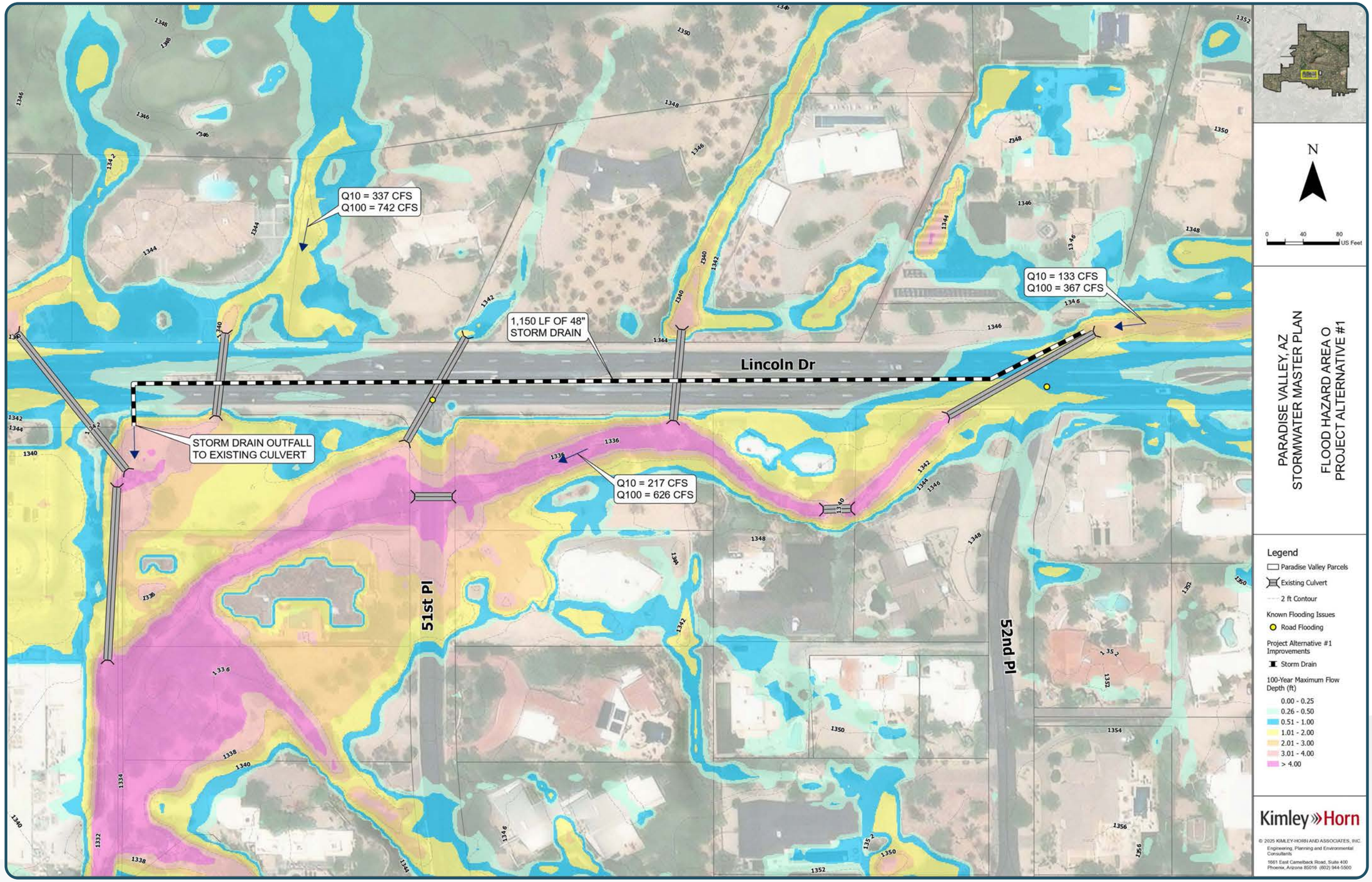
Alternative 1 Opportunities	Alternative 1 Constraints
Improves existing roadway drainage infrastructure	Major roadway impacts to Lincoln Drive during construction
Reduces discharge for undersized portions of Cudia City Wash	Utility conflicts likely
	More expensive alternative

Alternative 2 (Medium, Recommended)

The second alternative proposed is the increase in existing culvert capacity at flood prone locations. Three culvert expansions or replacements are proposed upstream and downstream of Lincoln Drive. At Desert Fairways Drive, the existing box culvert would be removed and replaced with a 10' by 4' reinforced concrete box culvert (RCBC). Flows passing through this box culvert continue west and cross Lincoln Drive at the existing culvert at 52nd Place. This culvert would be replaced with a three barrel 48" reinforced concrete pipe culvert to mitigate roadway overtopping. The culvert at 51st Place is particularly undersized and would be replaced with a two barrel 10' by 4' RCBC. The proposed configuration at 51st Place is a 2 barrel 10' by 4' RCBC. Road improvements would also be required to accommodate the increased height of the new culverts. The design and construction cost of Alternative 2 is estimated to be **1,159,731 USD**. See **Appendix E** for a detailed cost estimate of the project.

Table 26: Alternative 2 Opportunities and Constraints

Alternative 2 Opportunities	Alternative 2 Constraints
Less expensive alternative	Utility conflicts likely
Improves emergency vehicle access on 51st Place	Major roadway impacts to Lincoln Drive during construction
Improvements maintain current flow paths	Would not reduce flows on parcels adjacent to Lincoln Drive
	Smaller area of flooding mitigation


Q10 = 337 CFS
Q100 = 742 CFS
1,150 LF OF 48"
STORM DRAIN
Q10 = 133 CFS
Q100 = 367 CFS
Lincoln Dr
STORM DRAIN OUTFALL
TO EXISTING CULVERT
Q10 = 217 CFS
Q100 = 626 CFS
51st Pl
52nd Pl
N
0 40 80 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
FLOOD HAZARD AREA O
PROJECT ALTERNATIVE #1
Legend
Paradise Valley Parcels
Existing Culvert
2 ft Contour
Known Flooding Issues
Road Flooding
Project Alternative #1 Improvements
Storm Drain
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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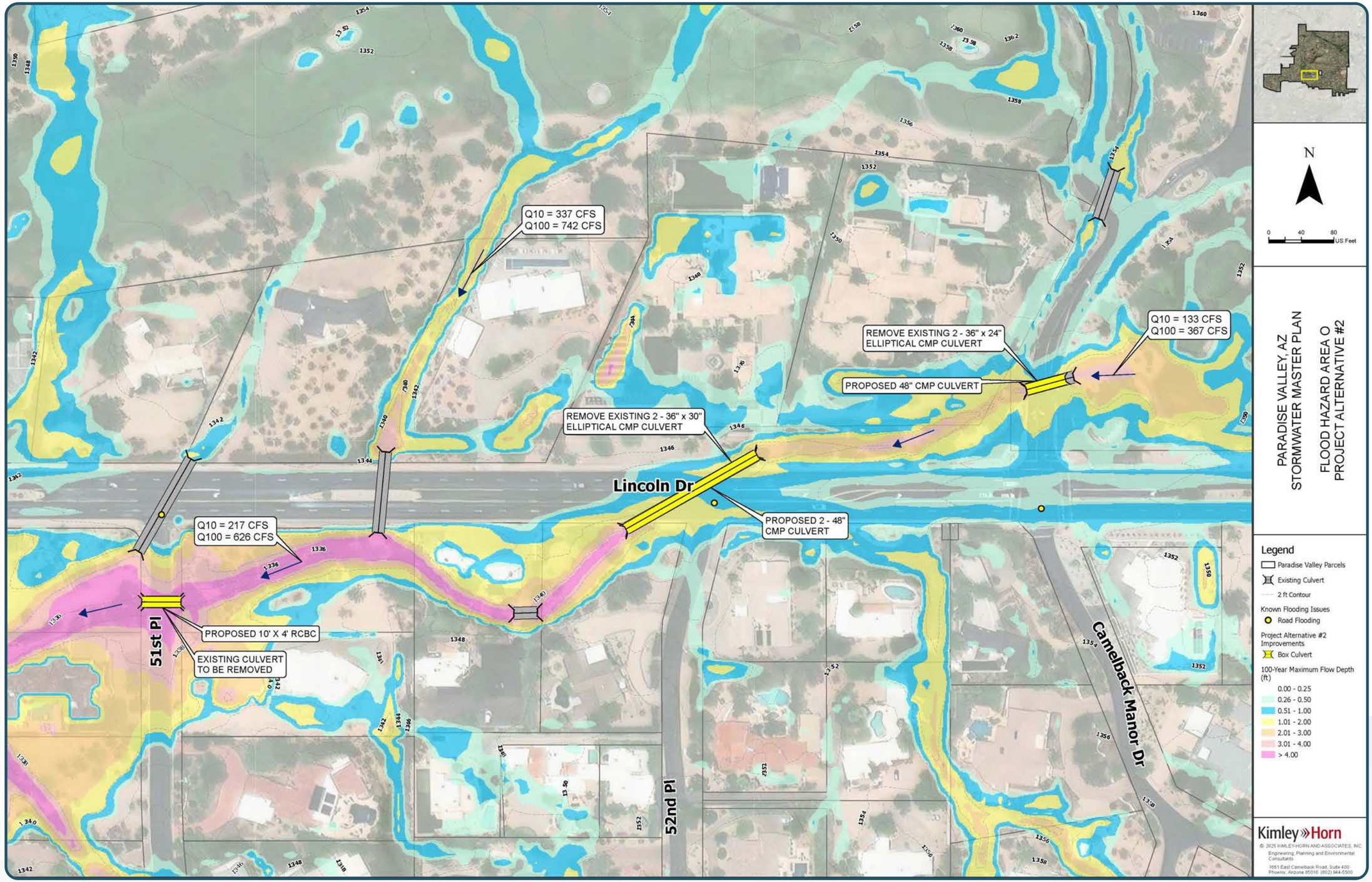
Q10 = 337 CFS
Q100 = 742 CFS
REMOVE EXISTING 2 - 36" x 24"
ELLIPTICAL CMP CULVERT
Q10 = 133 CFS
Q100 = 367 CFS
PROPOSED 48" CMP CULVERT
REMOVE EXISTING 2 - 36" x 30"
ELLIPTICAL CMP CULVERT
Lincoln Dr
PROPOSED 2 - 48"
CMP CULVERT
Q10 = 217 CFS
Q100 = 626 CFS
51st Pl
PROPOSED 10' X 4' RCBC
EXISTING CULVERT
TO BE REMOVED
52nd Pl
Camelback Manor Dr
N
0 40 80
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
FLOOD HAZARD AREA O
PROJECT ALTERNATIVE #2
Legend
Paradise Valley Parcels
Existing Culvert
2 ft Contour
Known Flooding Issues
Road Flooding
Project Alternative #2 Improvements
Box Culvert
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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Phoenix, Arizona 85016 (602) 944-5500

I. Flood Hazard Area P – Tatum Boulevard and McDonald Drive

Summary and Description

The source of flooding in this area is Cudia City Wash (CCW). The wash flows across private parcels and overtops Tatum Boulevard and McDonald Drive as it flows southeast through Area P. At Tatum Boulevard, a maximum water depth over the road of 2.9 feet occurs during the 100-year storm per FLO-2D modeling results from this study. This poses safety hazards to passenger vehicles and sediment and debris deposition on the road, requiring frequent maintenance. The existing culverts under McDonald Drive are also undersized resulting in road overtopping during the 100-year storm. residents have reported property and roadway flooding at both crossings. This area has also been identified as a flooding hazard by the CCW Area Drainage Master Study/Plan (ADMS/P) and the CCW Design Concept Report (DCR). Two alternatives were developed as described below, each divided into three phases for flexibility with cost allocations. The CCW DCR also recommended the establishment of an improvement district as a funding source for construction and maintenance. The DCR also recommended acquiring a drainage easement along the wash corridor between Tatum Boulevard and McDonald Drive. A drainage easement would facilitate more regular maintenance of the channel improving the overall function of the wash.

Alternative 1 (Large/Medium/Maintenance, Recommended)

Alternative 1, Phase 1 proposed for Area P is a segment of storm drain along Tatum Boulevard and McDonald Road. The storm drain would capture flows from CCW from an inlet on the east side of Tatum Boulevard. The water would be routed south and west along the road where it would discharge back into CCW just north of McDonald Road. This would reduce the overall flow in the wash between the two road crossings. The design and construction cost of Alternative 1 is estimated to be **6,848,094 USD.** See **Appendix E** for a detailed cost estimate of Alternative 1.

Alternative 1, Phase 2 consists of increasing the existing culvert capacity at McDonald Drive. At McDonald Drive, a three barrel 10' by 4' culvert conveys CCW south under the road. This configuration does not convey the full capacity of the wash during the 100-year storm, and roadway overtopping occurs. This alternative proposes constructing an additional barrel to the culvert. The design and construction cost of Alternative 1, Phase 2 is estimated to be **789,801 USD.**

Alternative 1, Phase 3 proposes drainage improvements to mitigate the roadway overtopping that occurs on Valley Vista Lane. Flows from the north that converge at CCW overtop Valley Vista Lane prior to entering the wash. Placing a culvert under the road at the location of the wash crossing would reduce the erosion and sediment deposition in this area. The design and construction cost of Alternative 1 is estimated to be **55,823 USD.**

Table 27: Alternative 1 Opportunities and Constraints

Alternative 1, Phase 1 Opportunities	Alternative 1, Phase 1 Constraints
No large land acquisition required	Utility conflicts likely
Improvements reduce discharge for undersized portions of Cudia City Wash	High cost alternative in comparison to Alternative 2, Phase 1
	Major roadway impacts to Tatum Blvd during construction
Alternative 1, Phase 2 Opportunities	**Alternative 1, Phase 2 Constraints**
Creates a road crossing that reduces road overtopping frequency	Major roadway impacts to Tatum Blvd during construction
More cost-effective Alternative in comparison to Alternative 2, Phase 2	Does not reduce discharge entering the wash
No large land acquisition required	Utility conflicts likely
Alternative 1, Phase 3 Opportunities	**Alternative 1, Phase 3 Constraints**
Slightly more effective cost alternative in comparison to Alternative 2, Phase 3	Construction would be disruptive for residents
Improvements reduce safety hazards and maintain requirements	

Alternative 2 (Large/Medium/Maintenance)

Alternative 2, Phase 1 proposes a reinforced concrete box culvert under Tatum Boulevard. The existing road crossing on Tatum Boulevard would be replaced with a four barrel 10' by 4' box culvert to mitigate roadway flooding. Road improvements would be required to accommodate the height of the culverts. The design and construction cost of Alternative 2 is estimated to be **1,974,030 USD**. See **Appendix E** for a detailed cost estimate of Alternative 2.

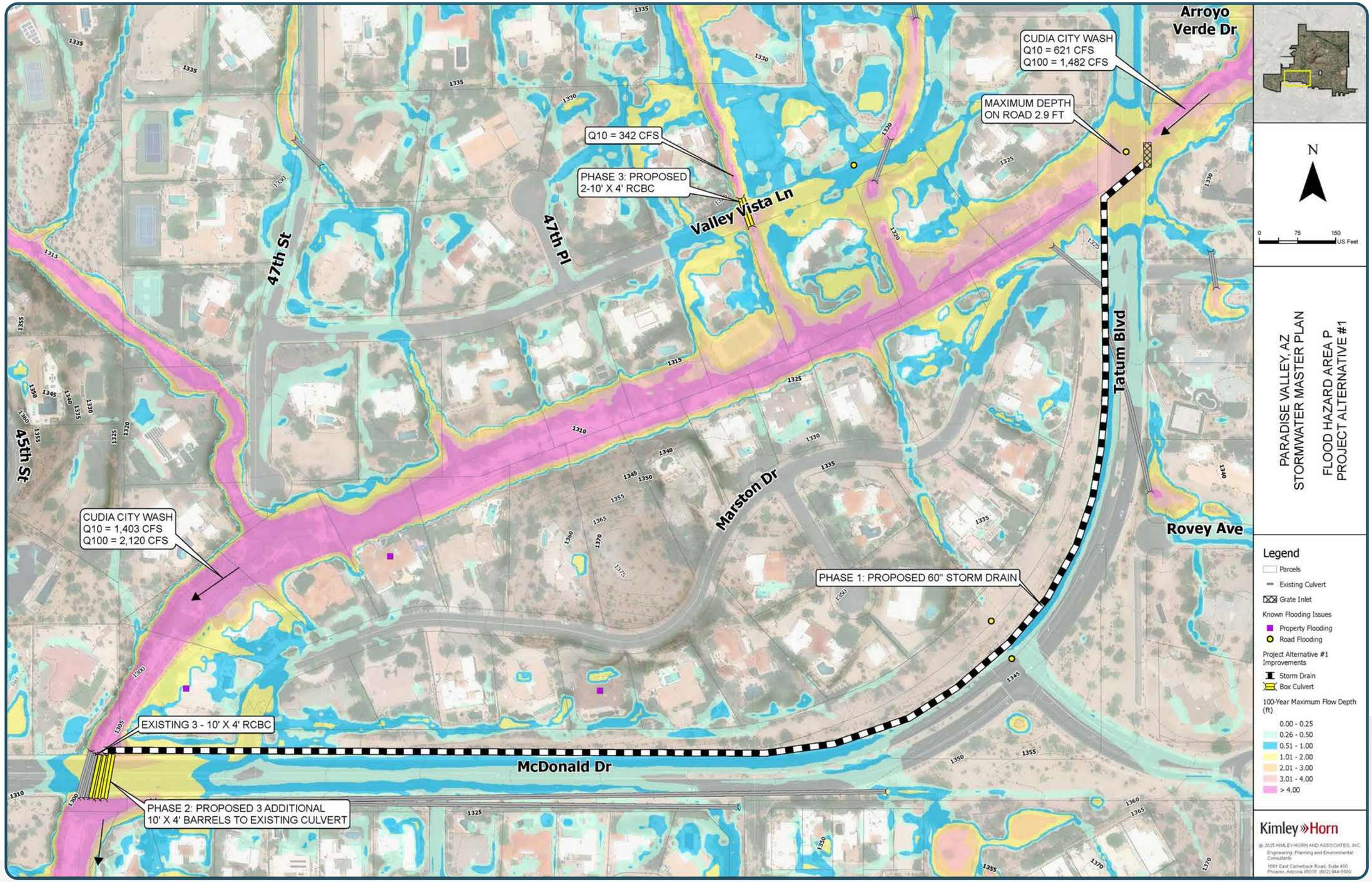
Alternative 2, Phase 2 replaces existing infrastructure. The existing box culvert under McDonald Drive would and be removed entirely replaced with a bridge, allowing the wash to flow without obstruction. This would reduce backwater effects and the water surface elevation north of the culvert. This area has been known to flood residential properties; therefore this improvement may not only improve roadway conditions, but also property conditions along the wash. The design and construction cost of Alternative 2 is estimated to be **3,341,890 USD.**

Alternative 2, Phase 3 utilizes Green Stormwater Infrastructure as a tool to reduce flooding. At the location where flows cross Valley Vista Lane, it is proposed that a low water crossing be implemented. The low water crossing would consist of concrete and grouted riprap to prevent erosion and sediment deposition on the road. It is also proposed that permeable pavement span 150 feet on either side of the crossing to help reduce the local ponding on the road. The design and construction cost of Alternative 2 is estimated to be **57,020 USD.**

CCW overtop Valley Vista Lane prior to entering the wash. Placing a culvert under the road at the location of the wash crossing would reduce the erosion and sediment deposition in this area. The design and construction cost of Alternative 1 is estimated to be **55,823 USD.**

Table 28: Alternative 2 Opportunities and Constraints

Alternative 2, Phase 1 Opportunities	Alternative 2, Phase 1 Constraints
More cost-effective alternative in comparison to Alternative 1, Phase 1	Major roadway impacts to McDonald Drive during construction
Improvement to existing infrastructure	Utility conflicts likely
Improvements would reduce roadway flooding on McDonald Drive	
Alternative 2, Phase 2 Opportunities	**Alternative 2, Phase 2 Constraints**
Improvements would mitigate roadway flooding on McDonald Drive	Higher cost alternative in comparison to Alternative 1, Phase 2
May reduce backwater issues north of McDonald Drive	Major roadway impacts to McDonald Drive during constriction
No large land acquisition required	Utility conflicts likely
Alternative 2, Phase 3 Opportunities	**Alternative 2, Phase 3 Constraints**
Improvements include GSI benefits	Construction would be disruptive for residents
Improvements reduce safety hazards and maintenance requirements	Higher cost alternative in comparison to Alternative 1, Phase 3


CUDIA CITY WASH
Q10 = 621 CFS
Q100 = 1,482 CFS
MAXIMUM DEPTH
ON ROAD 2.9 FT
Q10 = 342 CFS
PHASE 3: PROPOSED
2-10' X 4' RCBC
Arroyo
Verde Dr
47th St
47th Pl
Valley Vista Ln
Tatum Blvd
Marston Dr
Rovey Ave
45th St
CUDIA CITY WASH
Q10 = 1,403 CFS
Q100 = 2,120 CFS
PHASE 1: PROPOSED 60" STORM DRAIN
EXISTING 3 - 10' X 4' RCBC
McDonald Dr
PHASE 2: PROPOSED 3 ADDITIONAL
10' X 4' BARRELS TO EXISTING CULVERT
N
0 75 150
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
FLOOD HAZARD AREA P
PROJECT ALTERNATIVE #1
Legend
Parcels
Existing Culvert
Grate Inlet
Known Flooding Issues
Property Flooding
Road Flooding
Project Alternative #1
Improvements
Storm Drain
Box Culvert
100-Year Maximum Flow Depth
(ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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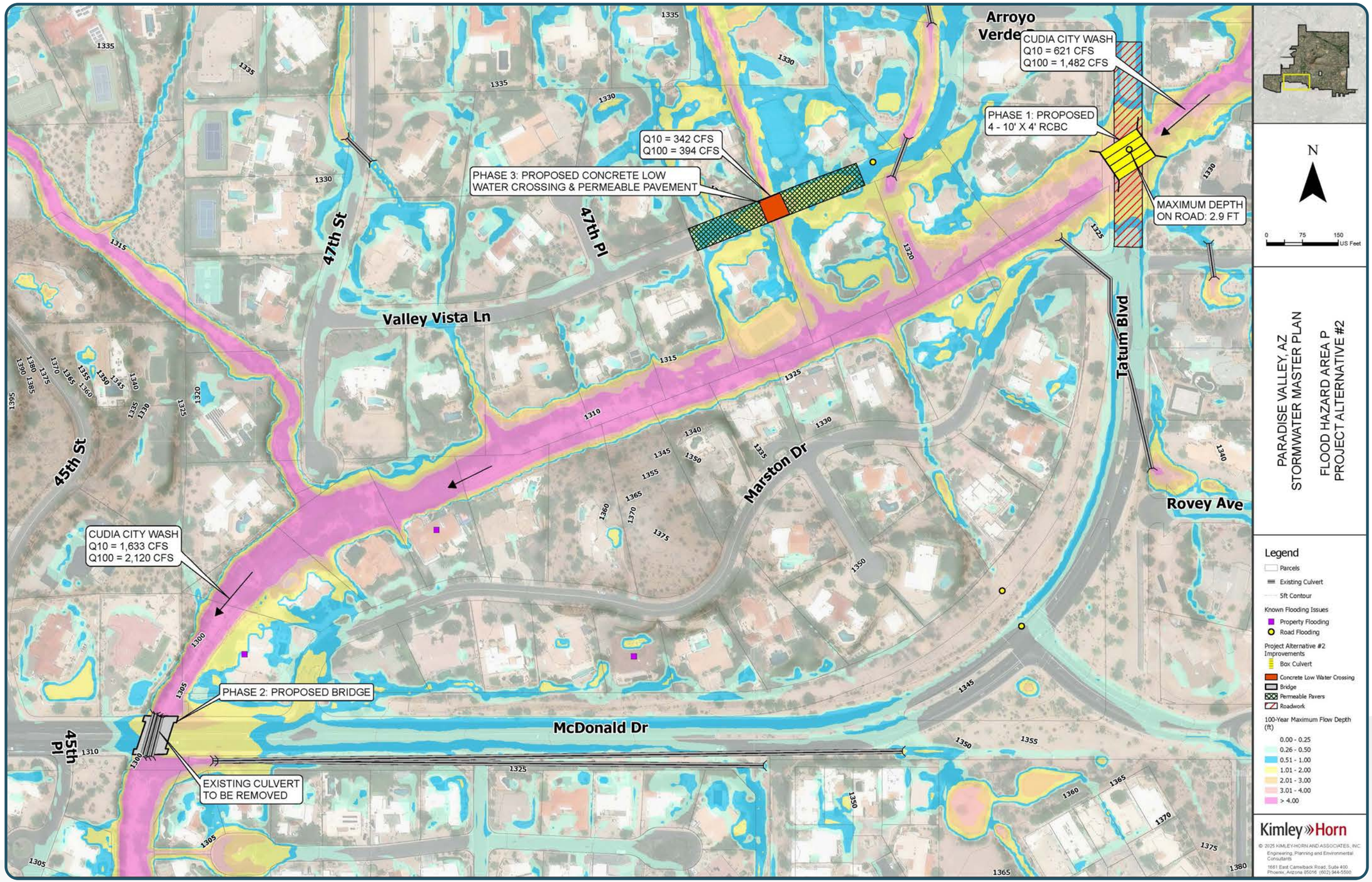
CUDIA CITY WASH
Q10 = 621 CFS
Q100 = 1,482 CFS
PHASE 1: PROPOSED
4 - 10' X 4' RCBC
MAXIMUM DEPTH
ON ROAD: 2.9 FT
Q10 = 342 CFS
Q100 = 394 CFS
PHASE 3: PROPOSED CONCRETE LOW
WATER CROSSING & PERMEABLE PAVEMENT
CUDIA CITY WASH
Q10 = 1,633 CFS
Q100 = 2,120 CFS
PHASE 2: PROPOSED BRIDGE
EXISTING CULVERT
TO BE REMOVED
Arroyo Verde
47th St
47th Pl
45th St
45th Pl
Valley Vista Ln
McDonald Dr
Marston Dr
Tatum Blvd
Rovey Ave
N
0 75 150
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
FLOOD HAZARD AREA P
PROJECT ALTERNATIVE #2
Legend
Parcels
Existing Culvert
5ft Contour
Known Flooding Issues
Property Flooding
Road Flooding
Project Alternative #2 Improvements
Box Culvert
Concrete Low Water Crossing
Bridge
Permeable Pavers
Roadwork
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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VIII. HIGHEST PRIORITY ALTERNATIVES – BENEFIT COST ANALYSIS

The selected alternatives for the six highest ranking flooding issue areas were further developed into 15% plans and detailed conceptual cost estimates. Pages 78-113 contain a further description of each area, cost/benefit analysis results, conceptual plans, and figures depicting 10-year pre-project, post-project, and depth-difference results. The detailed conceptual cost estimates can be found in **Appendix G**. Projects were developed using constraints and preferences provided by Town Council. Constraints included restricting projects to available right-of-way. Projects were designed to provide protection from the 10-year storm. Pre-project, post-project, and depth-difference maps for other storm events are included in **Appendix F.**

The selected alternative(s) and ranking score for each of the nine flood hazard areas is summarized in **Table 29**. Of these, the top six were developed for the Master Plan per Town project development requirements. Analyses were split into two methodologies based on the project type and flood reduction impacts. The benefits for Areas A and K were determined by incorporating the proposed drainage improvements into proposed conditions FLO-2D modeling and comparing the pre- and post-project flow depth conditions adjacent to the impacted buildings. By using the U.S. Army Corps of Engineers (USACE) depth-damage curves for the building structures and building contents, a damage reduction or benefit per building was determined for the 10- and 100-year storms. Areas A and K have the biggest positive impacts on potential residential structure flooding. The USACE depth-damage curve and the corresponding calculations for the two areas are provided in **Appendix I**. For Areas H, L, N, and O, benefits were determined by evaluating the total reduction of water surface elevation from road crossings and the potential for improving emergency vehicle access. Projects in these areas mainly benefit transportation corridors and ingress/egress.

Table 29: Prioritized Projects Summary

Top Ranking Six

Area Identification	Selected Alternative	Ranking Score
N	Alternative 1	49
A	Alternative 1	45
O	Alternative 2	45
K	Alternative 2	43
L	Alternative 1 & 2	41
H	Alternative 2	40
P	Alternative 1	39
C	Alternative 2	39
E	Alternative 3	38

A. Flood Hazard Area A – Invergordon and Mockingbird Lane

Description

Alternative 1 was selected from the project decision matrix. This project includes storm drain lines from 18" laterals up to a 12' x 3' storm drain box at the outfall. The storm drain upstream at Northern Avenue starts as a 36" pipe and transitions to a 42" storm drain downstream. Due to a sewer line crossing in Invergordon Road, a 2-30" pipe system was designed to provide clearance over the sewer line. This is an existing shallow sewer line crossing north of Maverick Road that is unavoidable. This sewer line is proposed to be rerouted by 300 feet to the north and tie into the adjacent system to avoid the conflict with the proposed storm drain box culvert. The sewer line reroute ultimately goes to the same location but the proposed realigned sewer to the north is lower allowing the storm drain to clear the existing sewer line. The Maverick Road storm drain trunk line is a 54" pipe that connects to the Invergordon trunk line. This project is estimated to cost 11,616,355 USD. Conceptual plans are shown on the following pages with the detailed cost estimate included in **Appendix G**.

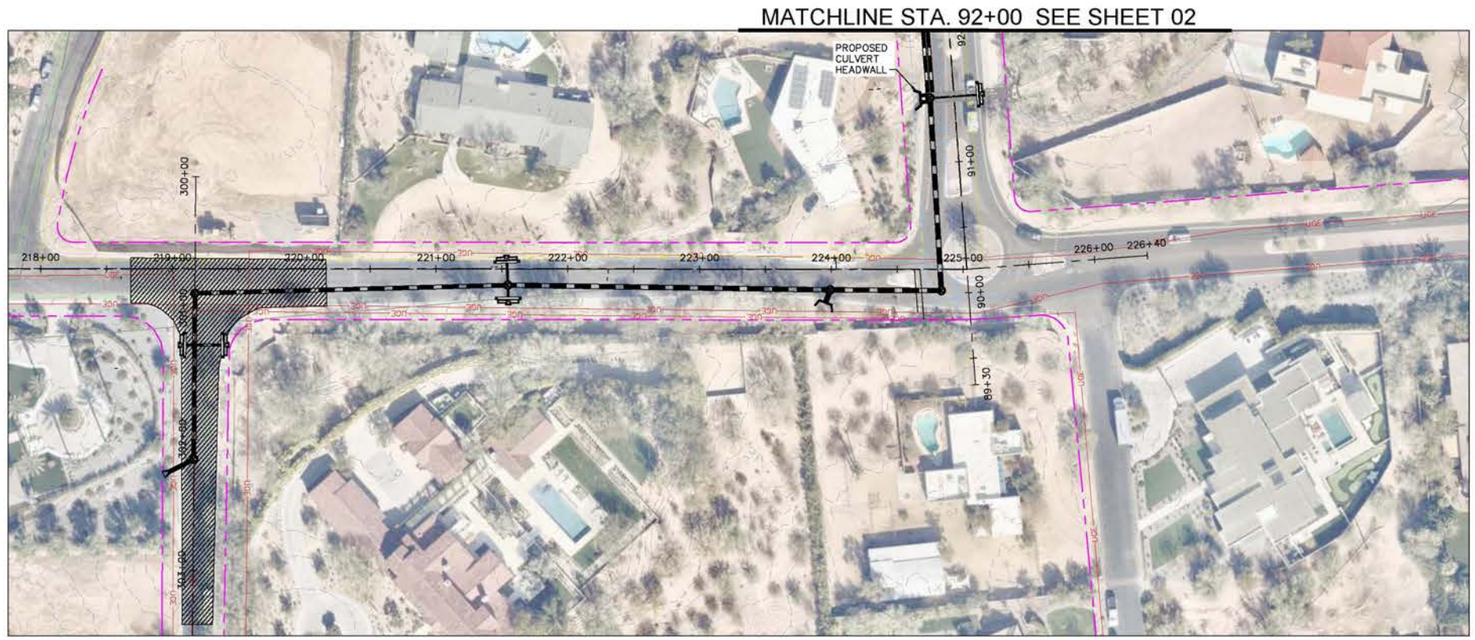
Benefits

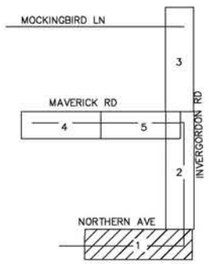
The potential benefits for the 10-year and 100-year storms were developed for the project and are shown in **Table 30**. The benefits were determined by incorporating the proposed drainage improvements into the FLO-2D model and comparing the pre and post project flow depth conditions adjacent to the impacted buildings. By using the U.S. Army Corps of Engineers (USACE) depth-damage curves for the building structures and building contents, a damage reduction or benefit per building was determined for the 10- and 100-year storms. The USACE depth damage curves can be seen in **Appendix H**. If the storm drain system is built, it is expected to have a life cycle of 75-years, and total benefits of about 23 million USD when assuming seven 10-year storms and one 100-year storm occurring during the infrastructure life span.

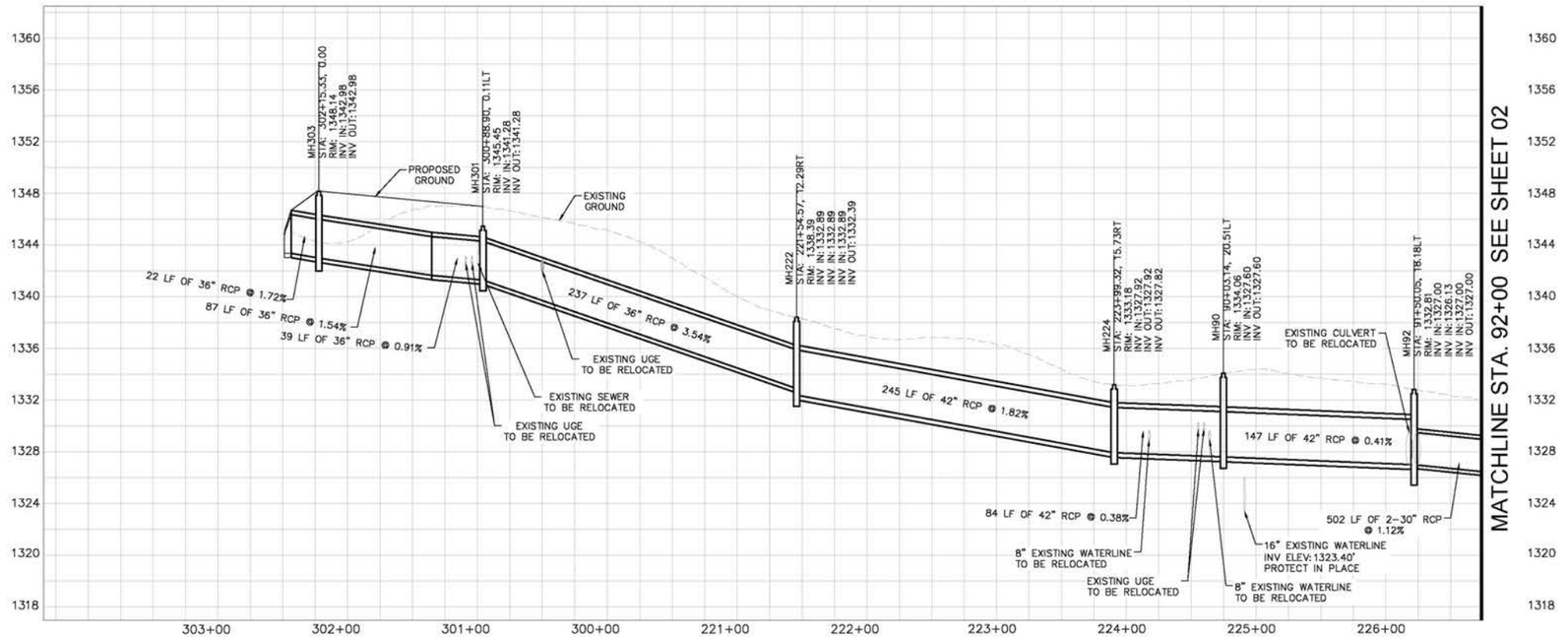
Table 30: Area A Benefit Cost Ratio Summary

Number of Properties Impacted		220
Approximate Population1		550
Benefit with Drainage Improvements in Place ($)	Damage Reduction	21,394,816
	Social Benefits	1,978,900
	Total	23,293,796
Construction Cost		11,616,355
Benefit-Cost Ratio (BCR)		2.01

1Assumed 2.5 people per household from U.S. Census for the Town of Paradise Valley.
2Social benefits are based on the number of residents impacted and are calculated using FEMA's Benefit Cost Analysis toolkit. This would account for traffic closures, interruptions to work, etc.
3Assumed at least seven 10-year storms and one 100- year storm occur during the 75-year life span of the improvements.







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PARADISE VALLEY SWMP
AREA A SELECTED ALTERNATIVE 15% PLANS

NORTH

PROJECT NO.
091054031

DRAWING NAME
AREA A

1 OF 6

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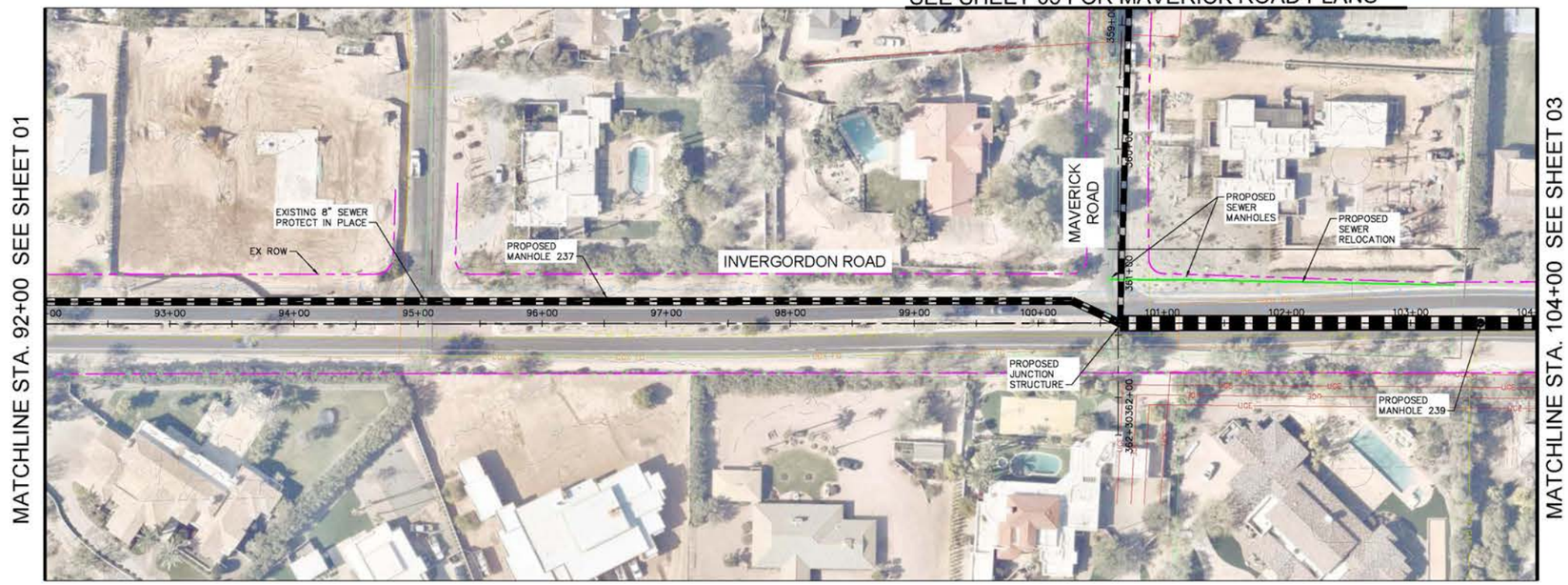
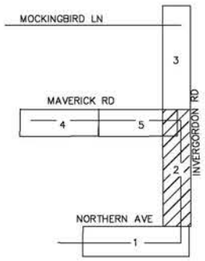
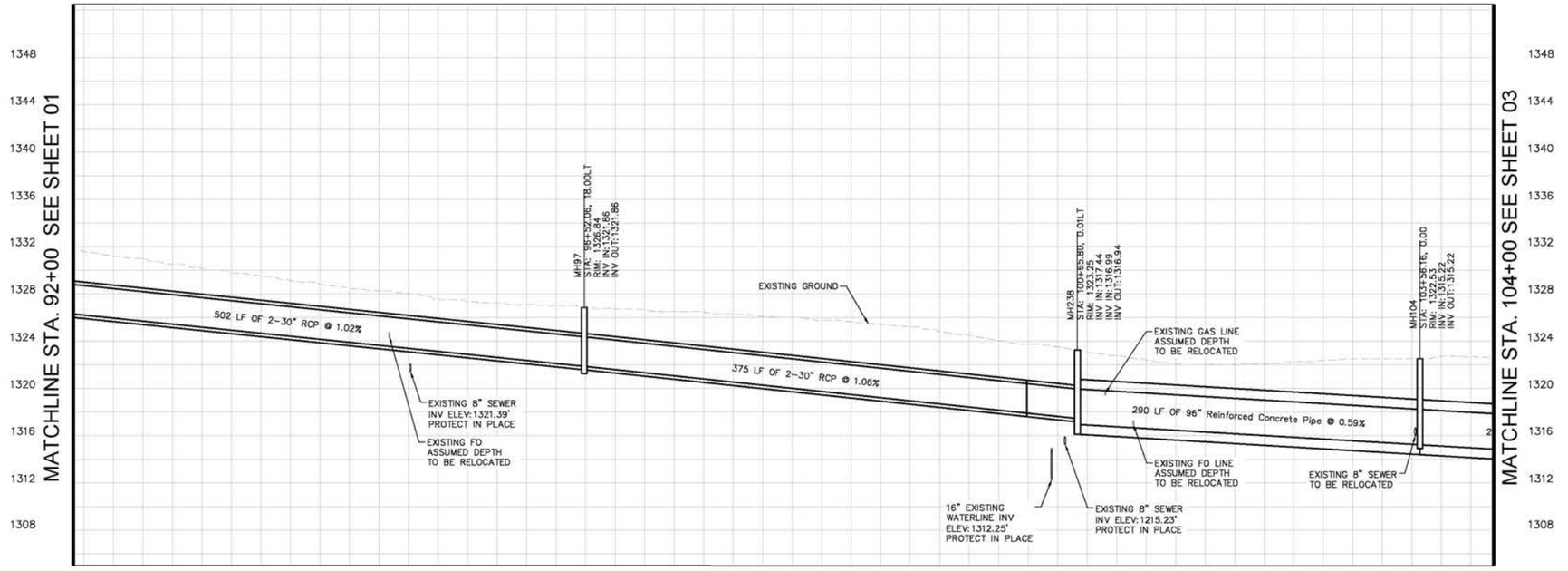
SEE SHEET 05 FOR MAVERICK ROAD PLANS







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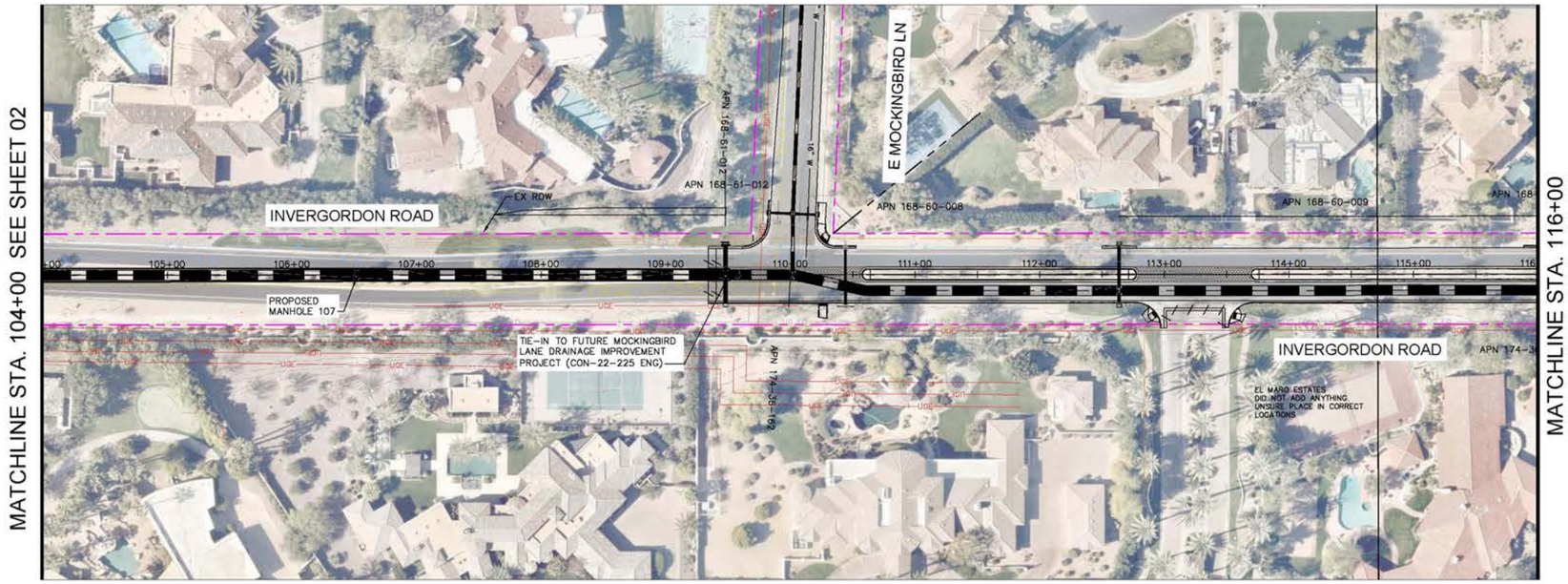

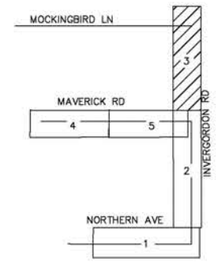

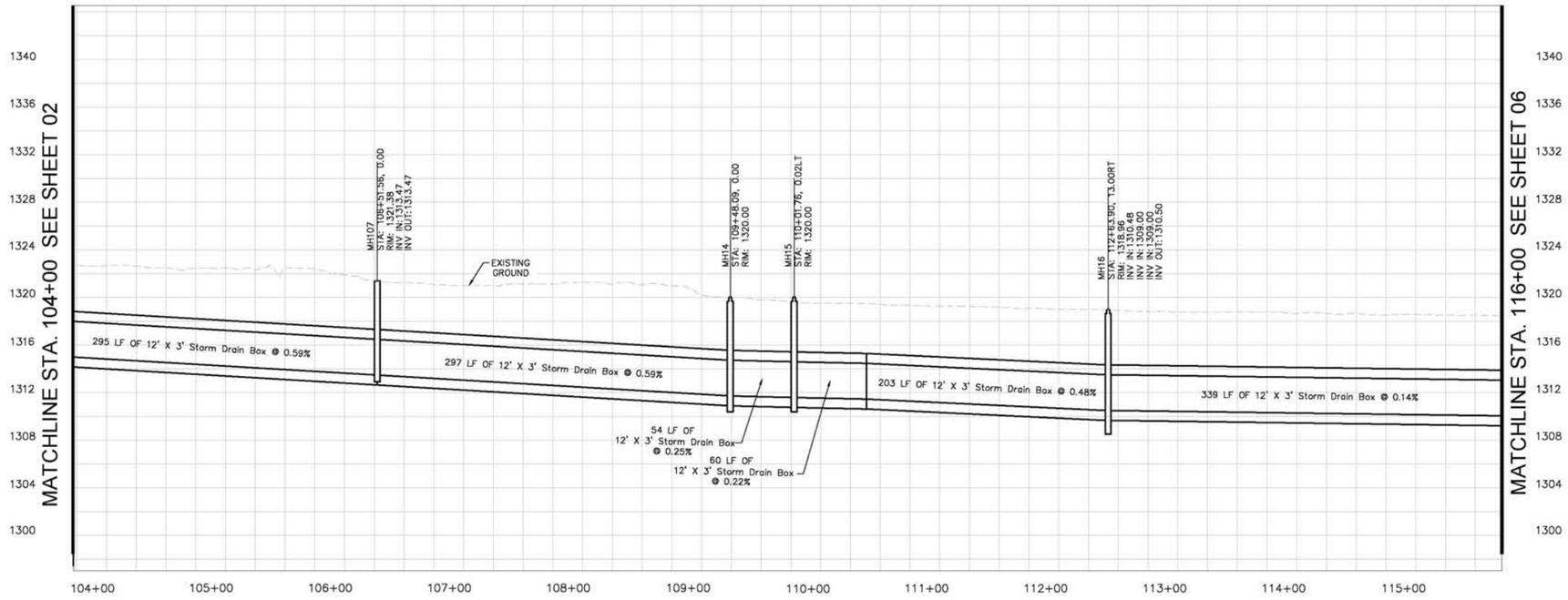

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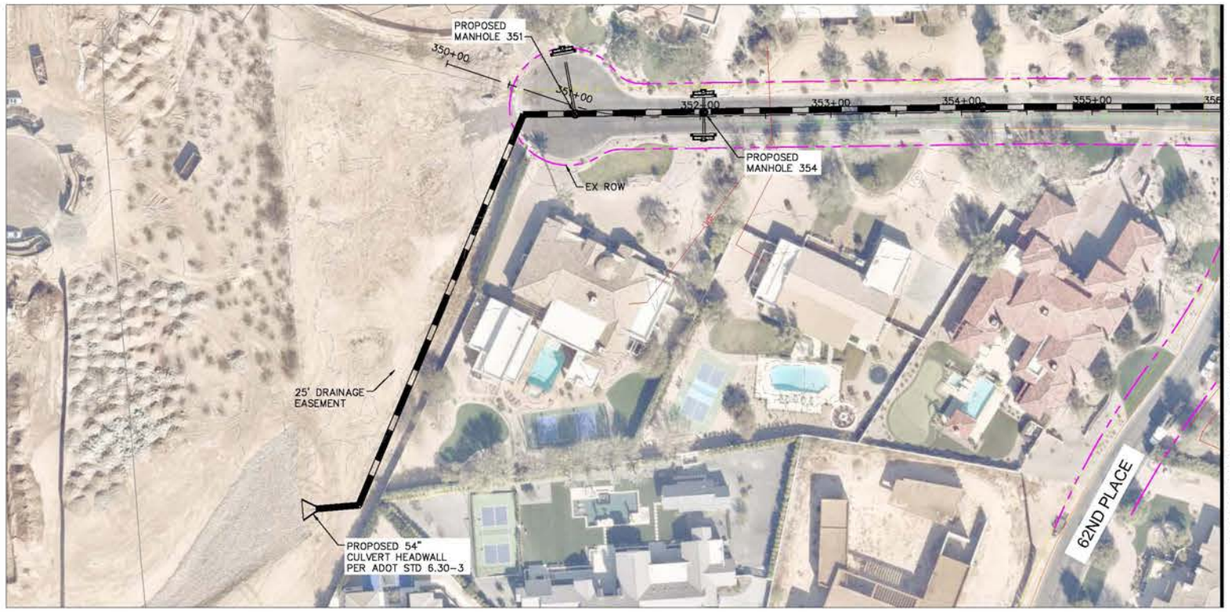

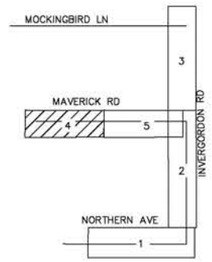

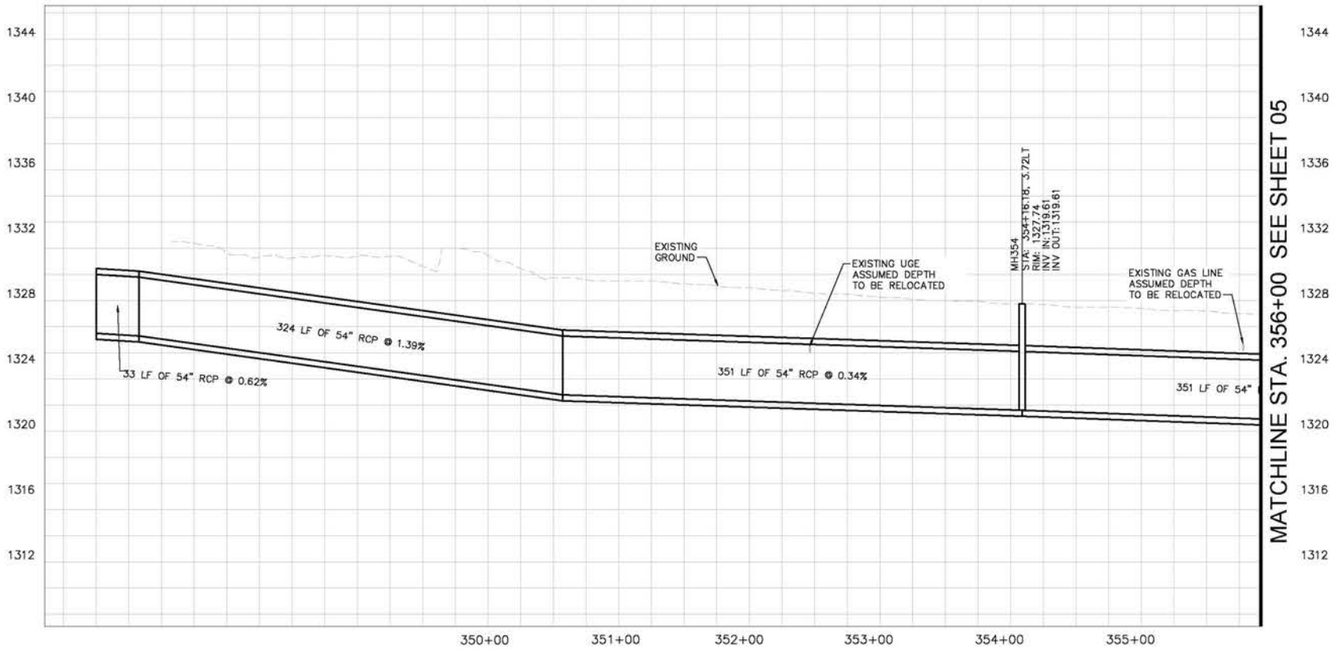

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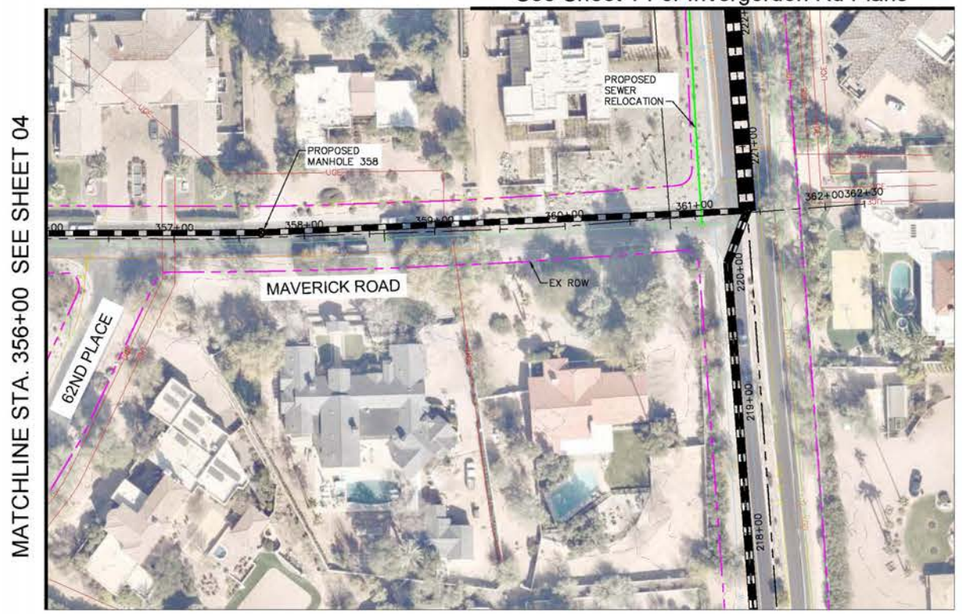

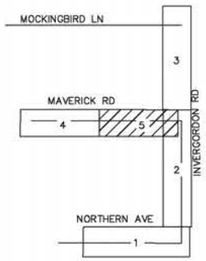

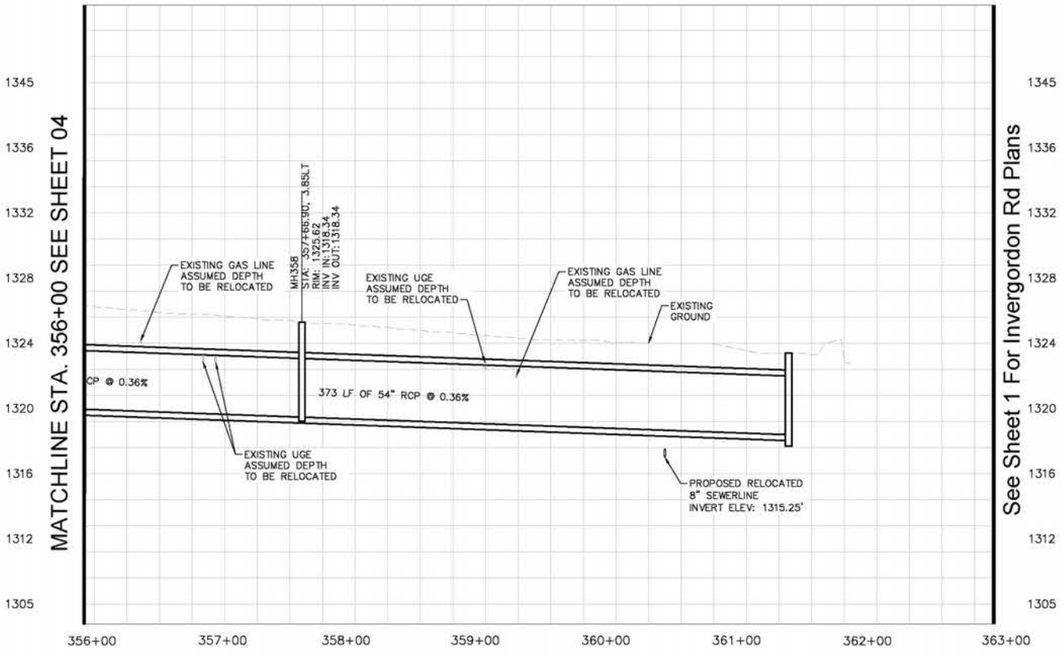

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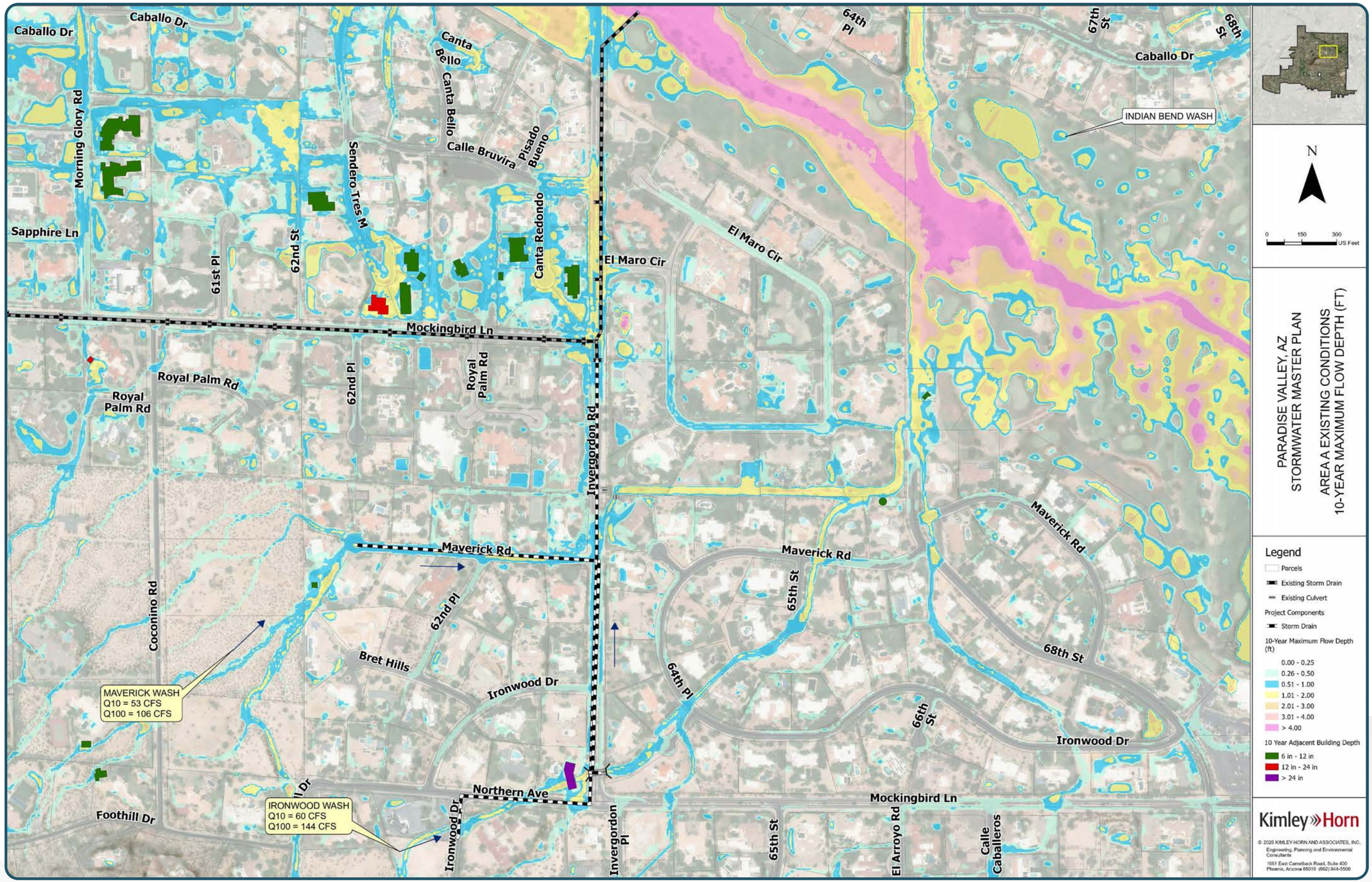
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Caballo Dr
Morning Glory Rd
Sapphire Ln
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62nd St
Sendero Tres M
Canta Bello
Canta Bello
Calle Bruvira
Pisado Bueno
Canta Redondo
El Maro Cir
El Maro Cir
Mockingbird Ln
Royal Palm Rd
Royal Palm Rd
62nd Pl
Royal Palm Rd
Invergordon Rd
64th Pl
67th St
68th St
Caballo Dr
INDIAN BEND WASH
Maverick Rd
Maverick Rd
Maverick Rd
62nd Pl
65th St
68th St
Coconino Rd
Bret Hills
Ironwood Dr
64th Pl
66th St
Ironwood Dr
MAVERICK WASH
Q10 = 53 CFS
Q100 = 106 CFS
Northern Ave
IRONWOOD WASH
Q10 = 60 CFS
Q100 = 144 CFS
Foothill Dr
Ironwood Dr
Invergordon Pl
65th St
Mockingbird Ln
El Arroyo Rd
Calle Caballeros
N
0
150
300
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
AREA A EXISTING CONDITIONS
10-YEAR MAXIMUM FLOW DEPTH (FT)
Legend
Parcels
Existing Storm Drain
Existing Culvert
Project Components
Storm Drain
10-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
10 Year Adjacent Building Depth
6 in - 12 in
12 in - 24 in
> 24 in
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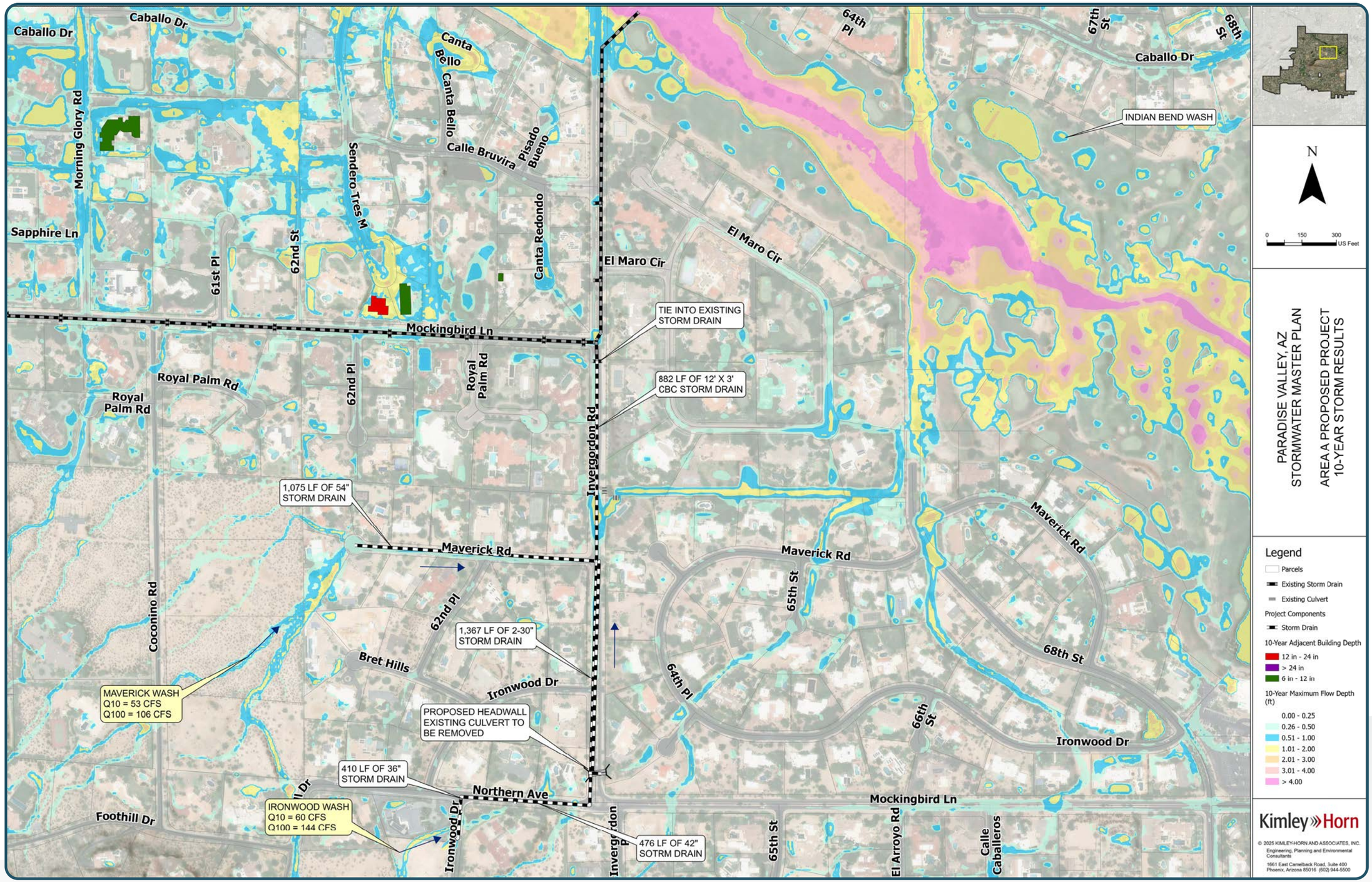
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Sendero Tres M
Canta Bello
Calle Bruvira
Pisado Bueno
Canta Redondo
El Maro Cir
64th Pl
67th St
68th St
INDIAN BEND WASH
TIE INTO EXISTING STORM DRAIN
882 LF OF 12' X 3' CBC STORM DRAIN
Mockingbird Ln
Royal Palm Rd
62nd Pl
Invergordon Rd
1,075 LF OF 54" STORM DRAIN
Maverick Rd
65th St
1,367 LF OF 2-30" STORM DRAIN
Bret Hills
Ironwood Dr
MAVERICK WASH
Q10 = 53 CFS
Q100 = 106 CFS
PROPOSED HEADWALL
EXISTING CULVERT TO
BE REMOVED
410 LF OF 36" STORM DRAIN
Northern Ave
IRONWOOD WASH
Q10 = 60 CFS
Q100 = 144 CFS
476 LF OF 42" SOTRM DRAIN
Foothill Dr
Coconino Rd
66th St
El Arroyo Rd
Calle Caballeros
N
0 150 300 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
AREA A PROPOSED PROJECT
10-YEAR STORM RESULTS
Legend
Parcels
Existing Storm Drain
Existing Culvert
Project Components
Storm Drain
10-Year Adjacent Building Depth
12 in - 24 in
> 24 in
6 in - 12 in
10-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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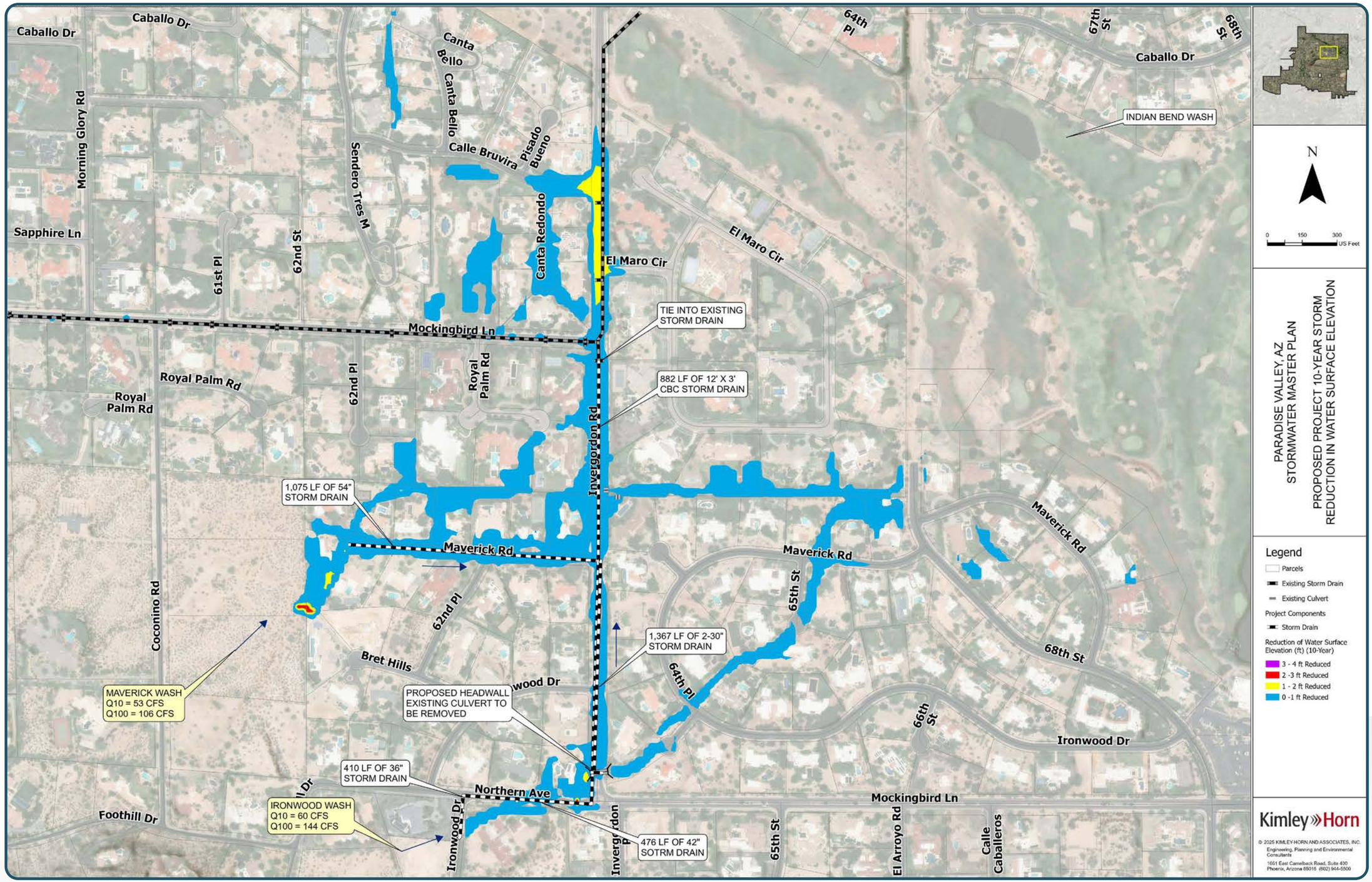
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Sapphire Ln
61st Pl
62nd St
Sendero Tres M
Canta Bello
Canta Bello
Calle Bruvira
Pisado Bueno
Canta Redondo
El Maro Cir
El Maro Cir
64th Pl
67th St
68th St
Caballo Dr
INDIAN BEND WASH
TIE INTO EXISTING STORM DRAIN
882 LF OF 12' X 3' CBC STORM DRAIN
Mockingbird Ln
Royal Palm Rd
Royal Palm Rd
62nd Pl
Royal Palm Rd
Invergordon Rd
1,075 LF OF 54" STORM DRAIN
Maverick Rd
Maverick Rd
Maverick Rd
62nd Pl
65th St
Coconino Rd
Bret Hills
1,367 LF OF 2-30" STORM DRAIN
64th Pl
68th St
MAVERICK WASH
Q10 = 53 CFS
Q100 = 106 CFS
PROPOSED HEADWALL
EXISTING CULVERT TO
BE REMOVED
66th St
Ironwood Dr
410 LF OF 36" STORM DRAIN
Northern Ave
Mockingbird Ln
IRONWOOD WASH
Q10 = 60 CFS
Q100 = 144 CFS
Foothill Dr
Ironwood Dr
Invergordon Rd
65th St
El Arroyo Rd
Calle Caballeros
476 LF OF 42" SOTRM DRAIN
N
0 150 300 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
PROPOSED PROJECT 10-YEAR STORM
REDUCTION IN WATER SURFACE ELEVATION
Legend
Parcels
Existing Storm Drain
Existing Culvert
Project Components
Storm Drain
Reduction of Water Surface Elevation (ft) (10-Year)
3 - 4 ft Reduced
2 -3 ft Reduced
1 - 2 ft Reduced
0 -1 ft Reduced
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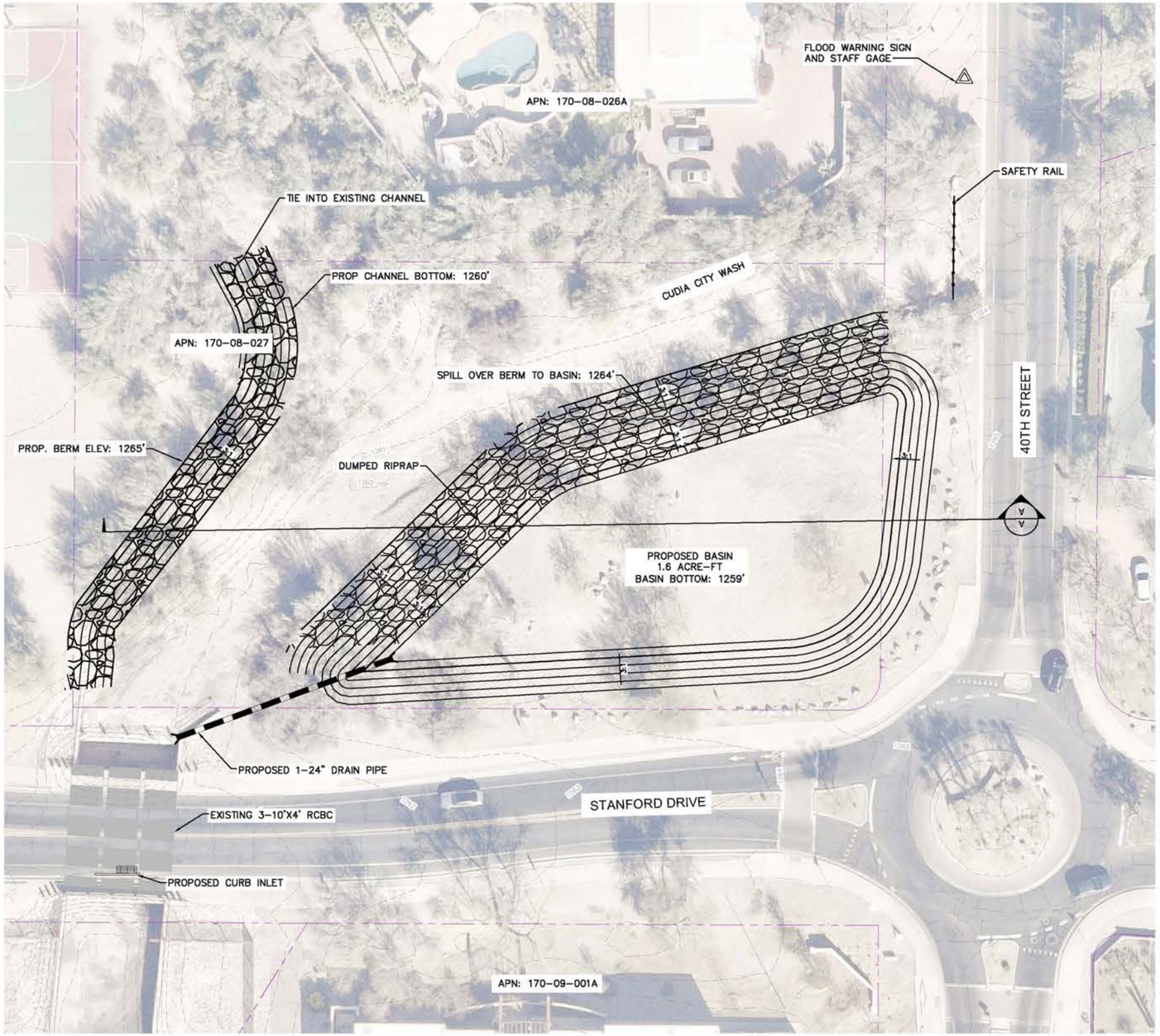
B. Flood Hazard Area H – 40th Street and Standford Drive

Description

Alternative 2 was selected from the three alternatives evaluated in the project matrix. This alternative involved making 2-year storm improvements to the existing wash running through 40th Street and Stanford Drive, the inclusion of a flood control basin, and the expansion of the curb inlet on Stanford Drive. The proposed channel was further refined with the following improvements: the channel bottom would be lowered to an elevation of 1260', and the side slopes would be graded at 3 to 1 to an elevation of 1265' on the north side of the channel. The south side of the channel would only be graded to an elevation of 1264' and would function as a spill over to the adjacent flood control basin. The basin was designed to use as much space as possible within the parcel and ROW. It would have 3 to 1 side slopes and a bottom elevation of 1259'. This would give the basin a height of 5 ft and provide a storage volume of 1.6 acre-ft. A 24" drain pipe located at the southeast corner of the basin would drain water to the existing culvert inlet on the north side of Stanford Drive. To reduce flooding along Stanford Drive, the existing curb inlet would be expanded to increase its capacity to drain water from the road. Safety measures including a staff gage, flood warning signage, and safety rails would be placed on 40th Street. This project is estimated to cost 1,039,500 USD. Conceptual plans are shown on the following pages with the detailed cost estimate include in **Appendix G**.

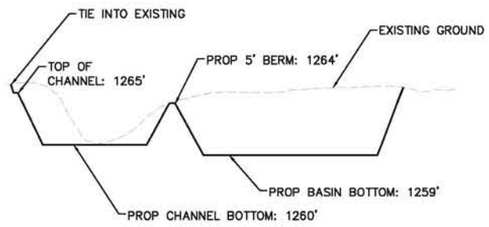
Benefits

The implementation of this project would allow for decreased frequency of road closures at this intersection. In existing conditions, the entire intersection must typically be shut down for the 2-year storm. Stanford Drive becomes inundated with 1 to 3 feet of water and 40th Street with up to 5 feet of water according to modeling results. Recorded instances of the intersection being shut down have been confirmed and recorded by Town Staff. In 2-year and 10-year storm proposed conditions, Stanford Drive could remain open with closures being limited to the 40th Street wash crossing. This project would improve emergency and passenger vehicle access. A cost/benefit ratio was not calculated for this project as the benefits are entirely improved transportation function and emergency vehicle access improvement. 10-year existing conditions, proposed conditions, and depth difference maps, along with conceptual plans, are shown on the following pages. Additional storm events results are included in **Appendix F.**



SECTION A-A

SCALE: 1"=50'



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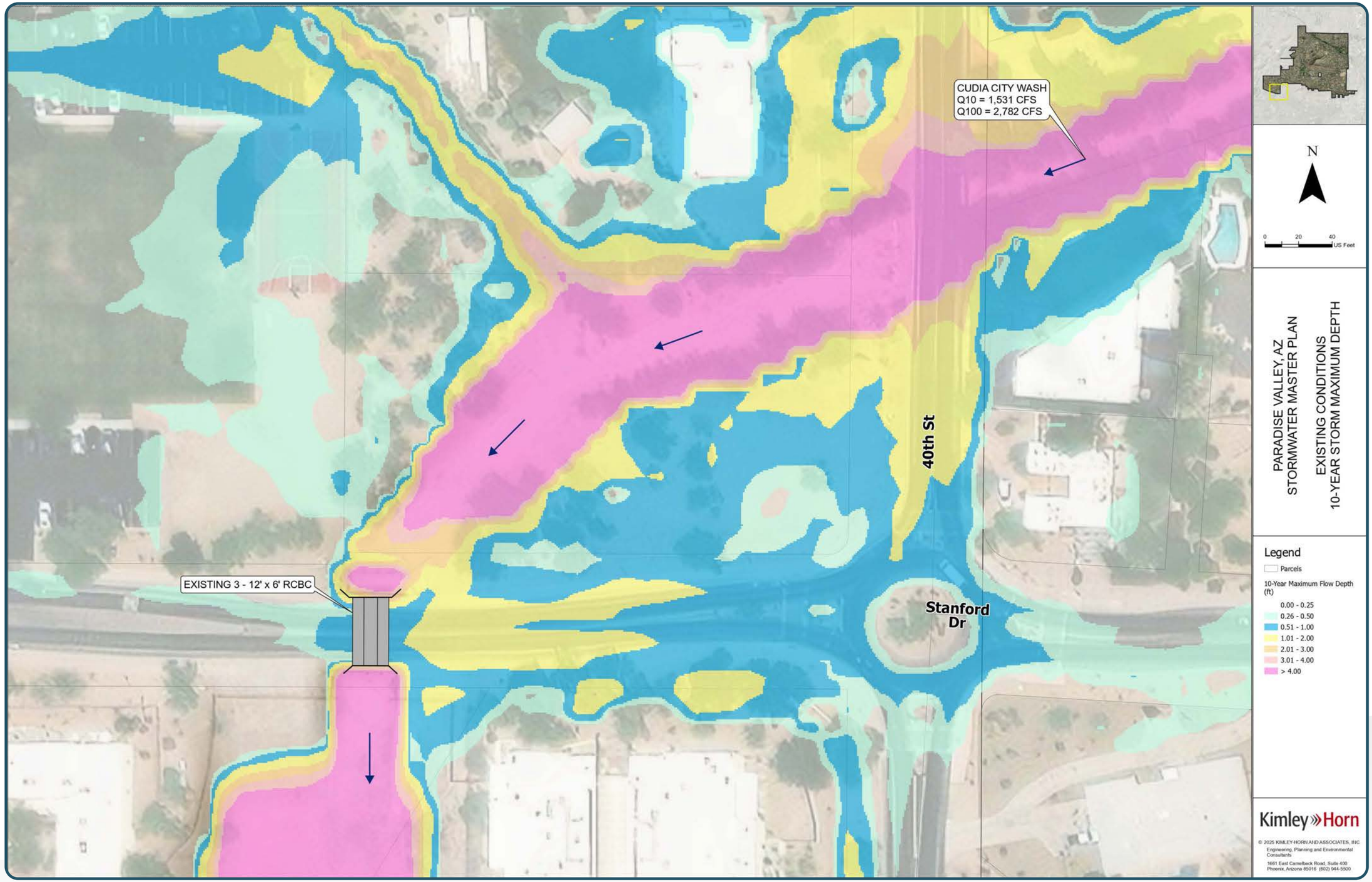
PARADISE VALLEY SWMP
AREA H SELECTED ALTERNATIVE 15% PLANS

NORTH

PROJECT NO. 091054031

DRAWING NAME AREA H

1 OF 1


CUDIA CITY WASH
Q10 = 1,531 CFS
Q100 = 2,782 CFS
EXISTING 3 - 12' x 6' RCBC
40th St
Stanford Dr
N
0 20 40
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
EXISTING CONDITIONS
10-YEAR STORM MAXIMUM DEPTH
Legend
Parcels
10-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
Kimley»Horn
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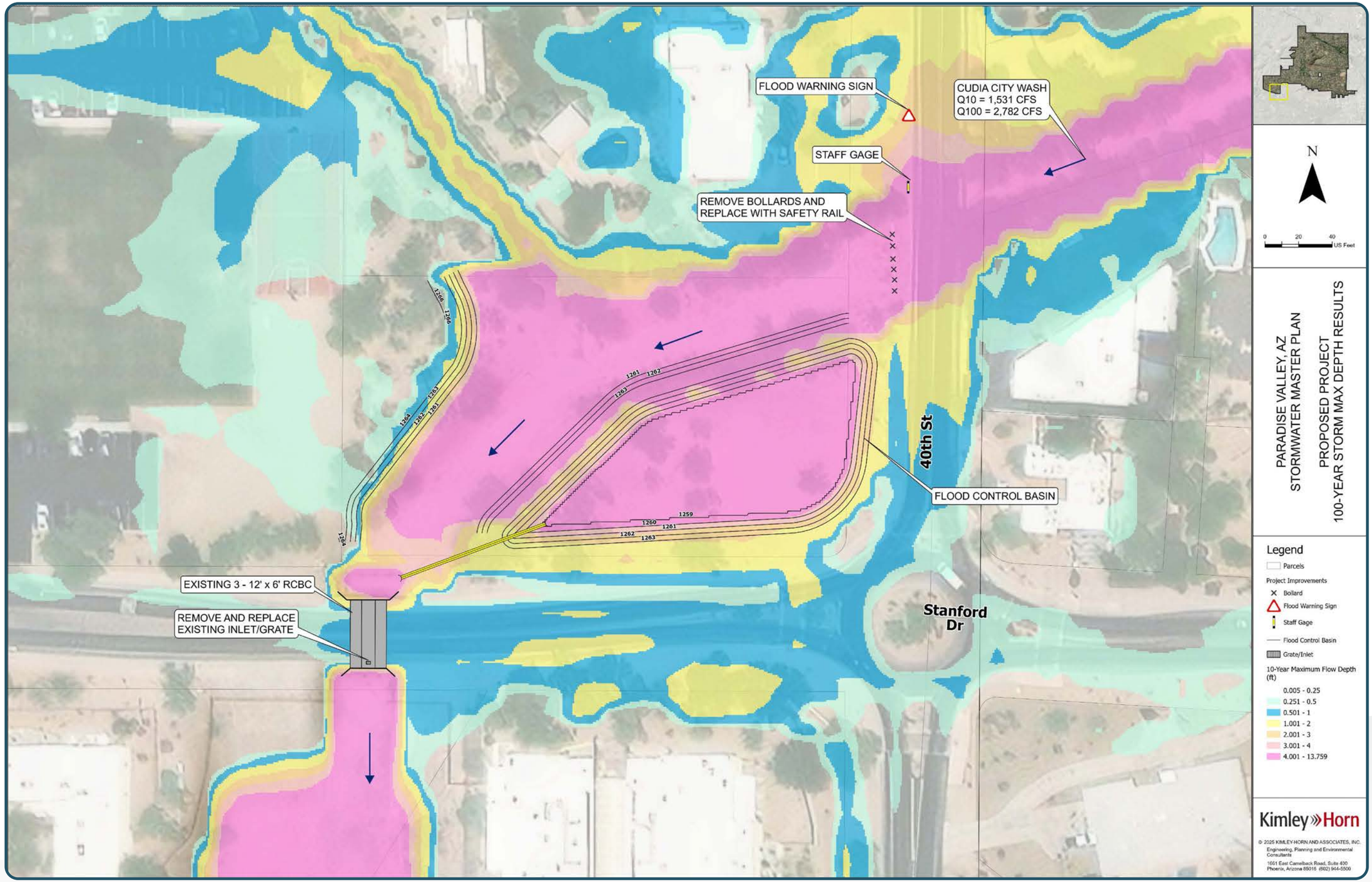
Engineering, Planning and Environmental Consultants
1661 East Camelback Road, Suite 400
Phoenix, Arizona 85016 (602) 944-5500


FLOOD WARNING SIGN
CUDIA CITY WASH
Q10 = 1,531 CFS
Q100 = 2,782 CFS
STAFF GAGE
REMOVE BOLLARDS AND
REPLACE WITH SAFETY RAIL
40th St
FLOOD CONTROL BASIN
EXISTING 3 - 12' x 6' RCBC
REMOVE AND REPLACE
EXISTING INLET/GRATE
Stanford
Dr
N
0 20 40
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
PROPOSED PROJECT
100-YEAR STORM MAX DEPTH RESULTS
Legend
Parcels
Project Improvements
Bollard
Flood Warning Sign
Staff Gage
Flood Control Basin
Grate/Inlet
10-Year Maximum Flow Depth (ft)
0.005 - 0.25
0.251 - 0.5
0.501 - 1
1.001 - 2
2.001 - 3
3.001 - 4
4.001 - 13.759
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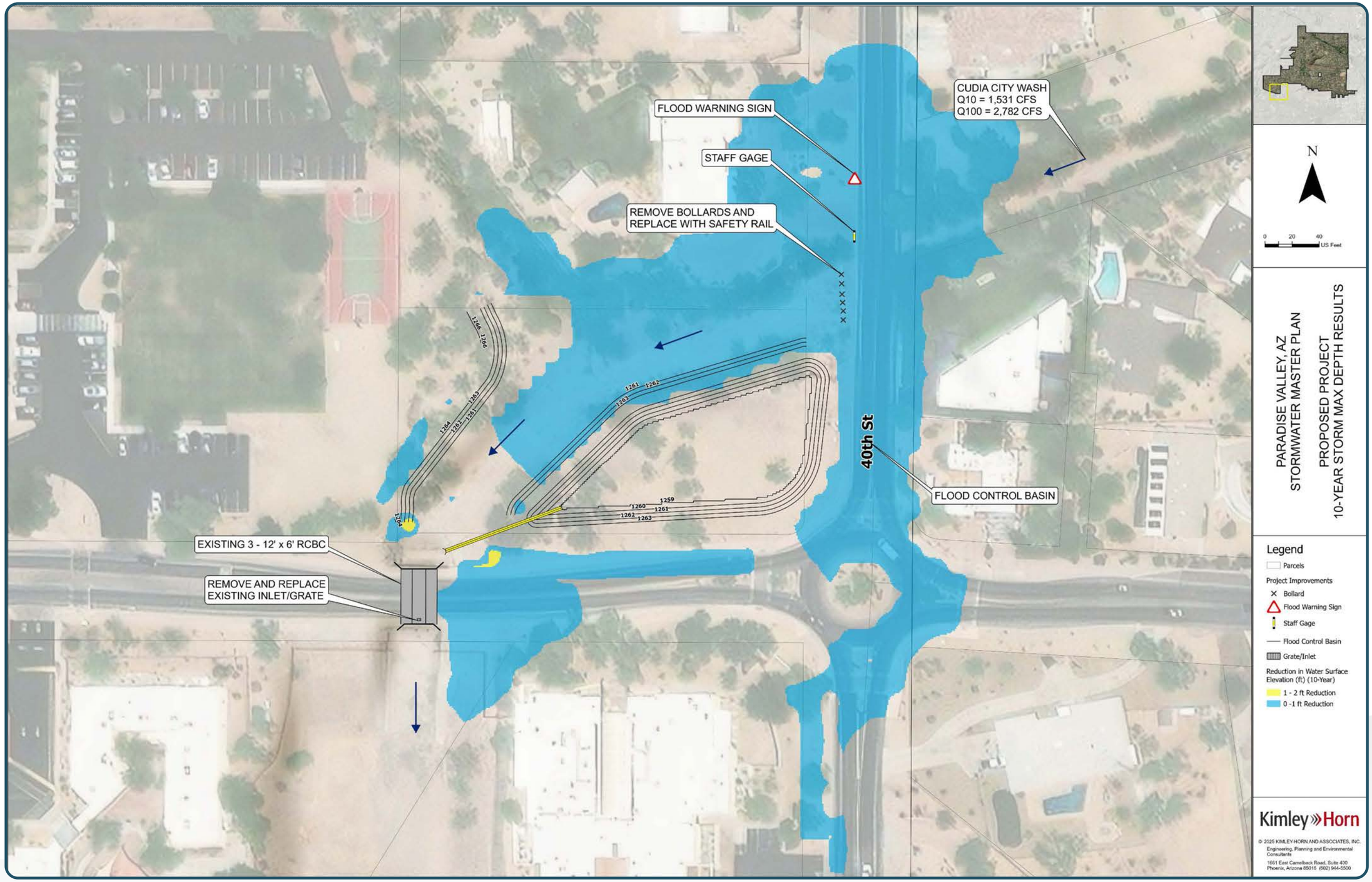
FLOOD WARNING SIGN
STAFF GAGE
REMOVE BOLLARDS AND REPLACE WITH SAFETY RAIL
CUDIA CITY WASH
Q10 = 1,531 CFS
Q100 = 2,782 CFS
40th St
FLOOD CONTROL BASIN
EXISTING 3 - 12' x 6' RCBC
REMOVE AND REPLACE EXISTING INLET/GRATE
N
0 20 40 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
PROPOSED PROJECT
10-YEAR STORM MAX DEPTH RESULTS
Legend
Parcels
Project Improvements
Bollard
Flood Warning Sign
Staff Gage
Flood Control Basin
Grate/Inlet
Reduction in Water Surface Elevation (ft) (10-Year)
1 - 2 ft Reduction
0 -1 ft Reduction
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C. Flood Hazard Area K – Mountain View Road

Description

Alternative 2 was selected from the two alternatives evaluated in the project matrix. This alternative involves constructing a retention basin upstream of Mountain View Road. The basin was sized with 3 to 1 slopes, a top elevation of 1396, and a bottom of elevation of 1388. This configuration provides 32.6 acre-ft of water storage, containing the 10-year hydrograph. The basin outfalls to a spillover weir on the west side of Tatum Boulevard. This project is estimated to cost 6,072,476 USD. Conceptual plans are shown on the following pages with the detailed cost estimate included in **Appendix G.**

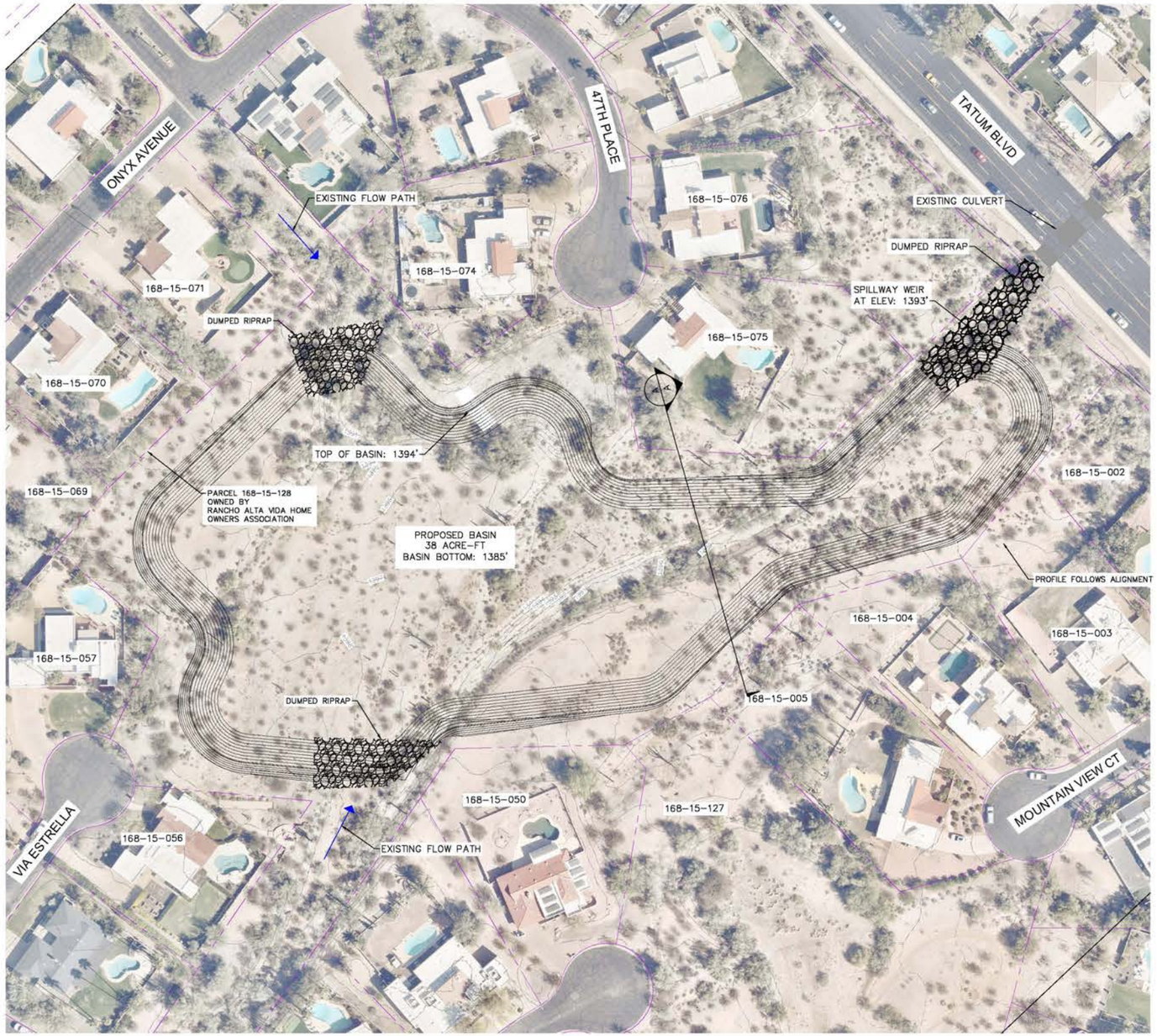
Benefits

The potential benefits for the 10-year and 100-year storms were developed for the project and are shown in **Table 31**. The benefits were determined by incorporating the proposed drainage improvements into the FLO-2D model and comparing the pre and post project flow depth conditions adjacent to the impacted buildings. By using the U.S. Army Corps of Engineers (USACE) depth-damage curves for the building structures and building contents, a damage reduction or benefit per building was determined for the 10- and 100-year storms. The USACE depth damage curves can be seen in **Appendix H**. If the detention basin is built, it is expected to have a life cycle of 75-years, and total benefits of about 18.7 million USD when assuming seven 10-year storms and one 100-year storm occurring during the infrastructure life span

Table 31: Area K Benefit Cost Ratio Summary

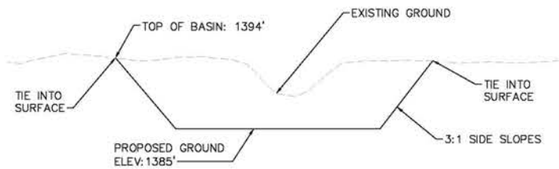
Number of Properties Impacted		220
Approximate Population1		550
Benefit with Drainage Improvements in Place ($)	Damage Reduction	21,394,816
	Social Benefits	1,978,900
	Total	23,293,796
Construction Cost		11,616,355
Benefit-Cost Ratio (BCR)		2.01

1Assumed 2.5 people per household from U.S. Census for the Town of Paradise Valley.
2Social benefits are based on the number of residents impacted and are calculated using FEMA's Benefit Cost Analysis toolkit. This would account for traffic closures, interruptions to work, etc.
3Assumed at least seven 10-year storms and one 100- year storm occur during the 75-year life span of the improvements.



SECTION A-A

SCALE: 1"=30'



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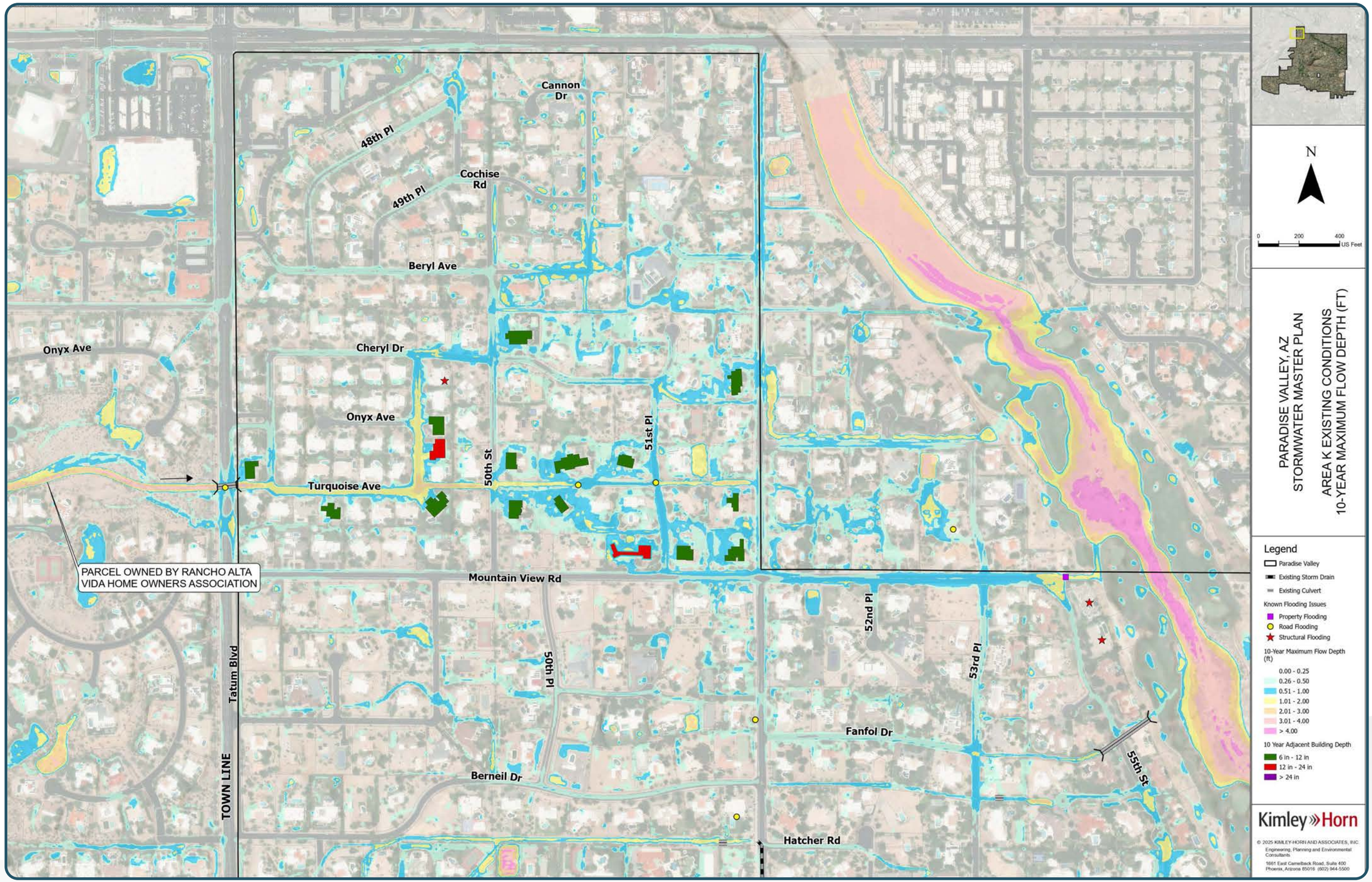
PARADISE VALLEY SWMP
AREA K SELECTED ALTERNATIVE 15% PLANS

PROJECT NO. 091054031

DRAWING NAME: AREA A


Cannon Dr
48th Pl
49th Pl
Cochise Rd
Beryl Ave
Onyx Ave
Cheryl Dr
Onyx Ave
51st Pl
50th St
Turquoise Ave
PARCEL OWNED BY RANCHO ALTA VIDA HOME OWNERS ASSOCIATION
Mountain View Rd
Tatum Blvd
50th Pl
52nd Pl
53rd Pl
Fanfol Dr
55th St
Berneil Dr
TOWN LINE
Hatcher Rd
N
0 200 400 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
AREA K EXISTING CONDITIONS
10-YEAR MAXIMUM FLOW DEPTH (FT)
Legend
Paradise Valley
Existing Storm Drain
Existing Culvert
Known Flooding Issues
Property Flooding
Road Flooding
Structural Flooding
10-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
10 Year Adjacent Building Depth
6 in - 12 in
12 in - 24 in
> 24 in
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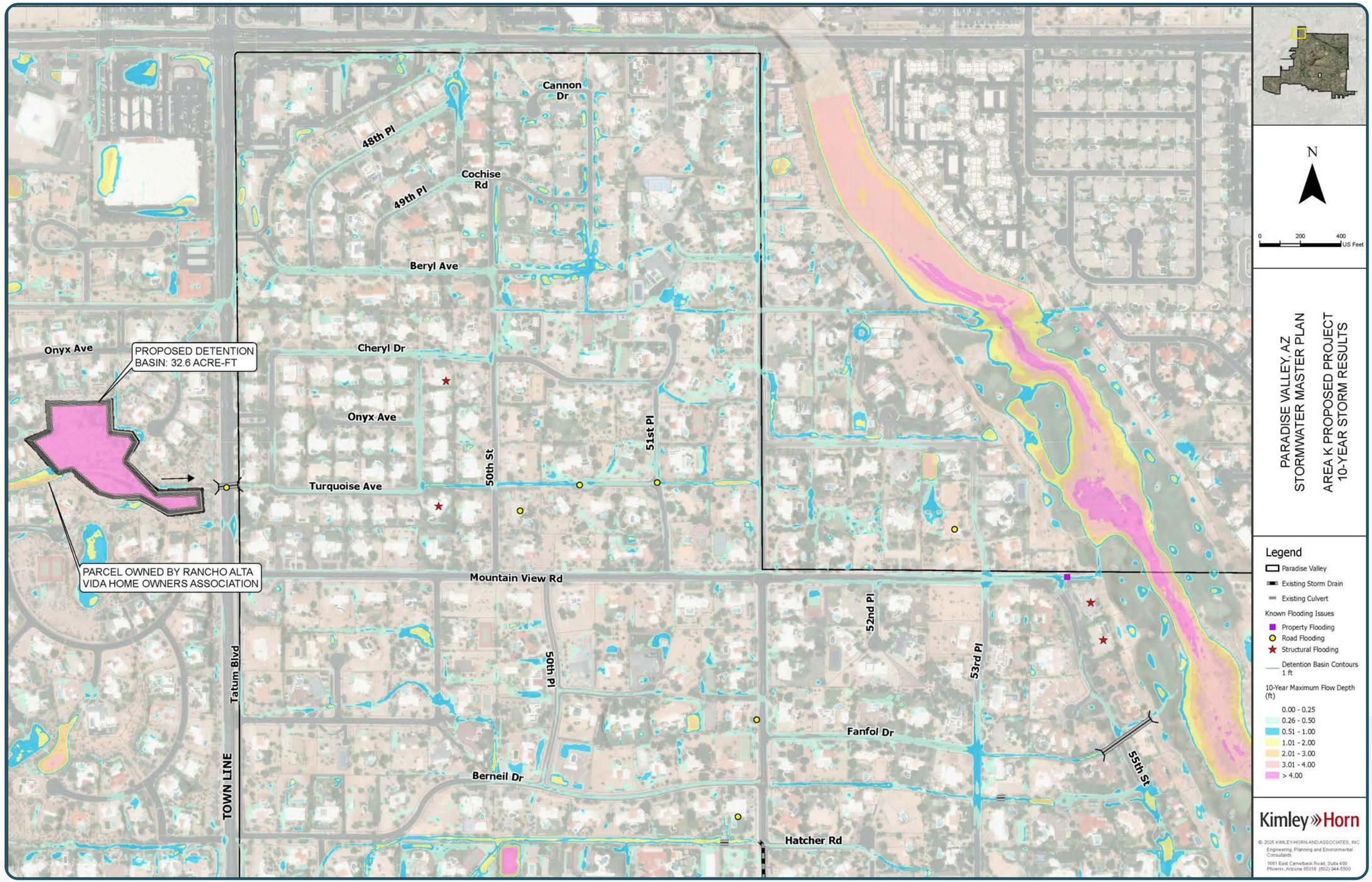
Cannon Dr
48th Pl
Cochise Rd
49th Pl
Beryl Ave
Onyx Ave
PROPOSED DETENTION BASIN: 32.6 ACRE-FT
Cheryl Dr
Onyx Ave
50th St
51st Pl
Turquoise Ave
PARCEL OWNED BY RANCHO ALTA VIDA HOME OWNERS ASSOCIATION
Mountain View Rd
Tatum Blvd
TOWN LINE
50th Pl
52nd Pl
53rd Pl
Fanfol Dr
Berneil Dr
55th St
Hatcher Rd
N
0 200 400 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
AREA K PROPOSED PROJECT
10-YEAR STORM RESULTS
Legend
Paradise Valley
Existing Storm Drain
Existing Culvert
Known Flooding Issues
Property Flooding
Road Flooding
Structural Flooding
Detention Basin Contours 1 ft
10-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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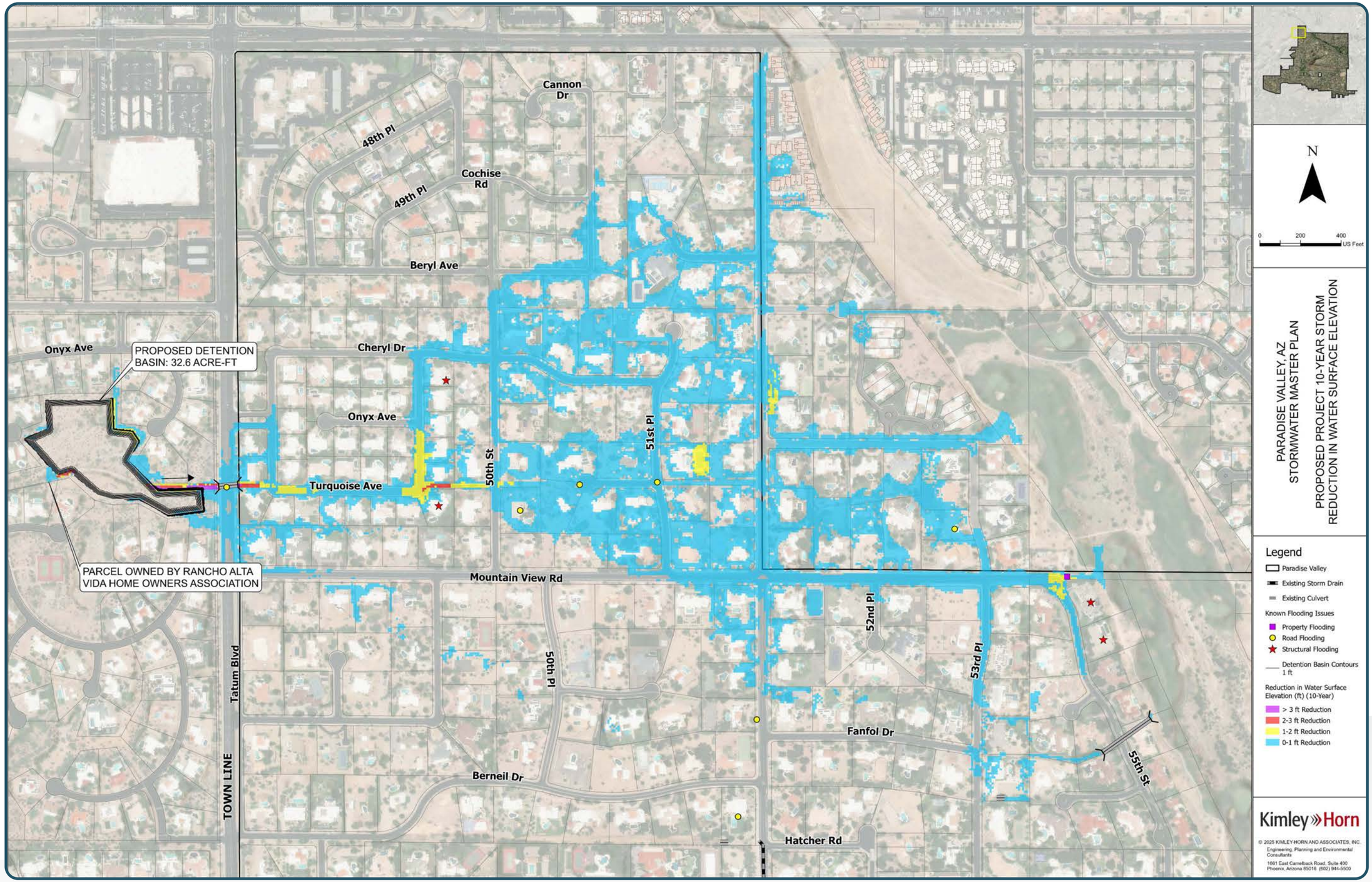
Cannon Dr
48th Pl
49th Pl
Cochise Rd
Beryl Ave
Cheryl Dr
Onyx Ave
PROPOSED DETENTION BASIN: 32.6 ACRE-FT
Turquoise Ave
50th St
51st Pl
PARCEL OWNED BY RANCHO ALTA VIDA HOME OWNERS ASSOCIATION
Mountain View Rd
Tatum Blvd
TOWN LINE
50th Pl
52nd Pl
53rd Pl
Fanfol Dr
Berneil Dr
55th St
Hatcher Rd
N
0 200 400 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
PROPOSED PROJECT 10-YEAR STORM
REDUCTION IN WATER SURFACE ELEVATION
Legend
Paradise Valley
Existing Storm Drain
Existing Culvert
Known Flooding Issues
Property Flooding
Road Flooding
Structural Flooding
Detention Basin Contours 1 ft
Reduction in Water Surface Elevation (ft) (10-Year)
> 3 ft Reduction
2-3 ft Reduction
1-2 ft Reduction
0-1 ft Reduction
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D. Flood Hazard Area L – Upstream Cherokee Wash

Description

Alternative 2 was selected from the two alternatives evaluated in the project decision matrix. The alternative involves replacing three low water crossings with culverts. This alternative requires raising the road to accommodate the culvert configuration. The proposed culverts were developed with the following improvements: the extent of roadway grading necessary for the construction of the culverts was determined and optimized by creating a 3D profile. The profiles provided the required length, invert elevations, and road elevation of the proposed culverts. Using these variables, the 10-year storm water surface elevation passing through the culvert was determined by normal depth calculations. The culvert profiles are included in **Appendix H.** The final configuration for the culverts is 2-10' x 4' on Crestview Drive and Arroyo Drive and a 3-10'x4' on Desert Jewel Drive. Safety rails based on MAG Standard Detail 145 were included in conceptual design. This project is estimated to cost 6,113,214 USD. See **Appendix G** for the associated conceptual cost estimate.

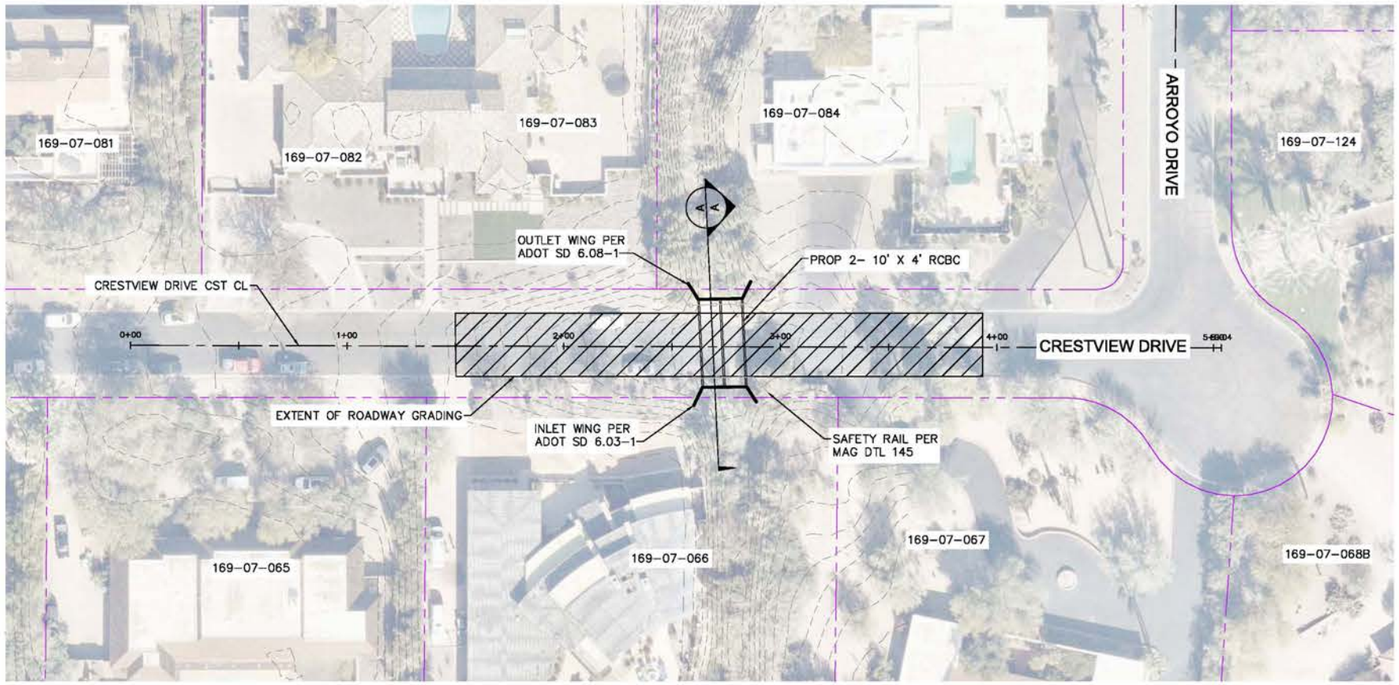
Benefits

The completion of this project would improve public safety and reduce obstruction to emergency vehicle access. In 10-year existing conditions, the maximum flow depths through Crestview Drive, Arroyo Drive, and Desert Jewel Drive are 6 ft, 6.1 ft, and 4.2 ft, respectively per modeling results. These water crossings are hazards to emergency vehicle access and the traveling public. The culvert configuration contains the 2-year storm, and obstructions to emergency vehicles are reduced in the 10-year storm. A cost/benefit ratio was not calculated for this project as the benefits are entirely improved transportation function and emergency access improvement. 10-year existing condition, proposed condition, and depth difference maps, along with conceptual plans, are shown on the following pages. Additional storm event results are included in **Appendix F.**

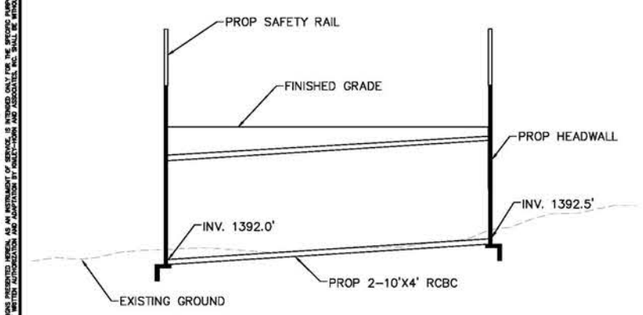
NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

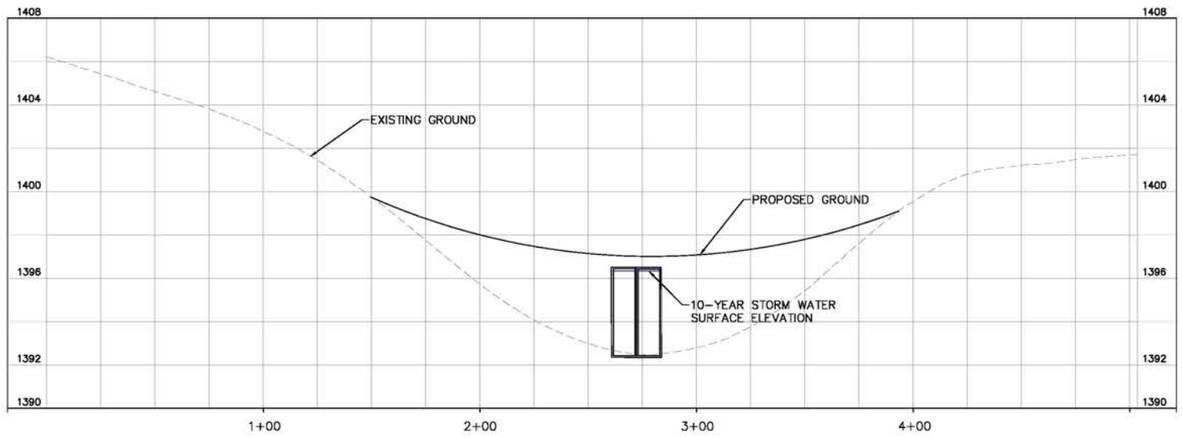
PROFILE VIEW
VERT SCALE: 1"=4'



SECTION A-A
SCALE: 1"=15'



CULVERT PROFILE



NO. | REVISION | DATE

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SCALE (H): 1"=30'
SCALE (V): 1"=4'
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
DATE: 03/2025

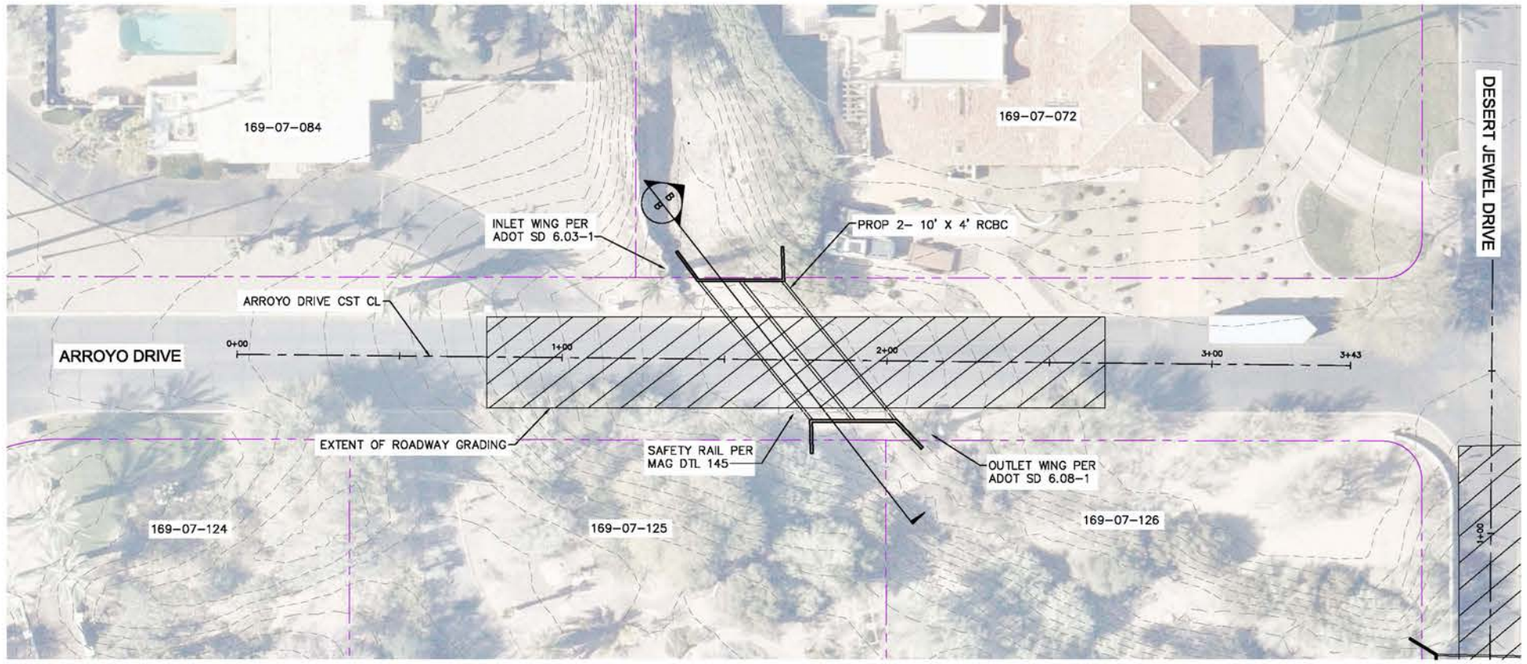
PARADISE VALLEY SWMP
AREA L SELECTED ALTERNATIVE 15% PLANS

PROJECT NO.
091054031
DRAWING NAME
AREA L
1 OF 3

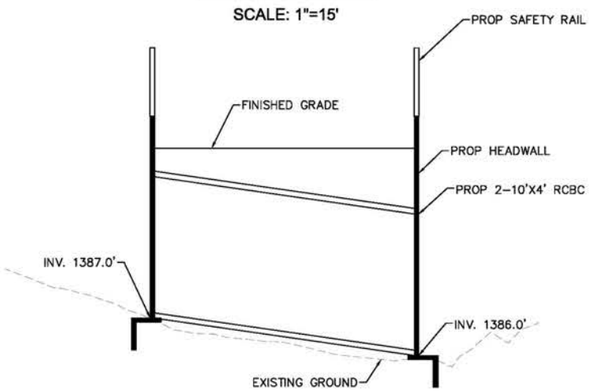
NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

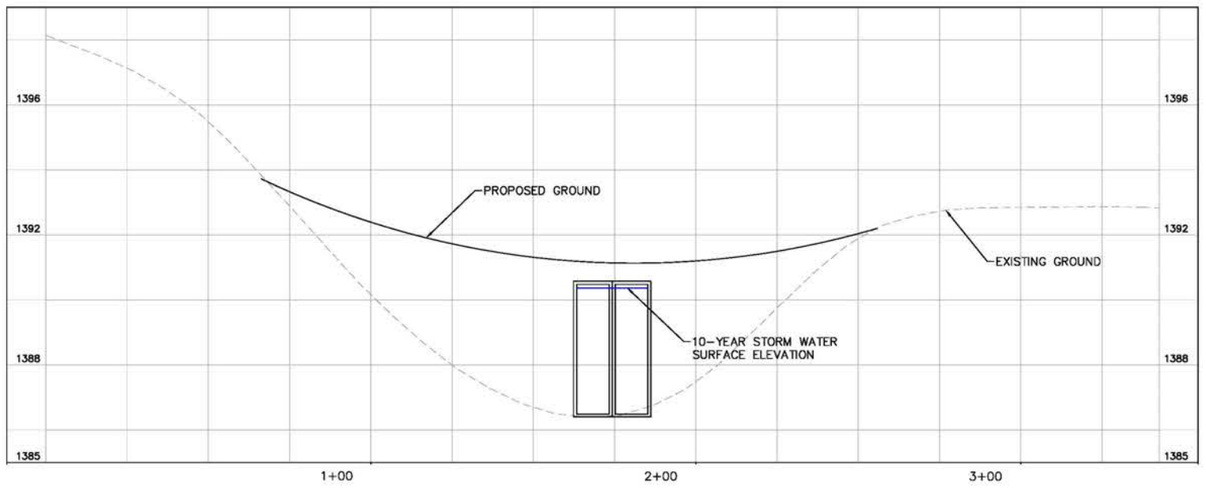
PROFILE VIEW
VERT SCALE: 1"=4'



SECTION B-B
SCALE: 1"=15'



CULVERT PROFILE



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NO. | REVISION | DATE

SCALE (H): 1"=30'
SCALE (V): 1"=4'
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
DATE: 03/2025

PARADISE VALLEY SWMP
AREA L SELECTED ALTERNATIVE 15% PLANS

PROJECT NO.
091054031

DRAWING NAME
AREA L

2 OF 3

C:\PW_WaterResources\091054031_PV_Stormwater_Master_Plan\CADD\Exhibit\Varied_project_profile.dwg May 19, 2025 PresleyBoles
XREFS: xD: xArea_Lsect
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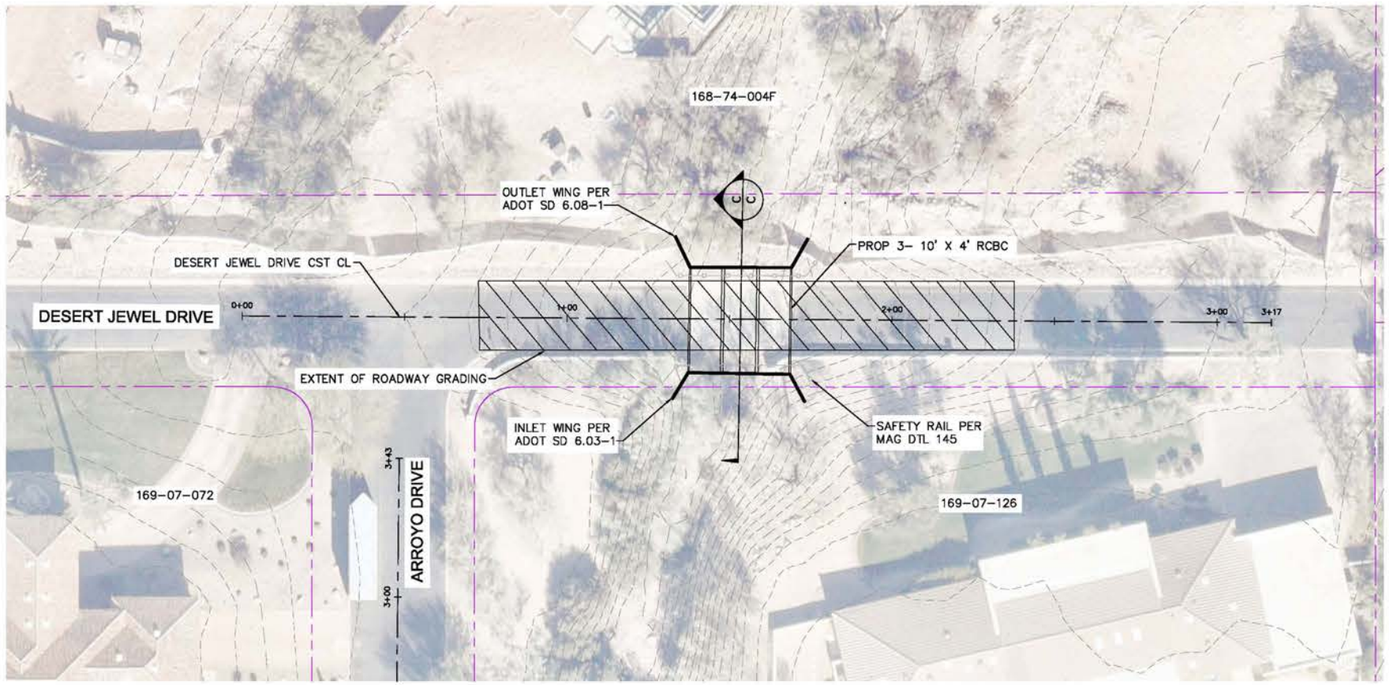
NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

PROFILE VIEW

VERT SCALE: 1"=4'



SECTION C-C

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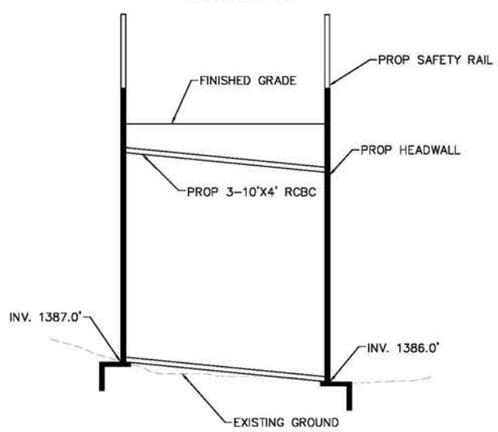
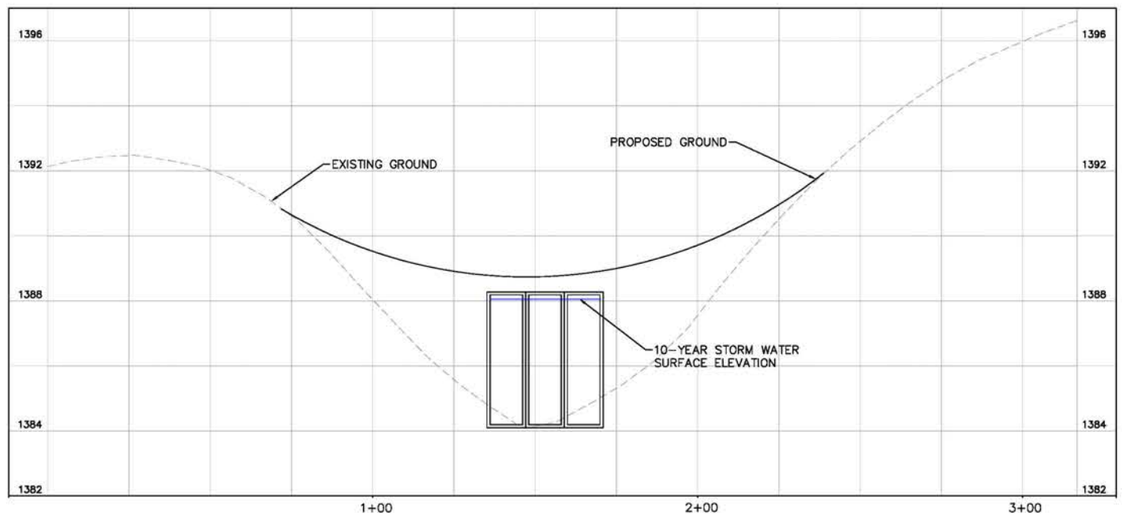


CULVERT PROFILE



NO.	REVISION	DATE

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SCALE (H): 1"=30'
SCALE (V): 1"=4'
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
DATE: 03/2025

PARADISE VALLEY SWMP
AREA L SELECTED ALTERNATIVE 15% PLANS

PROJECT NO.
091054031

DRAWING NAME
AREA L

3 OF 3

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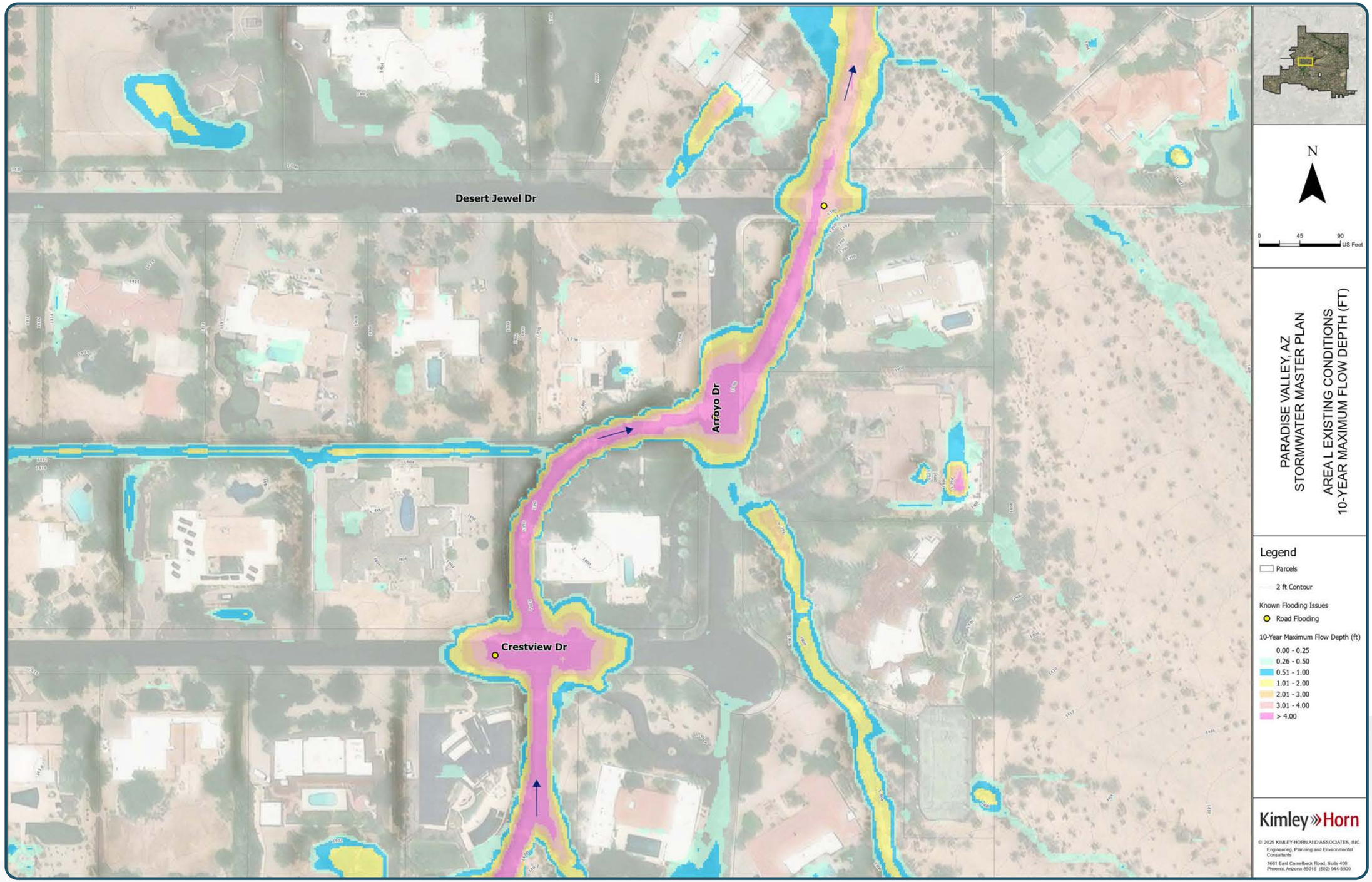
Desert Jewel Dr
Arroyo Dr
Crestview Dr
N
0
45
90
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
AREA L EXISTING CONDITIONS
10-YEAR MAXIMUM FLOW DEPTH (FT)
Legend
Parcels
2 ft Contour
Known Flooding Issues
Road Flooding
10-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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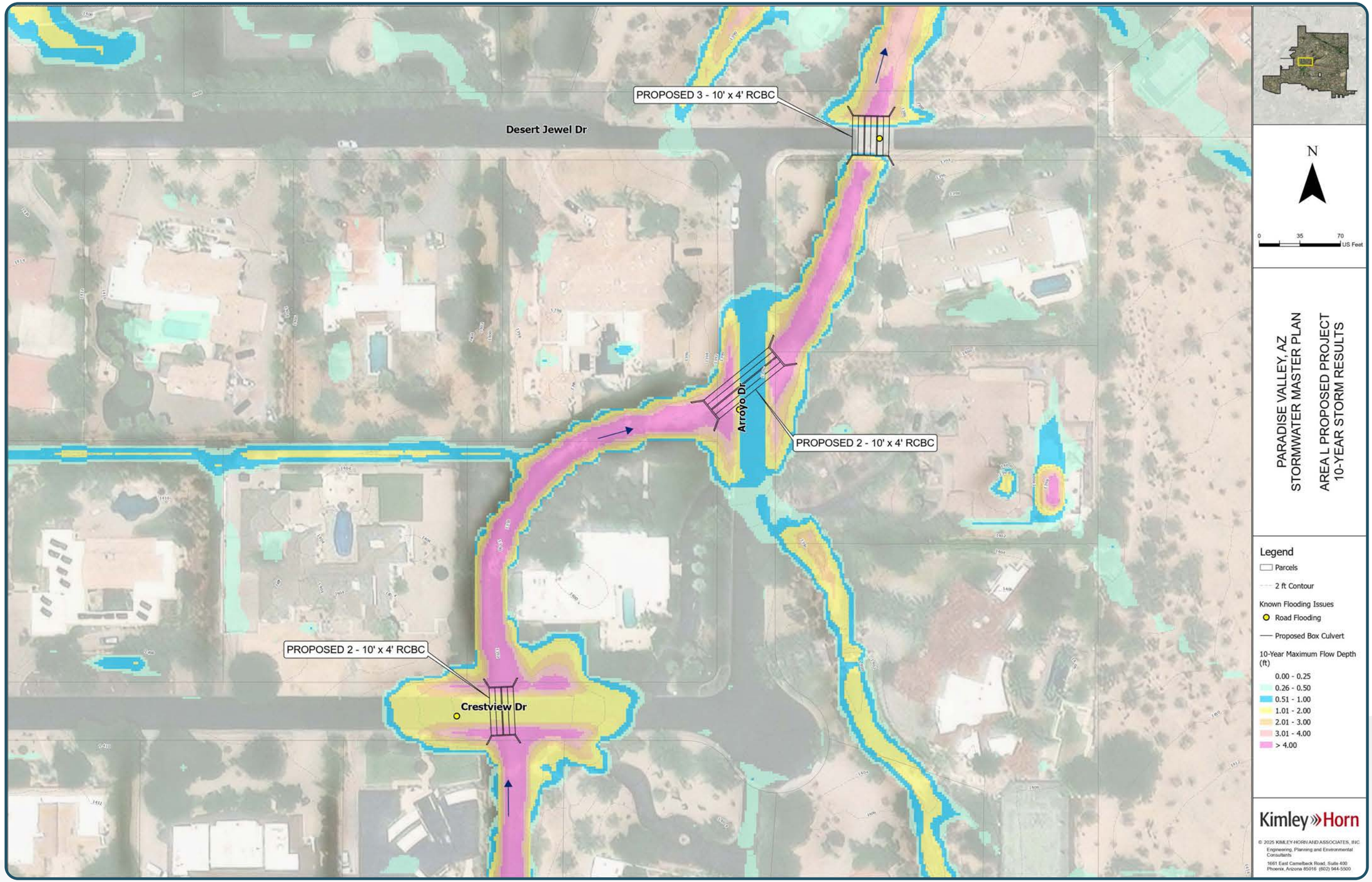
PROPOSED 3 - 10' x 4' RCBC
Desert Jewel Dr
Arroyo Dr
PROPOSED 2 - 10' x 4' RCBC
PROPOSED 2 - 10' x 4' RCBC
Crestview Dr
N
0
35
70
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
AREA L PROPOSED PROJECT
10-YEAR STORM RESULTS
Legend
Parcels
2 ft Contour
Known Flooding Issues
Road Flooding
Proposed Box Culvert
10-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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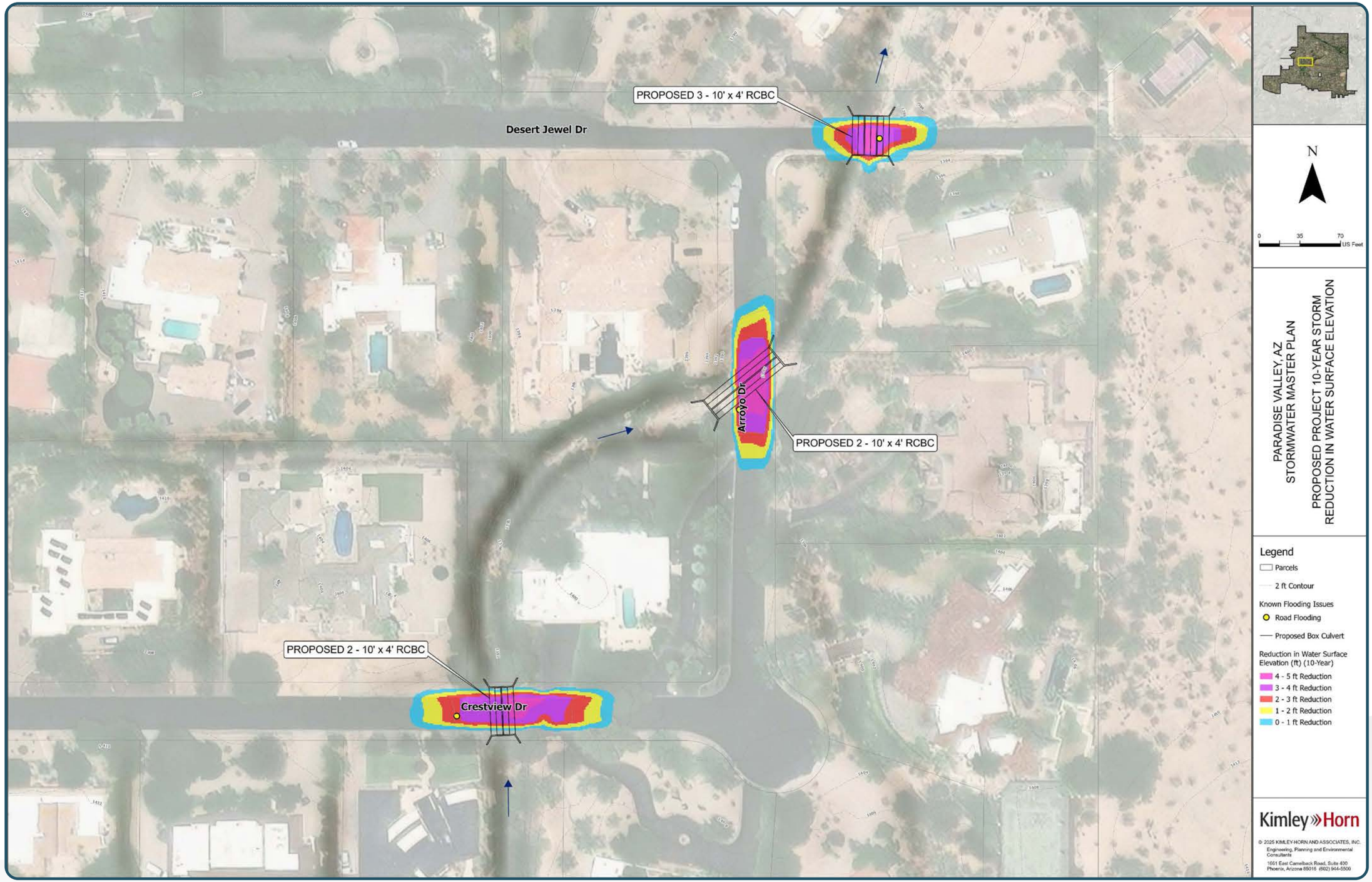
Engineering, Planning and Environmental Consultants
1661 East Camelback Road, Suite 400
Phoenix, Arizona 85016 (602) 944-5500


PROPOSED 3 - 10' x 4' RCBC
Desert Jewel Dr
Arroyo Dr
PROPOSED 2 - 10' x 4' RCBC
PROPOSED 2 - 10' x 4' RCBC
Crestview Dr
N
0 35 70
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
PROPOSED PROJECT 10-YEAR STORM
REDUCTION IN WATER SURFACE ELEVATION
Legend
Parcels
2 ft Contour
Known Flooding Issues
Road Flooding
Proposed Box Culvert
Reduction in Water Surface Elevation (ft) (10-Year)
4 - 5 ft Reduction
3 - 4 ft Reduction
2 - 3 ft Reduction
1 - 2 ft Reduction
0 - 1 ft Reduction
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E. Flood Hazard Area N – Downstream Cherokee Wash

Description

Alternative 1 was selected from the two alternatives evaluated in the project decision matrix. The alternative involves replacing four low water crossings with culverts. This alternative requires raising the road to accommodate the culvert configuration. The proposed culverts were developed with the following improvements: the extent of roadway grading necessary for the construction of the culverts was determined and optimized by creating a 3D profile. The profiles provided the required length, invert elevations, and road elevation of the proposed culverts. Using these variables, the 10-year storm water surface elevation passing through the culvert was obtained by performing normal depth calculations. The culvert configuration has the capacity for the 10-year storm. The culvert profiles are included in **Appendix F.** The final configuration for the culverts is a 10-year storm design and consisted of 2-10' x 4' for each culvert location. This project is estimated to cost 1,989,729 USD. See **Appendix G** for the associated conceptual cost estimate

Benefits

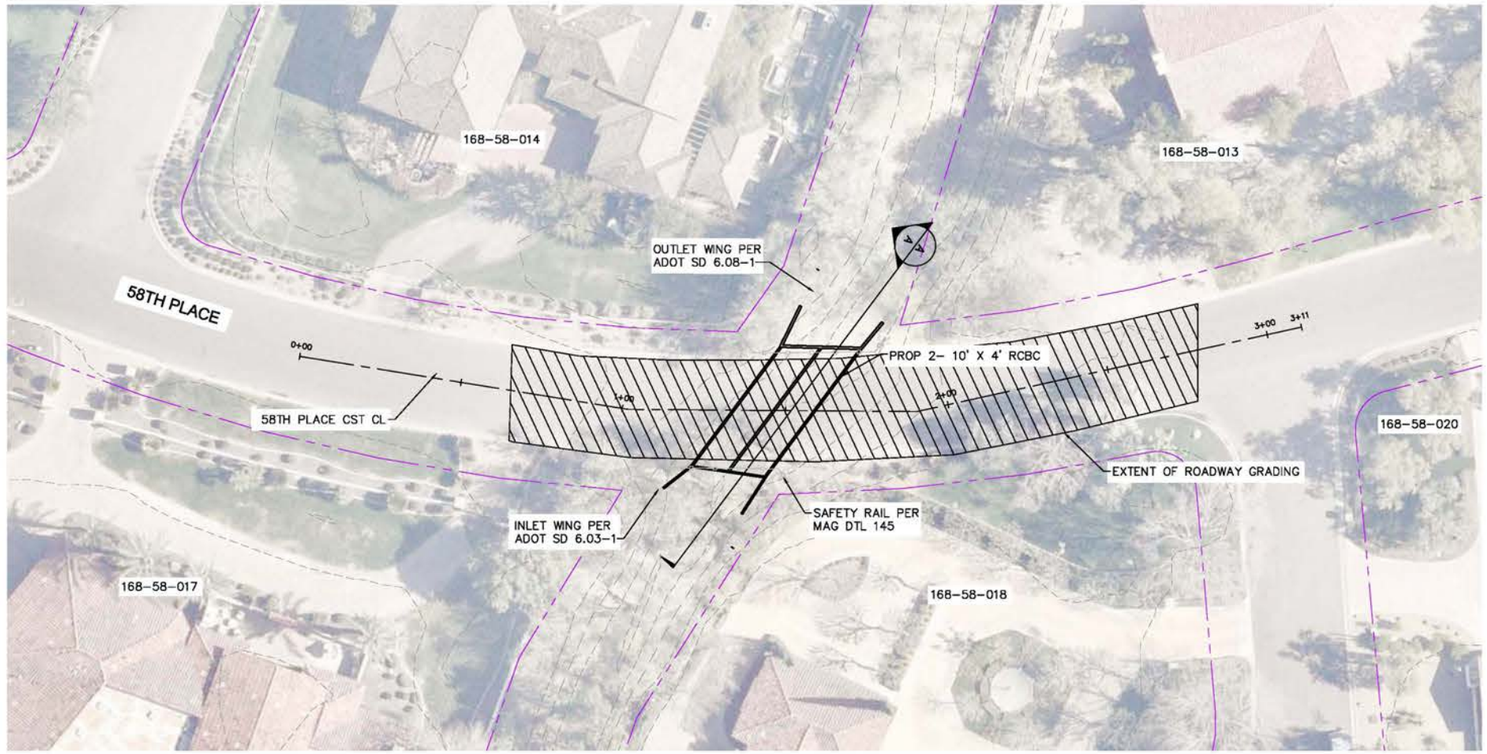
The completion of this project would improve public safety and reduce obstruction to emergency vehicle access. In 10-year existing conditions, the maximum flow depths through 58th Place, 59th Place, Morning Glory Rd, and Caballo Lane are 3.9 ft, 3.5 ft, 4.7, and 4.4 ft, respectively per modeling results. In 10-year proposed conditions, maximum flow depths are 0.1 ft, 0.6 ft, 0.6 ft, and 0.2 ft, respectively. A cost/benefit ratio was not calculated for this project as the benefits are entirely improved transportation function and emergency access improvement. 10-year existing condition, proposed condition, and depth difference maps, along with conceptual plans, are shown on the following pages. Additional storm event results are included in **Appendix F.**

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

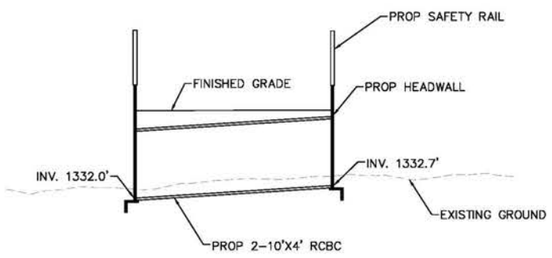
PROFILE VIEW

VERT SCALE: 1"=4'

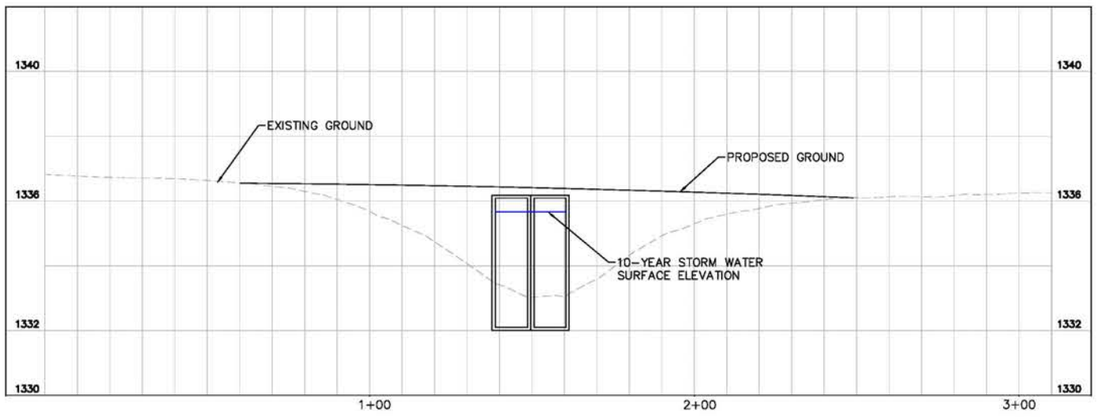


SECTION A-A

SCALE: 1"=15'



CULVERT PROFILE



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SCALE (H): 1"=20'
SCALE (V): 1"=4'
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
DATE: 03/2025

PARADISE VALLEY SWMP
AREA N SELECTED ALTERNATIVE 15% PLANS

PROJECT NO.
091054031

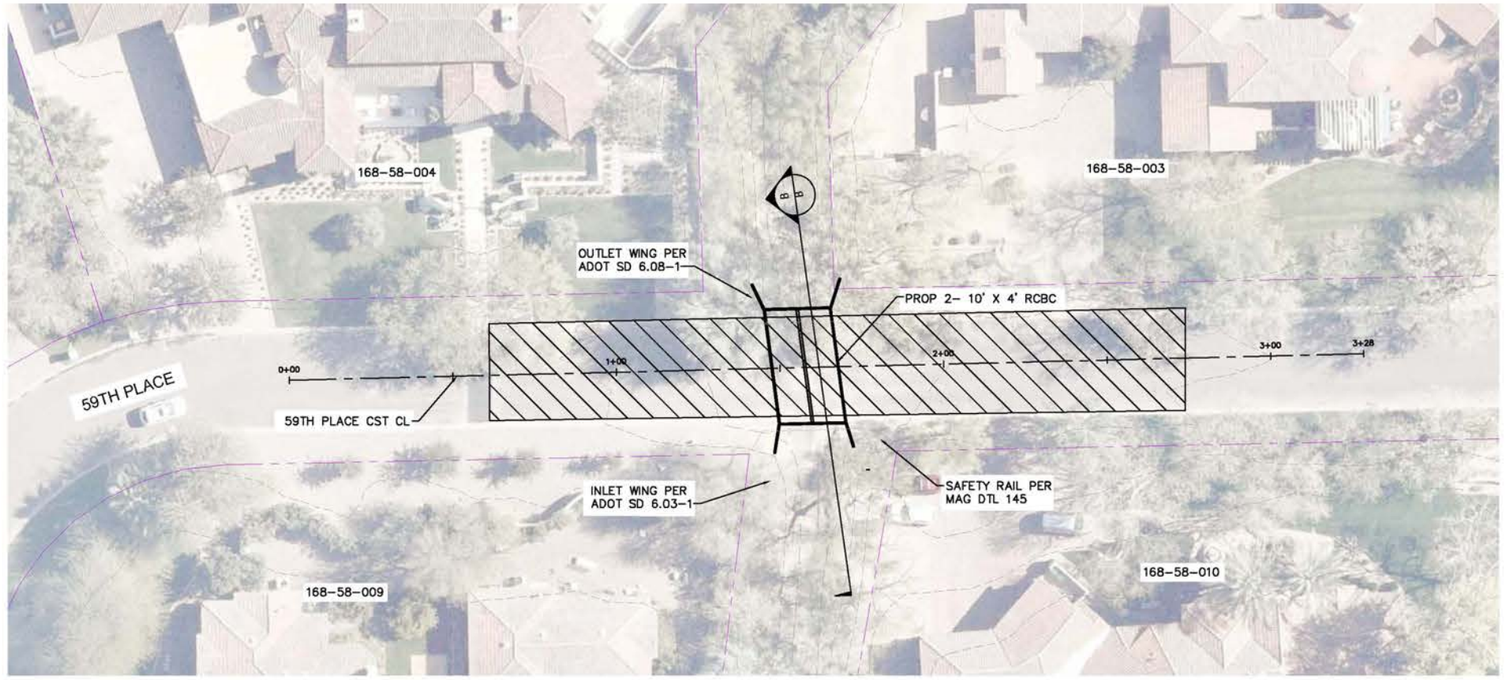
DRAWING NAME
AREA N

1 OF 4

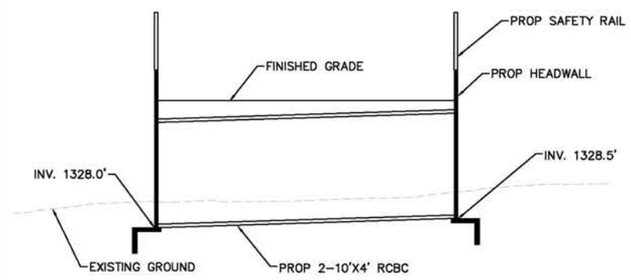
NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

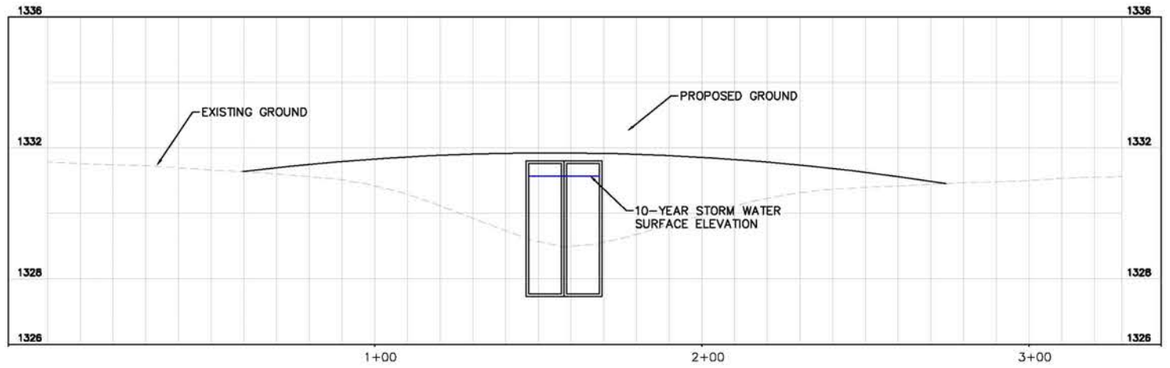
PROFILE VIEW
VERT SCALE: 1"=4'



SECTION B-B
SCALE: 1"=10'



CULVERT PROFILE



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AREA N SELECTED ALTERNATIVE 15% PLANS

PROJECT NO.
091054031

DRAWING NAME
AREA N

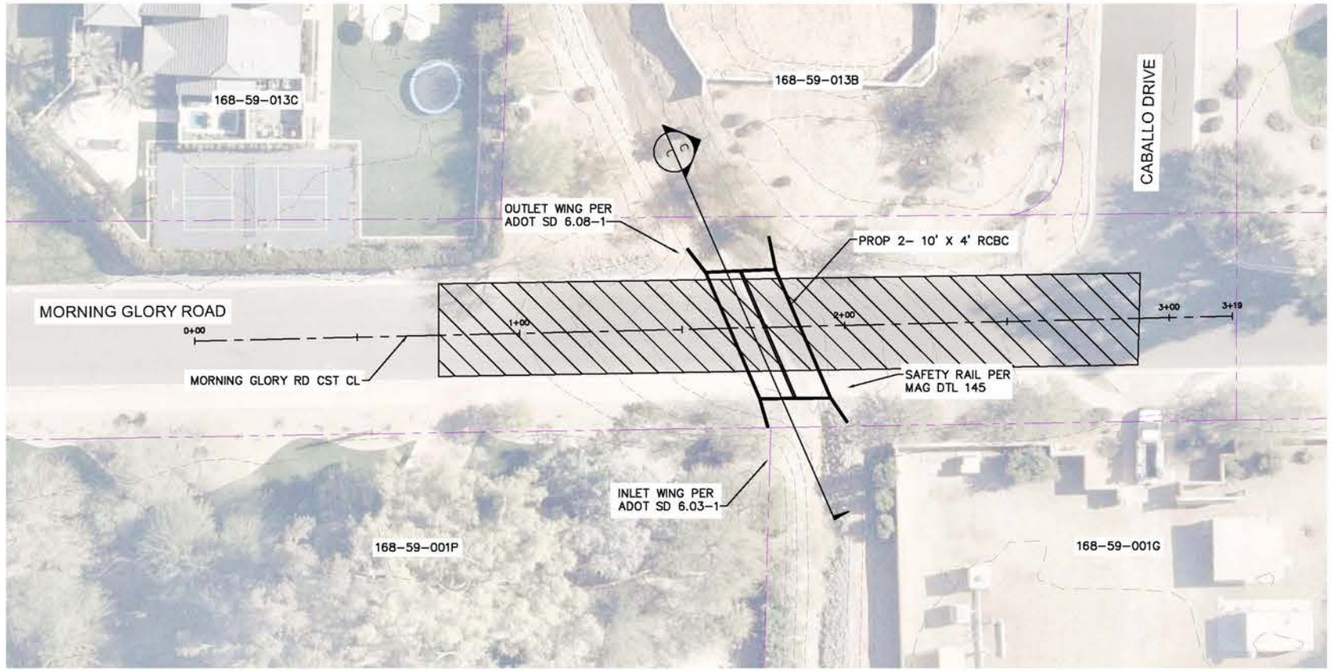
2 OF 4

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

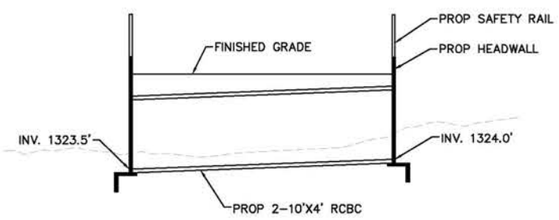
PROFILE VIEW

VERT SCALE: 1"=4'



SECTION C-C

SCALE: 1"=10'



CULVERT PROFILE

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PARADISE VALLEY SWMP
AREA N SELECTED ALTERNATIVE 15% PLANS

PROJECT NO. 091054031

DRAWING NAME AREA N

3 OF 4

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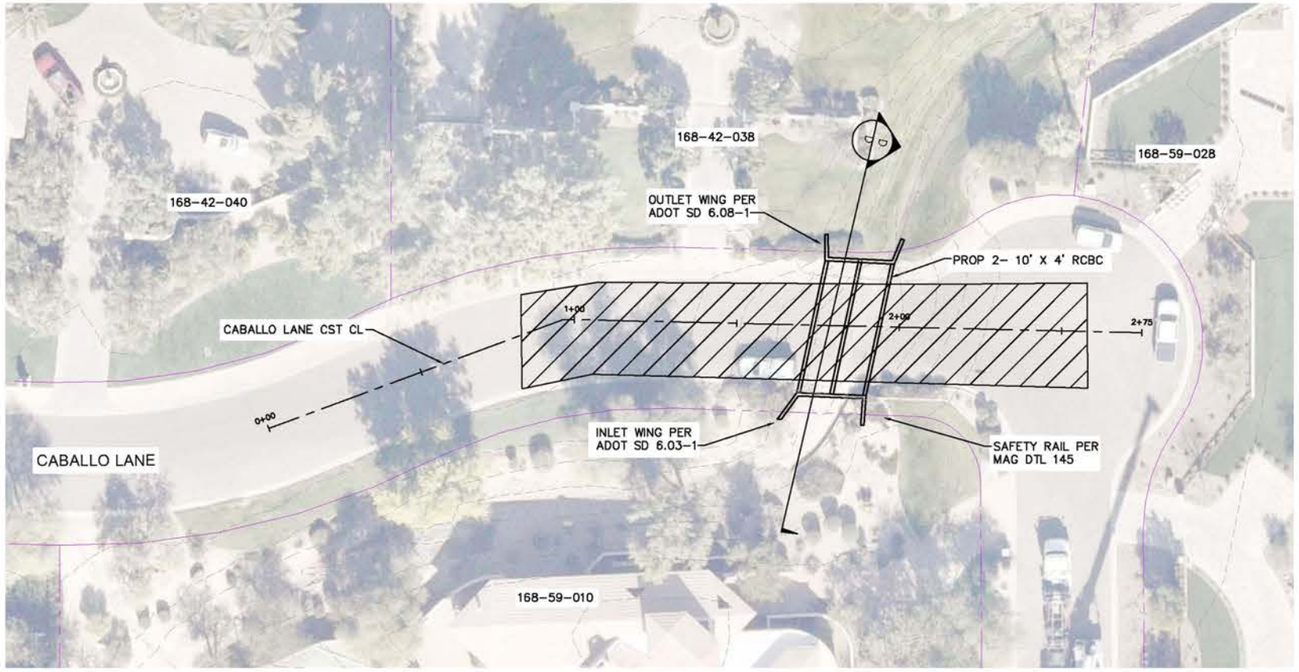
NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

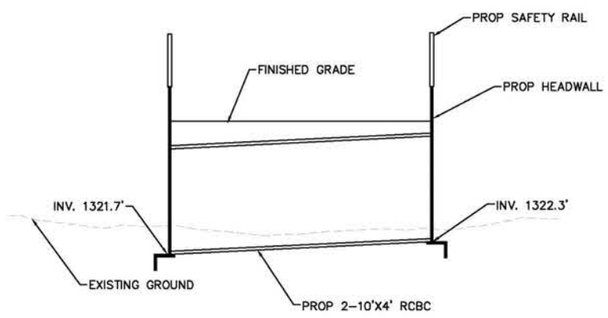
PROFILE VIEW

VERT SCALE: 1"=4'



SECTION D-D

SCALE: 1"=10'



CULVERT PROFILE

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PARADISE VALLEY SWMP
AREA N SELECTED ALTERNATIVE 15% PLANS

PROJECT NO.
091054031

DRAWING NAME
AREA N

4 OF 4

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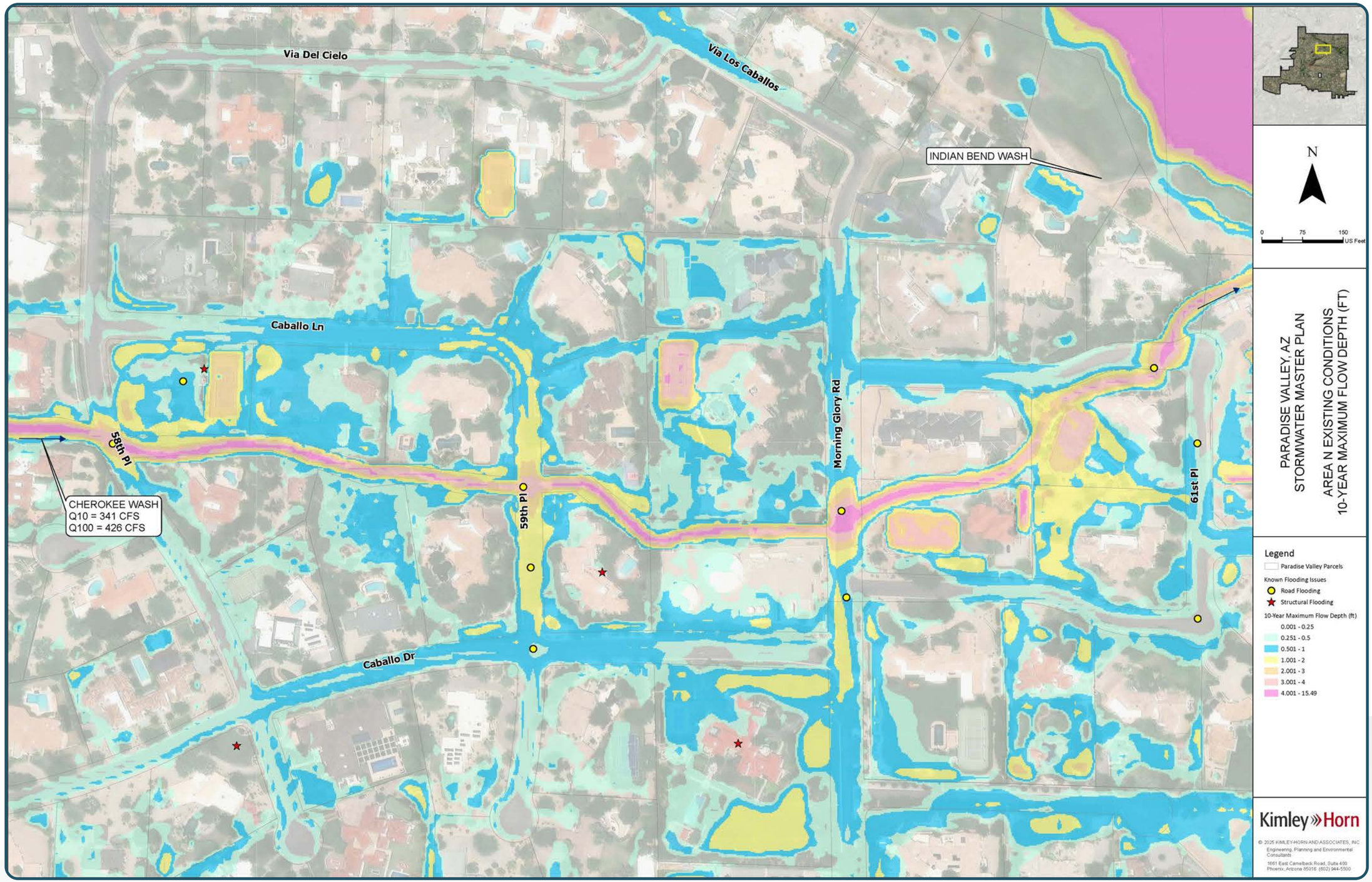
Via Del Cielo
Via Los Caballos
INDIAN BEND WASH
Caballo Ln
58th Pl
CHEROKEE WASH
Q10 = 341 CFS
Q100 = 426 CFS
59th Pl
Morning Glory Rd
61st Pl
Caballo Dr
N
0 75 150
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
AREA N EXISTING CONDITIONS
10-YEAR MAXIMUM FLOW DEPTH (FT)
Legend
Paradise Valley Parcels
Known Flooding Issues
Road Flooding
Structural Flooding
10-Year Maximum Flow Depth (ft)
0.001 - 0.25
0.251 - 0.5
0.501 - 1
1.001 - 2
2.001 - 3
3.001 - 4
4.001 - 15.49
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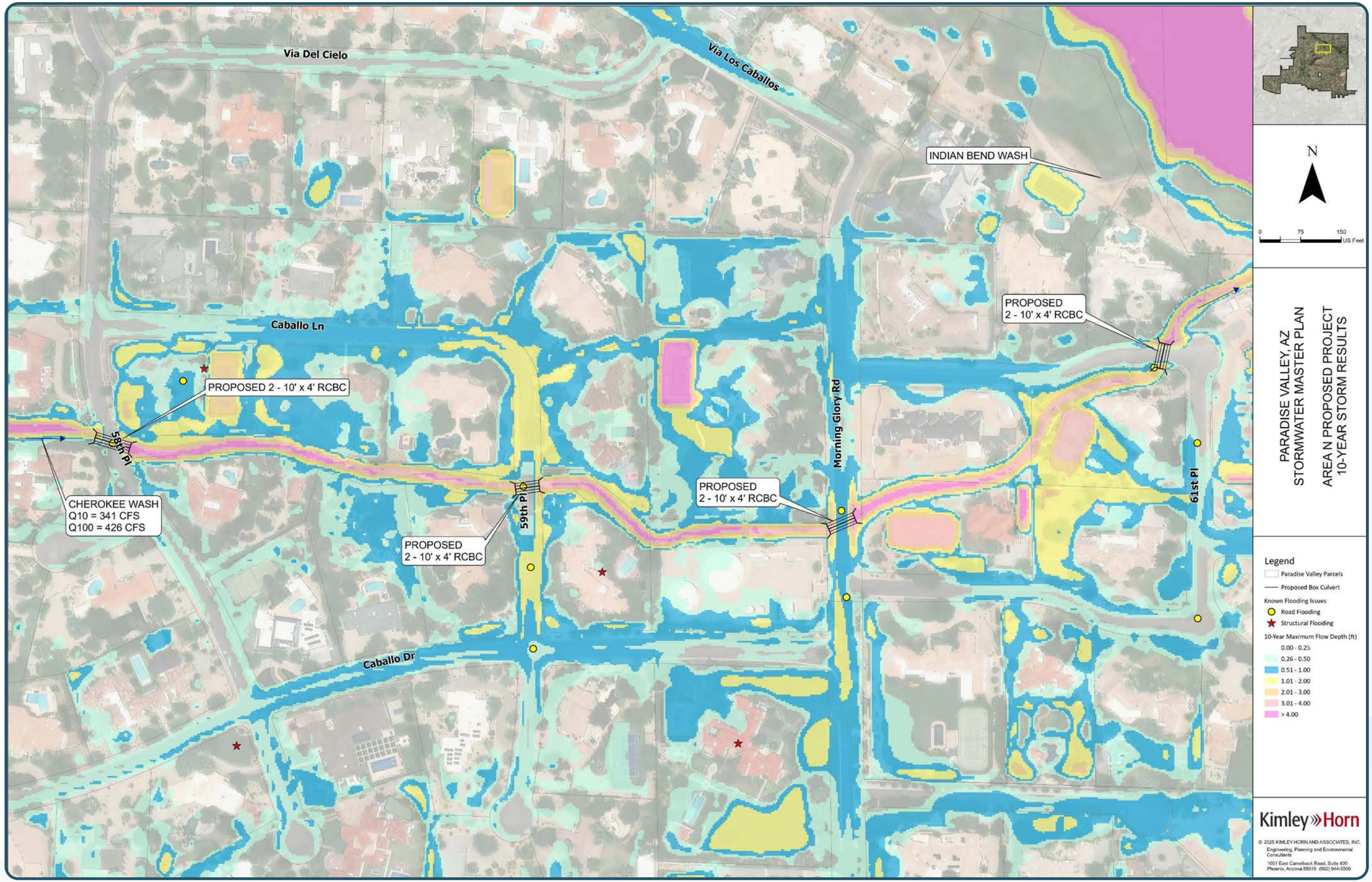
Via Del Cielo
Via Los Caballos
INDIAN BEND WASH
PROPOSED
2 - 10' x 4' RCBC
Caballo Ln
PROPOSED 2 - 10' x 4' RCBC
58th Pl
CHEROKEE WASH
Q10 = 341 CFS
Q100 = 426 CFS
59th Pl
PROPOSED
2 - 10' x 4' RCBC
Morning Glory Rd
PROPOSED
2 - 10' x 4' RCBC
61st Pl
Caballo Dr
N
0 75 150
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
AREA N PROPOSED PROJECT
10-YEAR STORM RESULTS
Legend
Paradise Valley Parcels
Proposed Box Culvert
Known Flooding Issues
Road Flooding
Structural Flooding
10-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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Via Del Cielo
Via Los Caballos
Caballo Ln
Caballo Dr
Morning Glory Rd
61st Pl
59th Pl
INDIAN BEND WASH
PROPOSED
2 - 10' x 4' RCBC
PROPOSED 2 - 10' x 4' RCBC
CHEROKEE WASH
Q10 = 341 CFS
Q100 = 426 CFS
PROPOSED
2 - 10' x 4' RCBC
PROPOSED
2 - 10' x 4' RCBC
N
0 75 150
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
PROPOSED PROJECT 10-YEAR STORM
REDUCTION IN WATER SURFACE ELEVATION
Legend
Paradise Valley Parcels
Proposed Box Culvert
Known Flooding Issues
Road Flooding
Structural Flooding
Reduction in Water Surface Elevation (ft) (10-Year)
4 - 5 ft Reduction
3 - 4 ft Reduction
2 - 3 ft Reduction
1 - 2 ft Reduction
0 - 1 ft Reduction
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F. Flood Hazard Area O – Lincoln Drive

Description

Alternative 2 was selected from the two alternatives evaluated in the project decision matrix. The alternative involves replacing three undersized culverts at 51st Place, Lincoln Drive, and Desert Fairways Drive. This alternative requires raising the road to accommodate the culvert configuration at two of the locations, 51st Street and Desert Fairways Drive. The proposed culverts were developed with the following improvements: the extent of roadway grading necessary for the construction of the culverts was determined and optimized by creating a 3D profile. The profiles provided the required length, invert elevations, and road elevation of the proposed culverts. Using these variables, the 10-year storm water surface elevation passing through the culvert was determined by performing normal depth calculations. The culvert configurations has the capacity for the 10-year storm. The culvert profiles are included in **Appendix F.** The final configuration for the culverts is a 10-year storm design and consisted of 2-10' x 4' at 51st Place and a 12'x3' culvert at both Lincoln Drive and Desert Fairways Drive. The culvert profiles and 15% plans are included in **Appendix H.** This project is estimated to cost 1,979,147 USD. See **Appendix G** for the associated conceptual cost estimate.

Benefits

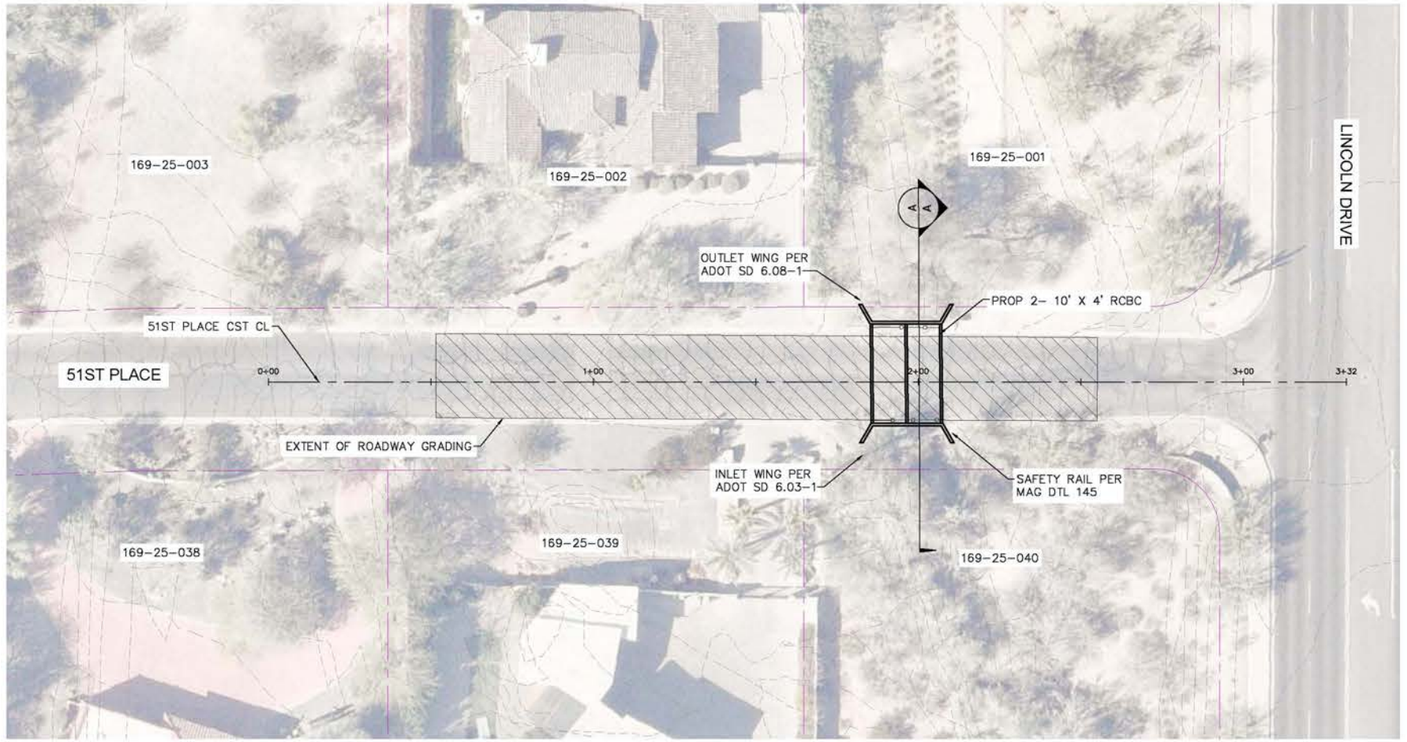
The completion of this project would improve public safety and reduce obstructions to emergency vehicle access. In 10-year existing conditions, the maximum flow depths through 51st Place, Lincoln Drive, and Desert Fairways Drive are 3 ft, 0.9 ft, and 1.3 ft, respectively per modeling results. In 10-year proposed conditions, maximum flow depths are 0.8 ft, 0.6 ft, and 0.8 ft, respectively. In the 2-year storm there is no overtopping of the culverts. A cost/benefit ratio was not calculated for this project as the benefits are entirely improved transportation function and emergency access improvement. 10-year existing condition, proposed condition, and depth difference maps, along with conceptual plans, are shown on the following pages. Additional storm event results are included in **Appendix F.**

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

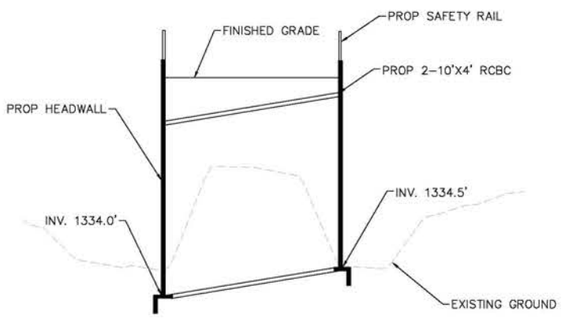
PROFILE VIEW

VERT SCALE: 1"=4'

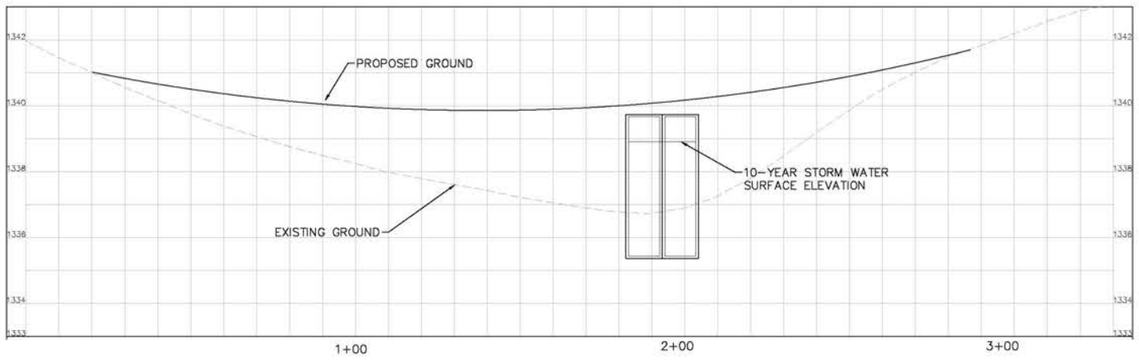


SECTION A-A

SCALE: 1"=15'



CULVERT PROFILE



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SCALE (V): 1"=4'
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
DATE: 03/2025

PARADISE VALLEY SWMP
AREA O SELECTED ALTERNATIVE 15% PLANS

PROJECT NO.
091054031

DRAWING NAME
AREA O

1 OF 3

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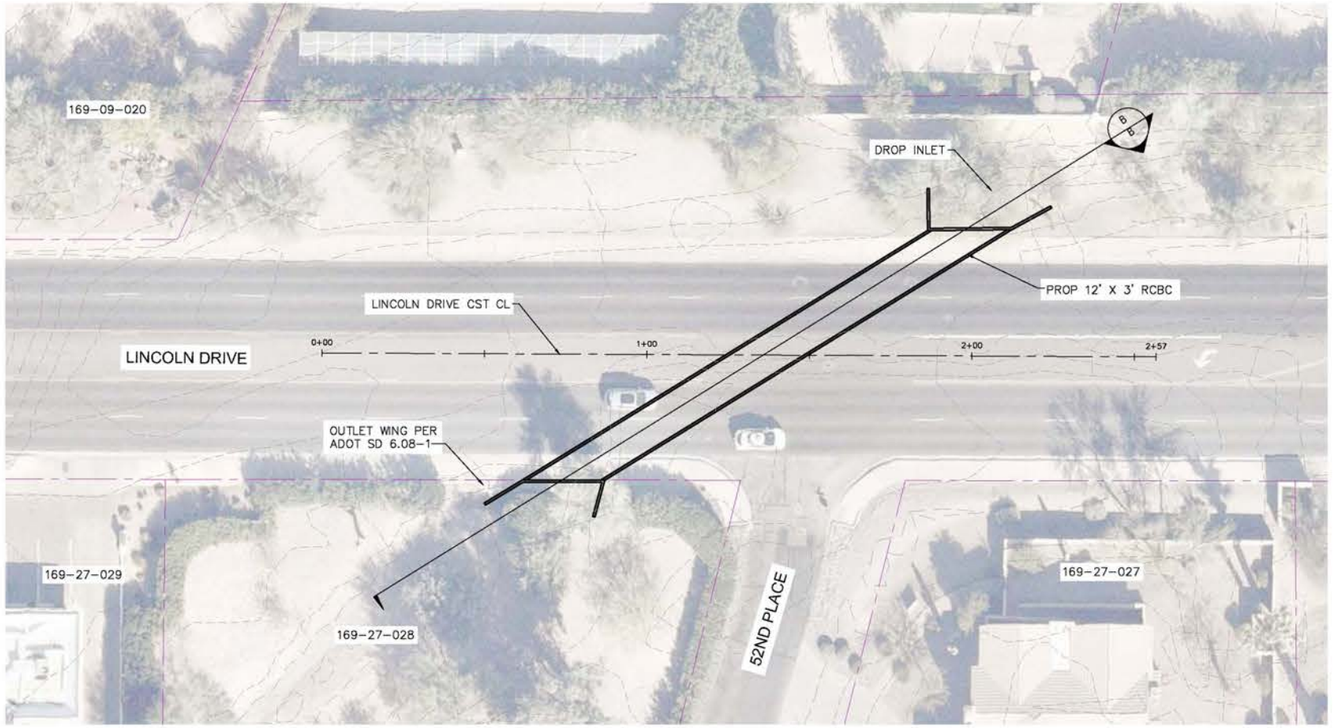
NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

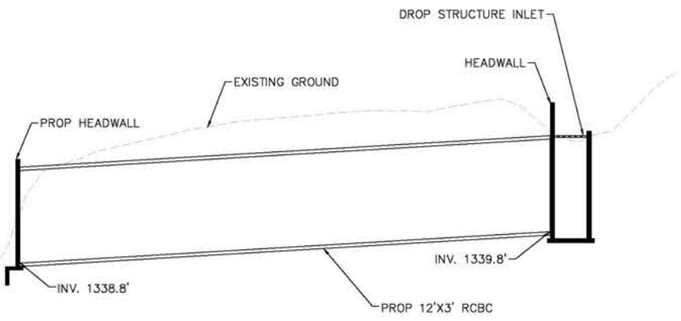
PROFILE VIEW

VERT SCALE: 1"=4'

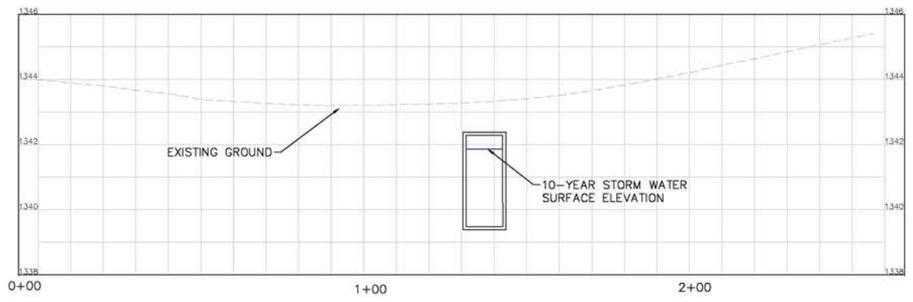


SECTION B-B

SCALE: 1"=30'



CULVERT PROFILE



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DATE: 05/2025

PARADISE VALLEY SWMP
AREA O SELECTED ALTERNATIVE 15% PLANS

PROJECT NO.
091054031

DRAWING NAME
AREA O

2 OF 3

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XREFS: (C) IGCS_AREA_O_Mesh.dwg (E) IGCS_AREA_O_Mesh.dwg
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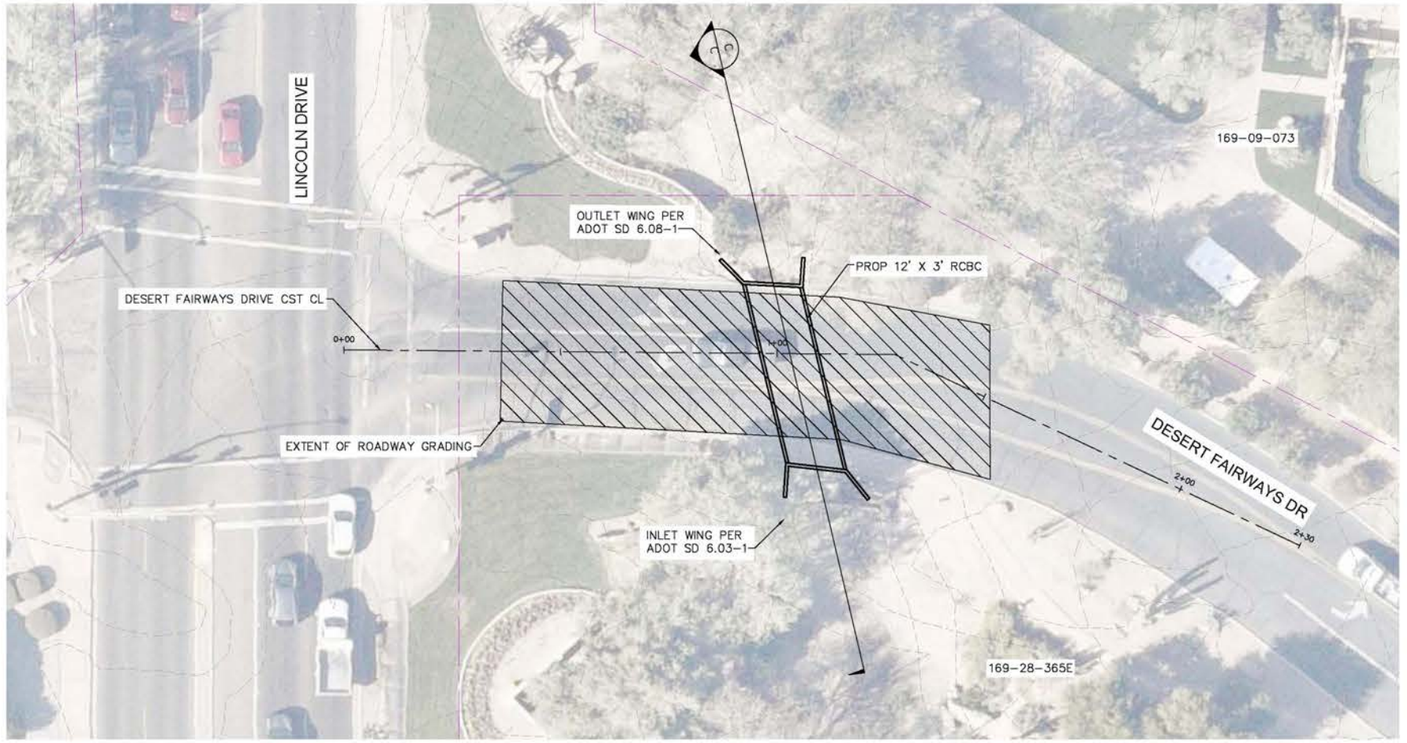
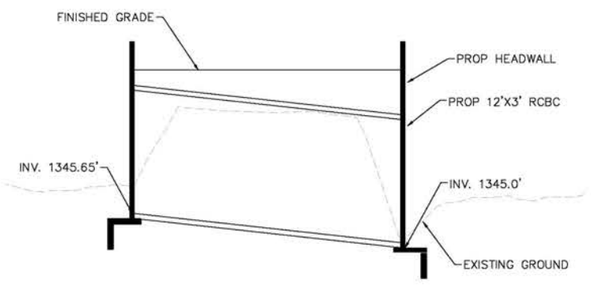
NORTH

GRAPHIC SCALE IN FEET
0 7.5 15 30

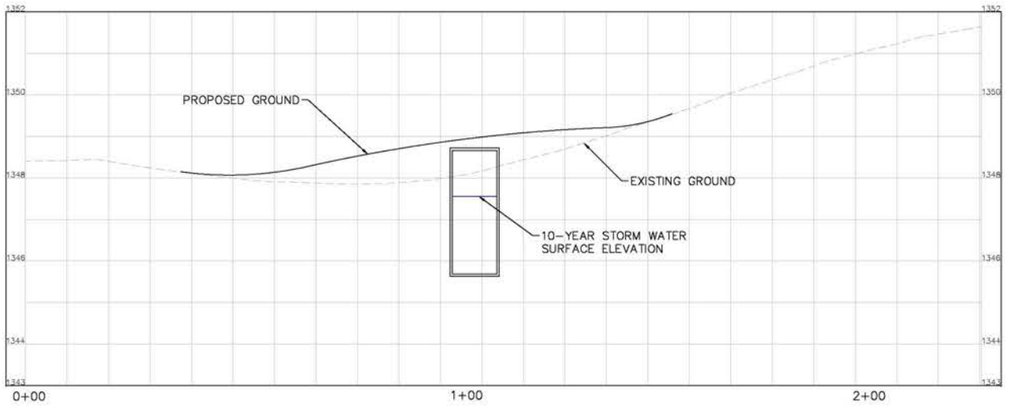
PROFILE VIEW
VERT SCALE: 1"=4'



SECTION C-C
SCALE: 1"=15'



CULVERT PROFILE



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SCALE (V): 1"=4'
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
DATE: 03/2025

PARADISE VALLEY SWMP
AREA O SELECTED ALTERNATIVE 15% PLANS

PROJECT NO.
091054031

DRAWING NAME
AREA O

3 OF 3

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XREFS: dCS_AREA_O_XAreaA_ortho2 x3r
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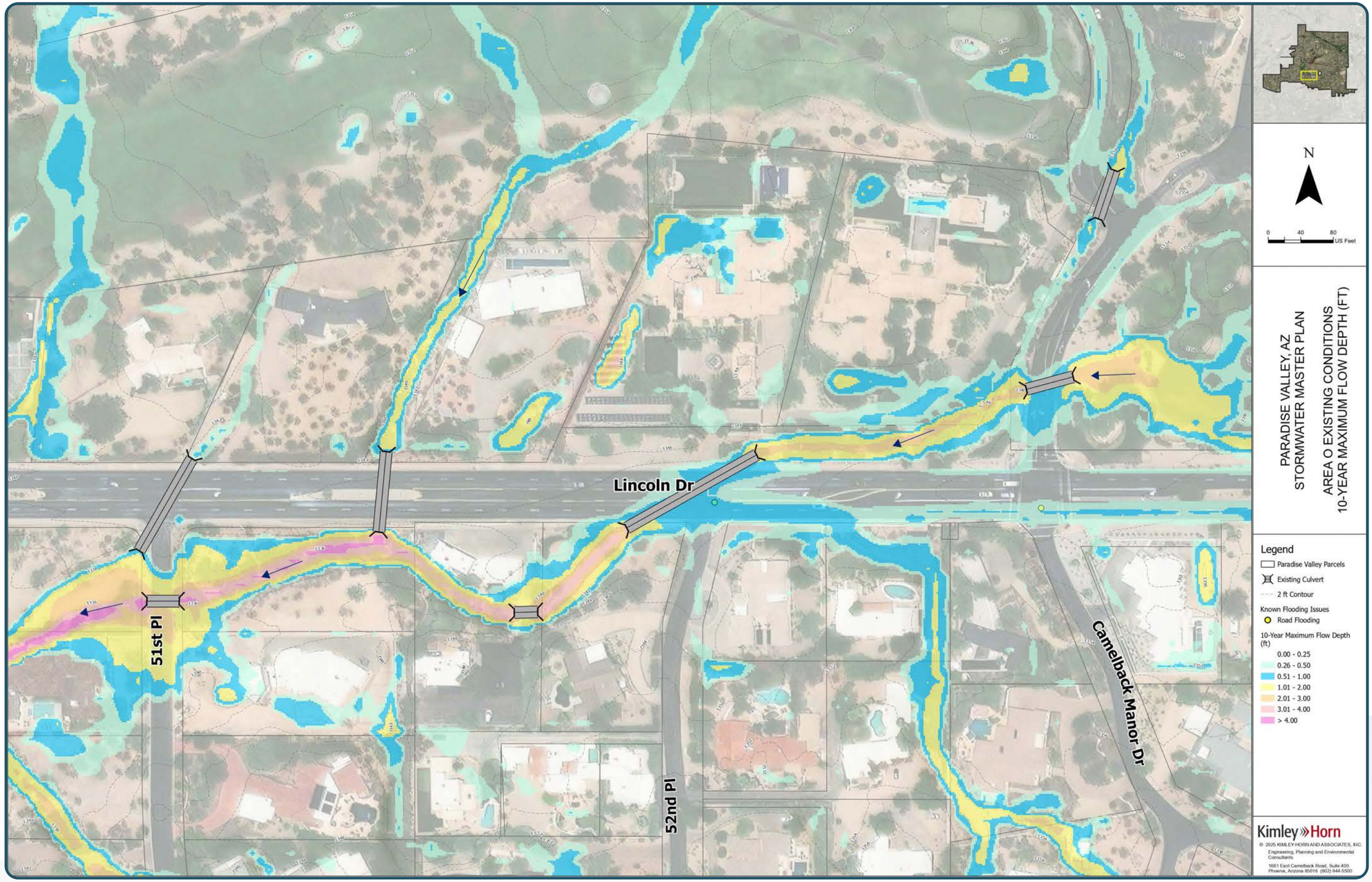
Lincoln Dr
51st Pl
52nd Pl
Camelback Manor Dr
N
0 40 80
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
AREA O EXISTING CONDITIONS
10-YEAR MAXIMUM FLOW DEPTH (FT)
Legend
Paradise Valley Parcels
Existing Culvert
2 ft Contour
Known Flooding Issues
Road Flooding
10-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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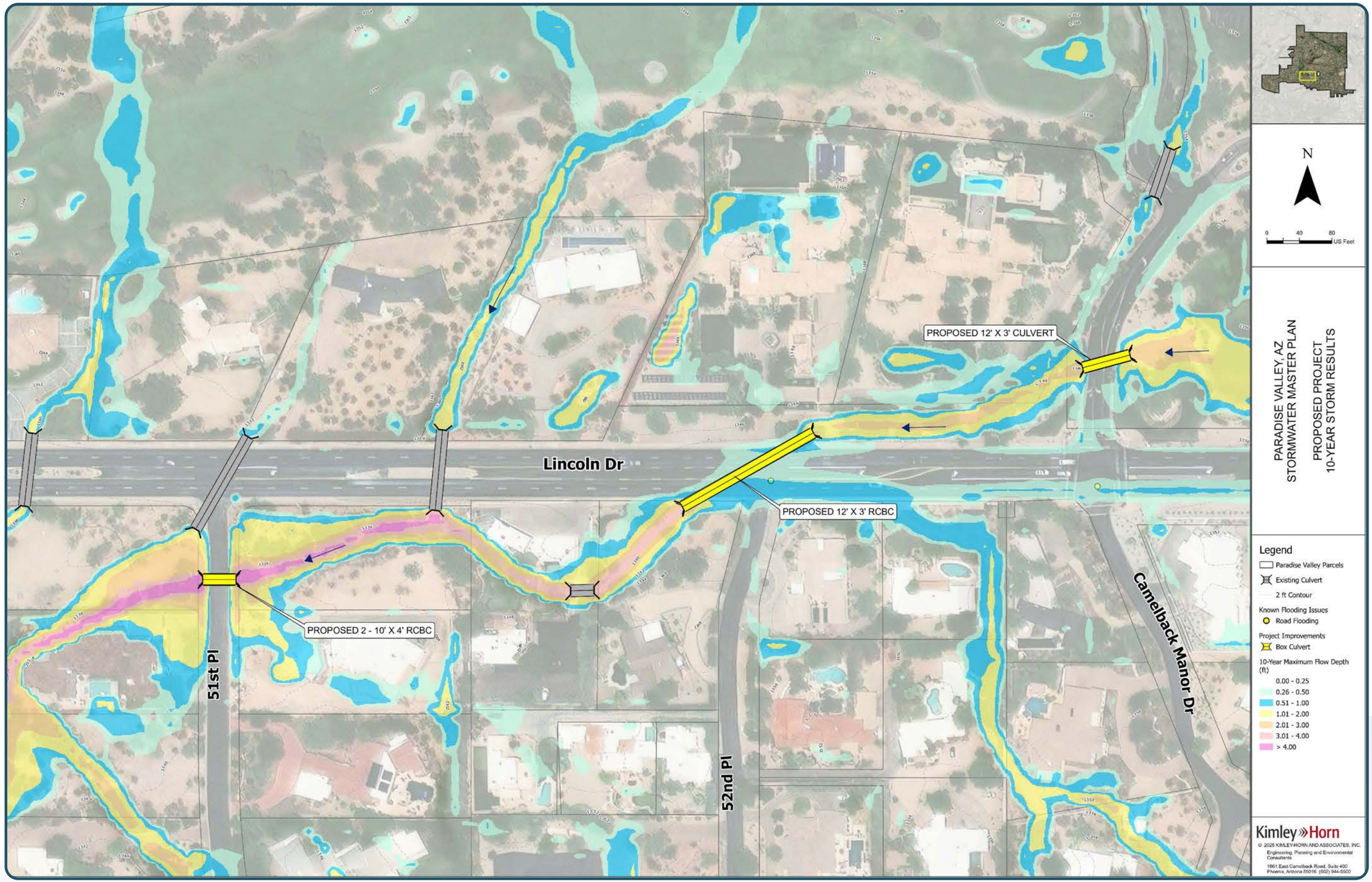
PROPOSED 12' X 3' CULVERT
Lincoln Dr
PROPOSED 12' X 3' RCBC
PROPOSED 2 - 10' X 4' RCBC
51st Pl
52nd Pl
Camelback Manor Dr
N
0 40 80
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
PROPOSED PROJECT
10-YEAR STORM RESULTS
Legend
Paradise Valley Parcels
Existing Culvert
2 ft Contour
Known Flooding Issues
Road Flooding
Project Improvements
Box Culvert
10-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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PROPOSED 12' X 3' CULVERT
Lincoln Dr
PROPOSED 12' X 3' RCBC
PROPOSED 2 - 10' X 4' RCBC
51st Pl
52nd Pl
Camelback Manor Dr
N
0 40 80
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
PROPOSED PROJECT 10-YEAR STORM
REDUCTION IN WATER SURFACE ELEVATION
Legend
Paradise Valley Parcels
Existing Culvert
2 ft Contour
Known Flooding Issues
Road Flooding
Project Improvements
Box Culvert
Reduction in Water Surface Elevation (ft) (10-Year)
2 - 3 ft Reduction
1 - 2 ft Reduction
0 - 1 ft Reduction
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IX. GRANT FUNDING OPPORTUNITY

The most accessible grant funding opportunities, both of which the Town has utilized in the past are the Flood Control District of Maricopa County's Small Project Assistance Program (SPAP) and Capital Improvement Project (CIP) cost shares. These programs have limits and are structures as follows:

SPAP

- 75/25 cost share between FCDMC and agency
- $1M limit for design and construction (with some flexibility up to $1.3M)
- Less than 24-month duration for design and construction
- Agency lead

CIP

- 65/35 cost share between FCDMC and agency
- Larger projects (>$1.3M)
- Longer duration for design and construction (>24 months)
- Can be FCDMC lead

In addition to these County sponsored programs, grant funding opportunities are also available at the state and federal level. While programs are constantly evolving and changing, **Table 32** lists opportunities available as of the date of this report, with some of the parameters, due dates, funding levels etc. included.

Table 32: Summary of Grant Funding Opportunities

Grant Name	Agency	Funding Maximum	Required Match	Priorities	Types of Projects
Hazard Pre-Disaster Mitigation Grant Program	FEMA	Up to 10 M USD	75% grant, 25% match	Implementation of sustainable cost-effective measures designed to reduce the risk to individuals and property from future natural hazards.	Hazard mitigation projects and management costs
Hazard Mitigation Grant Program	FEMA	Varies	75% grant, 25% match	Development of hazard mitigation plans and rebuilding in a way that reduces, or mitigates, future disaster losses.	Flood mitigation planning and projects
Safeguarding Tomorrow Revolving Loan Fund Program	FEMA	25% of project total	n/a	Empowerment of entities. Innovative funding solutions.	Hazard mitigation from natural disasters
Flood Mitigation Assistance Program	FEMA	300,000 USD for individual projects and 900,000 USD for community projects	75% grant, 25% match	Reduce or mitigate the risk of repetitive flood damage to buildings ensured by the National Flood Insurance Program	Localized flood control, floodwater storage and diversion, stream restoration, stormwater management
Community Development Block Grant Program	U.S. Department of Housing and Urban Development	Up to 450,000 USD	No Match Required	Assisting under privileged communities	Acquisition, relocation/ demolition, rehabilitation of structures, construction of public facilities, renewable energy resources
Water Infrastructure Finance and Innovation Act Program	EPA	Varies	n/a	Supporting water infrastructure projects	Mitigate impacts of drought, manage stormwater, updating aging infrastructure, PFAS water mitigation

Grant Name	Agency	Funding Maximum	Required Match	Priorities	Types of Projects
Corps Water Infrastructure Financing Program	U.S. Army Corps of Engineers	Provide loans of up 49%	n/a	Supporting water infrastructure projects	Dam safety projects
Public Works and Economic Adjustment Assistance Application Submission and Program	U.S. Economic Development Administration	49% of total project costs	49% grant, 51% match	promoting innovation and competitiveness, preparing American regions for economic growth and success in the worldwide economy	Water and sewer improvements
Sewer Overflow and Stormwater Reuse Municipal Grants program	EPA	344,000 USD	80% grant, 20% match	Facilitating the development of infrastructure capable of coping with the changing climate's impacts, such as precipitation events	Construction of critical stormwater infrastructure, combined sewer overflows, sanitary sewer overflows
Defense Community Infrastructure Program	Department of Defense	Between 250,000 and 20 Million USD	70% grant, 30% match	Addressing deficiencies in community infrastructure supportive of a military installation	Utility Infrastructure, transportation

X. PRIORITIZATION

Prioritization of projects can consider several factors. Project costs can determine which grant funding opportunities may be available. Benefit/cost ratios can determine eligibility for federal opportunities. Mitigation impacts can also influence Town priorities. Give these factors, **Table 33** lists each of the six projects where conceptual plans and cost were developed as part of this Master Plan, with prioritization considerations listed.

Table 33: Project Prioritization

Flood Hazard Area Designation	Project Size (Medium or Large)	Primary Benefit	Cost	BCR	Project Considerations
K	Large	Residential Structures	~ $6.1 M	3.08	The recommended project alternative for Area K has the highest BCR for the projects that primarily benefit residential structures. It is also potentially more cost effective than the Area A project. Because of this, it is ranked as the highest priority large project benefiting private property.
A	Large	Residential Structures	~ $11.6M	2.01	recommended project alternative ties into the ongoing Mockingbird Lane drainage improvements, creating an overall flood mitigation project for the area.
H	Medium	Arterial Roadways	~ $1M	n/a	Area H recommended project alternative may fall within the SPAP cost criteria, making it eligible for a 75% cost share with FCDMC. Because of this, Area H was ranked as the highest priority roadway-oriented project.
O	Large	Arterial and Residential Roadways	~ $2M	n/a	Area O recommended project alternative benefits both an arterial roadway (Lincoln Drive) and residential streets. Because of this, it was ranked higher than Areas L and N.
N	Large	Residential Roadways	~ $2M	n/a	Area N was ranked higher than Area L because of the lower cost for construction.
L	Large	Residential Roadways	~ $6.1M	n/a	Area L benefits residential streets only.

XI. CONCLUSION

The Paradise Valley Master Plan has identified and assessed areas vulnerable to flooding within the Town of Paradise Valley. By using records of flooding from residents and Town staff, previous studies, and comprehensive two-dimensional hydrologic and hydraulic modeling, this report provides detailed insights into flood risks and mitigation strategies for the entire 15-square-mile area.

Based on data collection and flood hazard analyses, the Master Plan identifies nineteen flood hazard areas, with nine prioritized for mitigation based on severity, impact on structures, streets, and emergency access. The nine were designated as the highest-ranking via a decision matrix ranking process. Recommended alternatives have been developed for each of these areas, ensuring efficient use of resources and strategic mitigation of flood hazards.

The six highest-ranking of the nine areas were designated as high-priority, with the recommended alternative for these areas further developed into 15% conceptual plans with an EOPC and cost/benefit analysis. The high-priority areas include Invergordon Road and Mockingbird Lane, 40th Street and Stanford Drive, Mountain View Road, upstream Cherokee Wash, downstream Cherokee Wash, and Lincoln Drive.

The benefit-cost analysis, prioritization, and thorough planning realized in this report offer Paradise Valley a robust framework for flood mitigation. Utilization of grant funding opportunities from local, state, and federal programs can significantly support the implementation of these projects.

In conclusion, this Master Plan sets the stage for Paradise Valley to strategically address flooding issues, assuring community resilience and safety through well-informed, high-priority flood mitigation projects. The Town's commitment to proactive flood hazard management will reduce risks, safeguard property, improve emergency access, and enhance the overall quality of life for its residents.

XII. REFERENCES

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Flood Control District of Maricopa County, Maricopa County Drainage Policies and Standards, 2018.

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WEST Consultants, Inc., Desert Mountain Hazard Risk Mapping Verification, July 2019.

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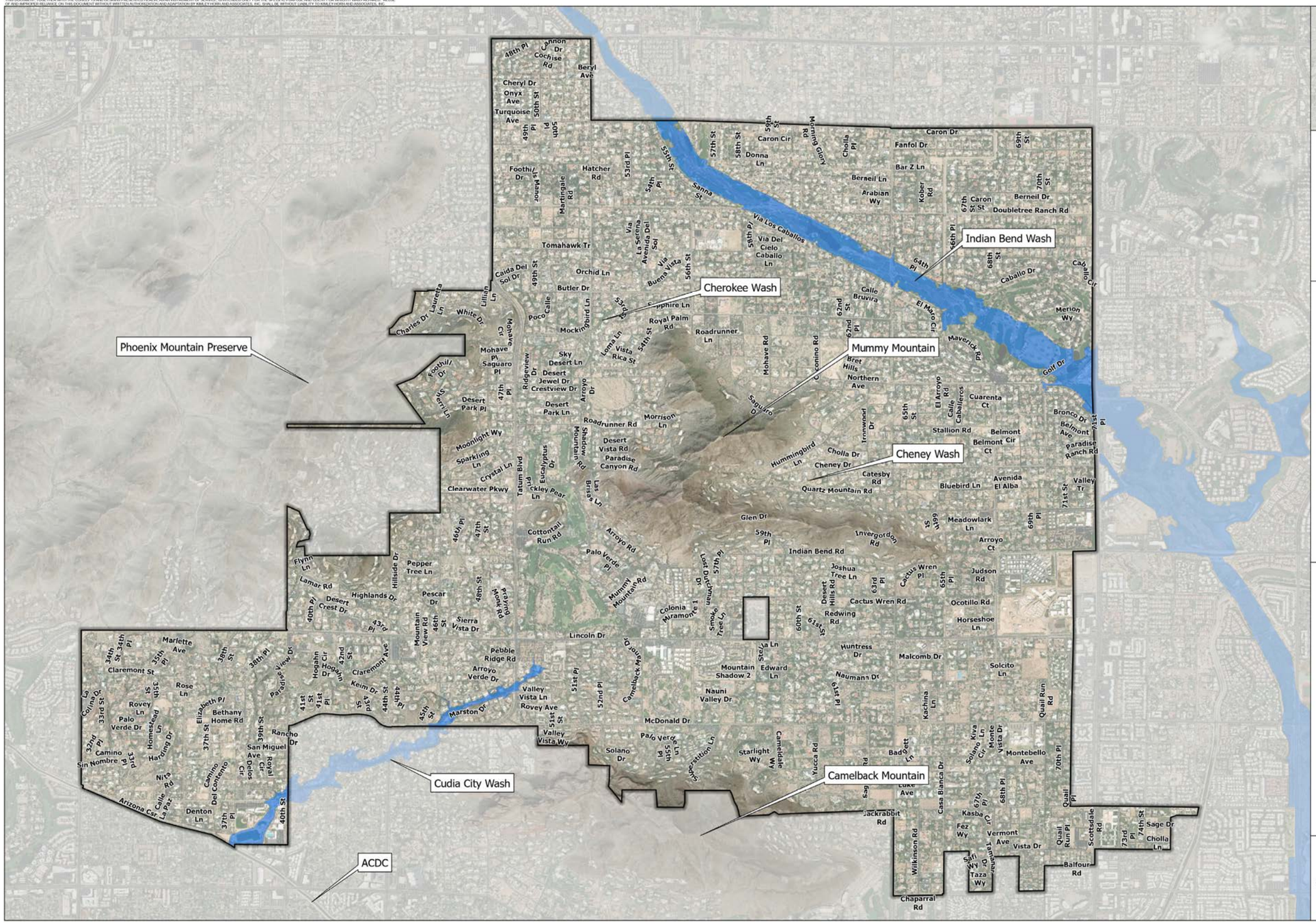
XIII. APPENDIX A – DATA COLLECTION

THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.



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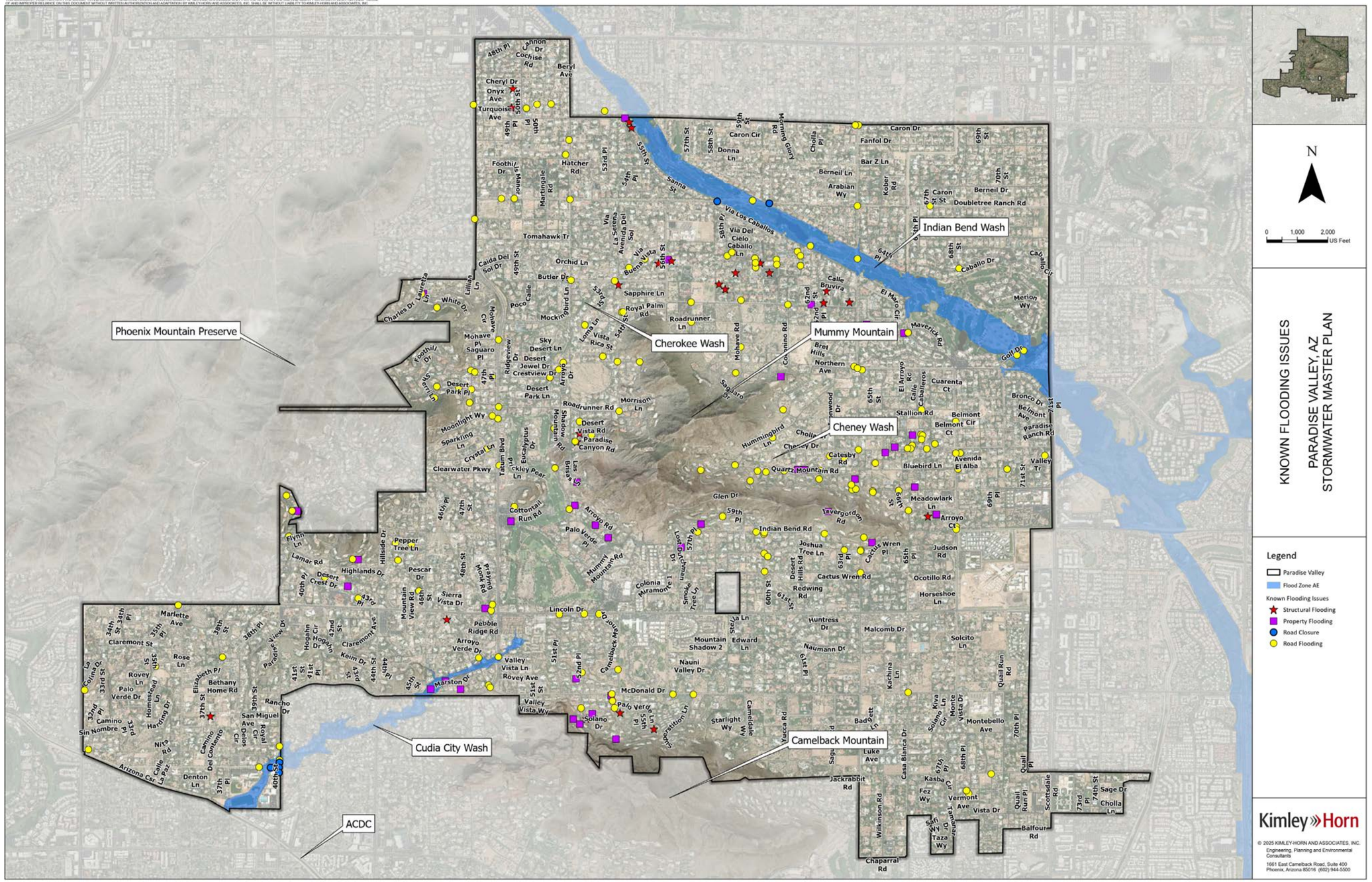

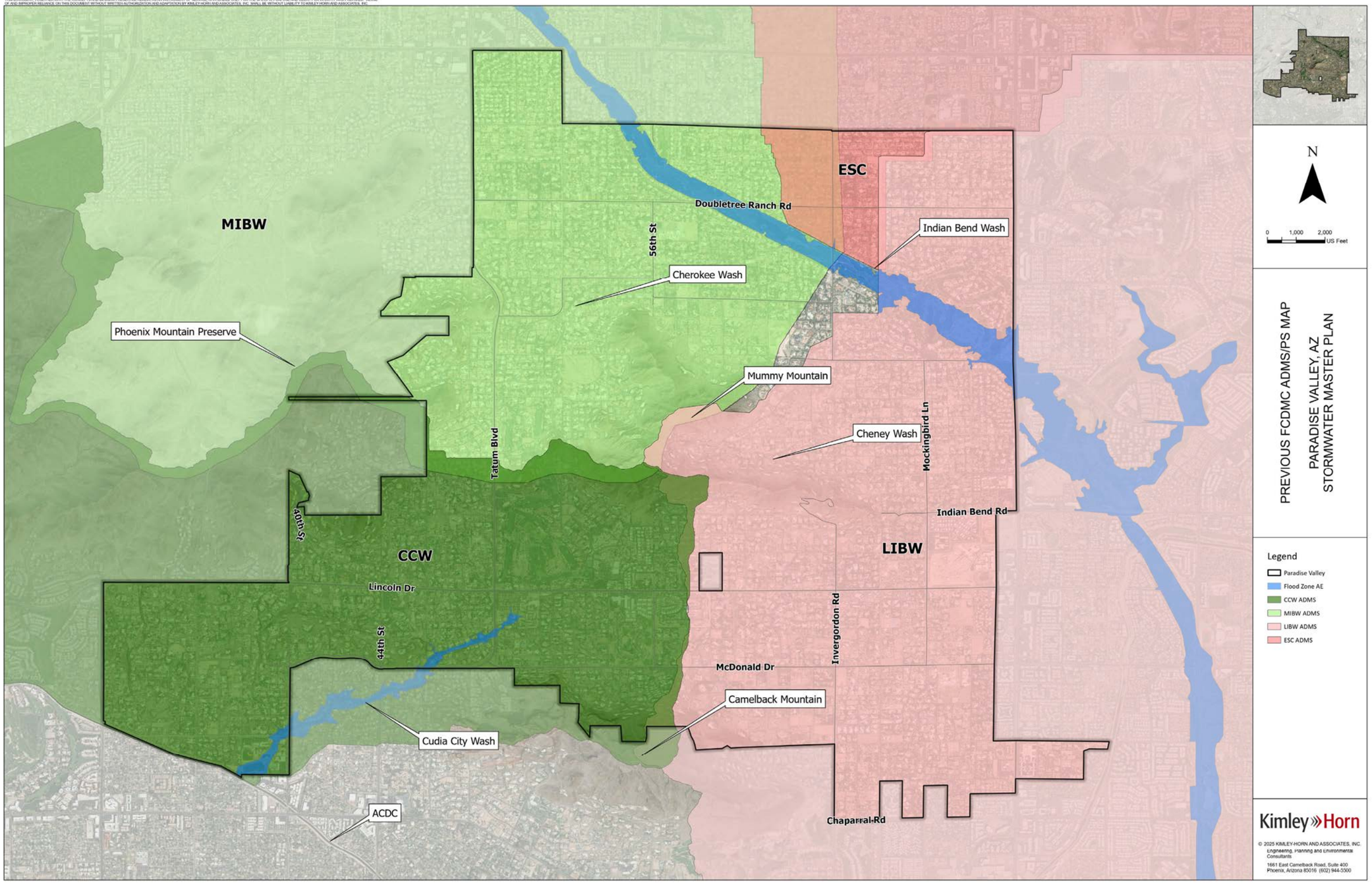
MIBW
ESC
CCW
LIBW
Doubletree Ranch Rd
56th St
Indian Bend Wash
Cherokee Wash
Phoenix Mountain Preserve
Mummy Mountain
Cheney Wash
Tatum Blvd
Mockingbird Ln
Indian Bend Rd
40th St
Lincoln Dr
44th St
Invergordon Rd
McDonald Dr
Camelback Mountain
Cudia City Wash
ACDC
Chaparral Rd
N
0 1,000 2,000 US Feet
PREVIOUS FCDMC ADMS/PS MAP
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
Legend
Paradise Valley
Flood Zone AE
CCW ADMS
MIBW ADMS
LIBW ADMS
ESC ADMS
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Flooding Issue Tracker

ID	Flooding Issue	Source	Origin	Location	Notes from Source
1	Structural Flooding	Civics Plus - Resident Request	Resident	3711 E. Rancho Dr	Erosion to their landscaping and flooding into driveway and garage
2	Structural Flooding	Hillside Meeting	Resident	6641 E Meadow Lark Lane	Flooding in front yard and in-house flooding
3	Structural Flooding	Cheney Watershed Analysis Report	Resident	6641 E Meadowlark Ln	No additional data included
4	Road Flooding	Hillside Meeting	Resident	5302 N 68th Place	Flooding at N/W Corner of 68th Place and Vermont
5	Road Flooding	Hillside Meeting	Resident	69th Place and Jackrabbit (N/E corner)	Flooding at 69th Place and Jackrabbit (N/E)
6	Road Flooding	Hillside Meeting	Town Staff	67th and Doubletree Ranch	67th and Doubletree Ranch - Severe roadway flooding
7	Road Flooding	Hillside Meeting	Resident	Quartz Mountain Road from La Place Du Sommet to 64th Place	Site conditions for the areas in La Place restrict retention upgrades, offsite flows lead to flood risks on the lower sections of Quartz Mountain Rd
8	Road Flooding	Hillside Meeting	Resident	Hummingbird Lane from 58th Place to 64th place	Offsite flows coming from Quartz Mountain leads to flooding
9	Road Flooding	Hillside Meeting	Resident	7011 N Invergordon Road	Flood Risk to Invergordon Rd. and Joshua Tree Ln.
10	Road Flooding	Road Closure by Town Staff	Town Staff	the Intersection of 40th St and Stanford Dr	Culvert under bridge likely the source of flooding, also noted as 8A in ADMP Cudia City Wash (ongoing)
11	Road Flooding	Road Closure by Town Staff	Town Staff	Doubletree Ranch Rd closed from Via Los Caballos to 60th Street	Located in the Indian Bend Wash Area
12	Road Flooding	Public Works Storm Cleanup Priority List	Town Staff	Stanford Dr and 40th Street	Cudia Wash Crossing on 40th Street. Debris gets stuck in barricade poles
13	Road Flooding	Public Works Storm Cleanup Priority List	Town Staff	Golf Drive at Indian Bend Wash Crossing	Road Inundation/Debris
14	Road Flooding	Public Works Storm Cleanup Priority List	Town Staff	Invergordon Rd at Indian Bend Wash Crossing	Road Inundation/Debris
15	Road Flooding	Public Works Storm Cleanup Priority List	Town Staff	Morning Glory & E Caballo Drive	Road Inundation/Debris
16	Road Flooding	Public Works Storm Cleanup Priority List	Town Staff	N Lauretta Lane and E Charles Drive	Road Inundation/Debris
17	Road Flooding	Public Works Storm Cleanup Priority List	Town Staff	E Quartz Mountain Rd	Road Inundation/Debris
18	Road Flooding	Public Works Storm Cleanup Priority List	Town Staff	N Mohave Road	Road Inundation/Debris
19	Road Flooding	Public Works Storm Cleanup Priority List	Town Staff	Foothills Dr and 47th St	Road Inundation/Debris. Also noted as #7 in ADMP Middle Indian Bend Wash (Ongoing) and Cherokee Wash
20	Road Flooding	Public Works Storm Cleanup Priority List	Town Staff	E Desert Park Place from 47th St to N Sherri Lane	Road Inundation/Debris
21	Road Flooding	Public Works Storm Cleanup Priority List	Town Staff	54th Street and Desert Jewel	Road Inundation/Debris
22	Road Flooding	Public Works Storm Cleanup Priority List	Town Staff	Invergordon Rd and Joshua Tree Lane	Road Inundation/Debris
23	Road Flooding	Public Works Storm Cleanup Priority List	Town Staff	60th Street and Indian Bend Road	Road Inundation/Debris

24	Road Flooding	Public Works Storm Cleanup Priority List	Town Staff	6533 N Praying Monk Road	Road Inundation/Debris
25	Road Flooding	Public Works Storm Cleanup Priority List	Town Staff	Hummingbird Lane and N 66th St	Road Inundation/Debris
26	Road Flooding	Public Works Storm Cleanup Priority List	Town Staff	E Crestview Dr	Road Inundation/Debris. Also noted as 4B in ADMP Middle Indian Bend Wash (Ongoing) and Cherokee Wash
27	Road Flooding	Public Works Storm Cleanup Priority List	Town Staff	Doubletree Ranch Rd and 52nd Street	Road Inundation/Debris
28	Road Flooding	Civics Plus - Resident Request	Resident	6354 E Hummingbird Lane	Edge of street washed out by erosion
29	Road Flooding	Civics Plus - Resident Request	Resident	5024 E Turquoise Ave	8/4/2022 (same place on another date) requested street cleaner
30	Road Flooding	Civics Plus - Resident Request	Resident	5300 Mountain View	Requested street cleaner
31	Road Flooding	Civics Plus - Resident Request	Resident	5024 E Turquoise Ave	9/6/2022 (same place on another date)requested street cleaner
32	Road Flooding	Civics Plus - Resident Request	Resident	6534 N 46th St	Requested street cleaner
33	Road Flooding	Civics Plus - Resident Request	Resident	3201 San Miguel Pl	Requested street cleaner
34	Road Flooding	Civics Plus - Resident Request	Resident	3511 East Rose Lane	Noted water ponding on road in front of house
35	Road Flooding	Civics Plus - Resident Request	Resident	3201 E San Miguel	Requested street cleaner
36	Road Flooding	Civics Plus - Resident Request	Resident	Hummingbird Lane and Quartz Mountain (near the entrance of Le Summit)	Storm drain clogged. Stormwater Runoff from Mummy mountain to the east collects at the intersection. Runoff has eroded the road embankment on the downstream side of Hummingbird Ln. Road Damage has occured along the the shoulder and will continue to cut into the road section. The roadway embankment consists of unprotected native material.
37	Road Flooding	Civics Plus - Resident Request	Resident	8100 N Tatum Blvd	Blocked storm drain grate
38	Road Flooding	Civics Plus - Resident Request	Resident	6217 E. Quartz Mountain Rd	Storm Drain in front of house is clogged
39	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Quartz Mountain Road from Hummingbird to Hummingbird	Additional information not included
40	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Hummingbird from Quartz Mountain Rd to Quartz Mountain Rd	Additional information not included
41	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	64th Place and Hummingbird	Additional information not included
42	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Catesby Rd off of Cheney Dr	Additional information not included
43	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	66th St off of Cheney Dr.	Additional information not included
44	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Mohave off of Mockingbird	Additional information not included
45	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Coconino off of Mockingbird	Additional information not included
46	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Mummy Mountain Rd off of Mockingbird	Additional information not included
47	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Mummy Mountain Rd and Roadrunner	Additional information not included
48	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Royal Palm and 54th St	Additional information not included
49	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	54th St from Royal Palm to Mockingbird	Additional information not included

50	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	61st St and Caballo	Additional information not included
51	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	59th Place and Caballo	Additional information not included
52	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Charles & Lauretta	Additional information not included
53	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	54th St and Desert Jewel.	Additional information not included
54	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	54th St and Roadrunner Rd.	Additional information not included
55	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	55th St and Desert Jewel.	Additional information not included
56	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Desert Fairways and Shadow Mountain Rd.	Additional information not included
57	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Desert Fairways and Arroyo Rd.	Additional information not included
58	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Desert Fairways from Lincoln Dr to Tatum Blvd.	Additional information not included
59	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Roadrunner Rd from 54th St to Tatum Blvd.	Additional information not included
60	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	7837 N 47th St.	Additional information not included
61	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	7701 N Moonlight Ln.	Additional information not included
62	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Desert Park Pl from 47th St to Sherri Ln.	Additional information not included
63	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	6533 N Praying Monk	Additional information not included
64	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Invergordon and Cactus Wren	Additional information not included
65	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Invergordon and Joshua Tree Ln.	Additional information not included
66	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Joshua Tree Ln and N 63rd Pl.	Additional information not included
67	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Cactus Wren from Invergordon to 60th St.	Additional information not included
68	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	60th St and Indian Bend Rd.	Additional information not included
69	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Joshua Tree Ln and 60th St.	Additional information not included
70	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Indian Bend Rd from 60th St to Dead End.	Additional information not included
71	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	59th Pl and Indian Bend	Additional information not included
72	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	57th Pl and Indian Bend.	Additional information not included
73	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	McDonald Dr from Scottsdale Rd to Tatum Blvd.	Additional information not included
74	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	54th St. from McDonald Dr. to San Miguel Ave.	Additional information not included
75	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	San Miguel Ave. from 54th St to Solano Dr.	Additional information not included
76	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Solano Dr from San Miguel Ave to 54th St.	Additional information not included
77	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	Camelback Manor Drive from Lincoln to McDonald	Additional information not included
78	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	52nd Place from McDonald to Lincoln	Additional information not included
79	Road Flooding	Staff Documented Storm Cleanup Locations	Town Staff	51st Place from McDonald to Lincoln	Additional information not included

80	Road Flooding	Work Order Listing By Street Report	Town Staff	Mcdonald Dr from Nauni Valley to the roundabout by Tatum Blvd	Storm clean up required
81	Road Flooding	Work Order Listing By Street Report	Town Staff	Invergordon Rd and Mountain View Rd	Cleaned out storm drain trash rack
82	Road Flooding	Work Order Listing By Street Report	Town Staff	7629 Foothill Dr	Filled and compacted erosion
83	Road Flooding	Work Order Listing By Street Report	Town Staff	Tatum and Mcdonald Rd	Filled in erosion by guard rail
84	Road Flooding	Work Order Listing By Street Report	Town Staff	White Dr	Erosion repair
85	Road Flooding	Work Order Listing By Street Report	Town Staff	5913 N La Colina Dr	Storm clean up, erosion repair
86	Road Flooding	Work Order Listing By Street Report	Town Staff	6015 E Joshua Tree	Storm clean up
87	Road Flooding	Work Order Listing By Street Report	Town Staff	4050 E Desert Crest Dr	Storm clean up
88	Road Flooding	Work Order Listing By Street Report	Town Staff	Caballos and 68th St	Cleared debris from wash
89	Road Flooding	Work Order Listing By Street Report	Town Staff	On Mcdonald Rd, east of Casa Blanca	Concrete spill cleaned up
90	Road Flooding	Drainage Improvement Areas - Technical Memo	Town Staff	E. Quartz Mountain Rd South of Cheney Wash	Road receives shallow flows with high velocity that cause erosion and sediment transport/deposits. Repetitive roadway Maintenance issues and public safety complaints.
91	Road Flooding	Drainage Improvement Areas - Technical Memo	Town Staff	7555 N. Hummingbird Ln	Existing low water crossing east of Mummy Mountain that has repetitive maintenance issues and public complaints. Stormwater runoff crosses ove Hummingbird Ln. from south to north and deposits sediment in the roadway.
92	Road Flooding	Drainage Improvement Areas - Technical Memo	Town Staff	5959 E. Hummingbird Ln	Existing low water crossing east of mummy mountain where high velocity flows cross Hummingbird Ln. Road damage has occurred due to the under cutting of the roadway embankment which has caused a dip east of the driveway of 5959 E. Hummingbird Ln. demonstrated in the field observations. The roadway embankment consists of unprotected native material.
93	Road Flooding	Drainage Improvement Areas - Technical Memo	Town Staff	6324 E. Quartz Mountain Rd	Overland sheet flow from the southwest and roadway drainage along Quartz Mountain Rd. combine at this location and are routed to the northwest adjacent to 6324 E. Quartz Mountain Rd by a drainage swale. After a storm event, sediment deposits have to be removed from Quartz Mountain Rd. This is a repetitive maintenance location.
94	Road Flooding	Drainage Improvement Areas - Technical Memo	Town Staff	58th Pl. South of Caballo Ln.	Existing low water crossing near the confluence with Indian Bend Wash that has repretitive maintenance issues.

95	Road Flooding	Drainage Improvement Areas - Technical Memo	Town Staff	59th Pl. South of Caballo Ln.	Existing low water crossing near the confluence with Indian Bend Wash that has repretitive maintenance issues.
96	Road Flooding	Drainage Improvement Areas - Technical Memo	Town Staff	Caballo Ln east of Morning Glory Rd	Existing low water crossing near the confluence with Indian Bend Wash that has repretitive maintenance issues.
97	Road Flooding	Drainage Improvement Areas - Technical Memo	Town Staff	E Desert Jewel Dr and N Arroyo Dr	Low water crossing along Cherokee Wash. Repetitive maintenance issues.
98	Road Flooding	Drainage Improvement Areas - Technical Memo	Town Staff	N Arroyo Dr	Low water crossing along Cherokee Wash. Repetitive maintenance issues.
99	Road Flooding	Drainage Improvement Areas - Technical Memo	Town Staff	N 57th Pl and E Glen Dr	High velocity flows that cause erosion, and sediment deposition. Runoff flows south through private property and public roads
100	Road Flooding	Drainage Improvement Areas - Technical Memo	Town Staff	9438 N. 52nd St	Low point on the west side of the road that collects nuisance flows
101	Road Flooding	Drainage Improvement Areas - Technical Memo	Town Staff	3800 E. Berridge Ln. west of N. 38th Pl.	Berridge Ln road is super elevated along the horizontal roadway curve where the eastbound lane is higher than the westbound lane, trapping water from draining into the adjacent wash to the southwest, and causing nuisance ponding and roadway maintenance issues.
102	Road Flooding	Cudia City Wash ADMS	Town Staff	Solano Dr.	Low water crossing causes routine debris and obstructions
103	Road Flooding	Cheney Watershed Analysis Report	Resident	E Mcdonald Dr & N 56th St	Sediment left on road after storm
104	Road Flooding	Cheney Watershed Analysis Report	Resident	E Lincoln Dr & N 51st Pl	Sediment left on road after storm
105	Road Flooding	Cheney Watershed Analysis Report	Resident	E Stanford Dr & Cudia City Wash	Sediment left on road after storm
106	Road Flooding	Cheney Watershed Analysis Report	Resident	Invergordon and Cheney Rd	Additional information not included
107	Road Flooding	Cheney Watershed Analysis Report	Resident	N 66th St and E Cholla Dr	Additional information not included
108	Road Flooding	Cheney Watershed Analysis Report	Resident	N 66th St & E Meadowlark Ln	Additional information not included
109	Road Flooding	Cheney Watershed Analysis Report	Resident	N 68th St & E Bluebird Ln	Additional information not included
110	Road Flooding	Cheney Watershed Analysis Report	Resident	N 68th St & E Cheney Dr	Additional information not included
111	Road Flooding	Cheney Watershed Analysis Report	Resident	N 70th St and E Ave ElAlba	Additional information not included
112	Road Flooding	Cheney Watershed Analysis Report	Resident	N 71st Pl & E Valley Trail	Additional information not included
113	Road Flooding	Cheney Watershed Analysis Report	Resident	E Maverick Rd & N 68th St	Additional information not included
114	Property Flooding	Hillside Meeting	Resident	6659 E Meadow Lark Lane	Flooding in front yard
115	Property Flooding	Hillside Meeting	Resident	7401 N Las Brisas to 7404 N Las Brisas	Flooding Risk from 7401 N Las Brisas
116	Property Flooding	Hillside Meeting	Resident	6006 and 6001E Foothill Dr.	Flood risk to 6006 and 6001E Foothill Dr

117	Property Flooding	Hillside Meeting	Resident	6418 E Joshua Tree Lane	Flooding risk from 7011 N Invergordon and flows west down Joshua Tree onto Invergordon
118	Property Flooding	Hillside Meeting	Resident	7045 N Invergordon Road	Flood risk to Joshua Tree Lane and any homes south on Invergordon
119	Property Flooding	Public Works Storm Cleanup Priority List	Town Staff	54th Street from Mcdonald Drive to San Miguel / San Miguel Ave from 54th St to Solano Drive / Solano Dr from San Miguel to 54th St	Road Inundation/Debris
120	Property Flooding	Drainage Improvement Areas - Technical Memo	Town Staff	7002 N 57th Pl	High velocity flows that cause erosion, and sediment deoposition. Runoff Flows South Through Private Property and public roads
121	Property Flooding	Drainage Improvement Areas - Technical Memo	Town Staff	N 56th St and E Caballo Dr	Existing box culvert crossing at 56th st and cherokee wash and a catch basin inlet at 56th St and Caballo Dr. The roadway drainage along 56th St has overtopped the vertical curb and damaged the adjacent properties.
122	Property Flooding	Drainage Improvement Areas - Technical Memo	Town Staff	Mockingbird Ln and 62nd St	Offsite runoff cascades through properties before reaching the Indian Bend Wash to the north east
123	Property Flooding	Cudia City Wash ADMS	Resident	4741 E Marston Dr	Offsite Flows from the channel impact these homes
124	Property Flooding	Cudia City Wash ADMS	Resident	4700 E Marston Dr	Offsite Flows from the channel impact these homes
125	Property Flooding	Cudia City Wash ADMS	Resident	4730 E Marston Dr	Offsite Flows from the channel impact these homes
126	Property Flooding	Cudia City Wash ADMS	Resident	5501 E San Miguel Ave	Mountain Run-off
127	Property Flooding	Cudia City Wash ADMS	Resident	5200 E Solano Dr	Mountain Run-off
128	Property Flooding	Cudia City Wash ADMS	Resident	5228 E Solano Dr	Mountain Run-off
129	Property Flooding	Cudia City Wash ADMS	Resident	5301 E Palo Verde Dr	Mountain Run-off
130	Property Flooding	Cudia City Wash ADMS	Resident	5401 E Palo Verde Dr	Mountain Run-off
131	Property Flooding	Cudia City Wash ADMS	Resident	E San Miguel Ave	Mountain Run-off
132	Property Flooding	Cudia City Wash ADMS	Resident	E Solano Dr	Mountain Run-off
133	Property Flooding	Cheney Watershed Analysis Report	Resident	6515 E Cheney Dr	Additional information not included
134	Property Flooding	Cheney Watershed Analysis Report	Resident	6520 E Cheney Dr	Additional information not included
135	Property Flooding	Cheney Watershed Analysis Report	Resident	6602 E Cholla Dr	Additional information not included
136	Property Flooding	Cheney Watershed Analysis Report	Resident	6340 E Quartz Mountain Rd	Additional information not included
137	Property Flooding	Cheney Watershed Analysis Report	Resident	6612 E Hummingbird Ln	Additional information not included
138	Property Flooding	Cheney Watershed Analysis Report	Resident	6112 E Quartz Mountain Rd	Additional information not included
139	Property Flooding	Cheney Watershed Analysis Report	Resident	6122 E Quartz Mountain Rd	Additional information not included
140	Property Flooding	Cheney Watershed Analysis Report	Resident	6659 E Meadowlark Ln	Additional information not included
141	Property Flooding	Cheney Watershed Analysis Report	Resident	6451 E El Maro Cir	Additional information not included
142	Property Flooding	Cheney Watershed Analysis Report	Resident	6424 E Maverick Rd	Additional information not included

143	Property Flooding	Cheney Watershed Analysis Report	Resident	6460 E Maverick Rd	Additional information not included
144	Property Flooding	Cheney Watershed Analysis Report	Resident	6532 E Maverick Rd	Additional information not included
145	Property Flooding	Cheney Watershed Analysis Report	Resident	6001 E Foothill Dr N	Additional information not included
146	Structural Flooding	Middle Indian Bend Wash	Town Staff	Mountain View Rd and IBW	Flooding in house before trash rack removed
147	Structural Flooding	Middle Indian Bend Wash	Town Staff	Mountain View Rd and IBW	Flooding in house before trash rack removed
148	Structural Flooding	Middle Indian Bend Wash	Town Staff	Mountain View Rd and IBW	Maintenance yard frequently has debris on property. Local trash rack is clogged
149	Structural Flooding	Middle Indian Bend Wash	Town Staff	Turquoise Ave and 52nd St	Flooding in Home
150	Property Flooding	Middle Indian Bend Wash	Town Staff	Turquoise Ave Cul De Sac	Flooding in Garages in nearby homes
151	Structural Flooding	Middle Indian Bend Wash	Town Staff	49th Pl and Turquoise Ave	Flooding in Home
152	Structural Flooding	Middle Indian Bend Wash	Town Staff	49th Pl and Cheryl Dr	Flooding in Home
153	Road Flooding	Middle Indian Bend Wash	Town Staff	Mockingbird Lane and Mummy Mountain Road	Debris in intersection
154	Structural Flooding	Middle Indian Bend Wash	Town Staff	Cherokee Wash and 55th Pl	Flooding in Home
155	Structural Flooding	Middle Indian Bend Wash	Town Staff	Cherokee Wash and 56th Street	Flooding in Home
156	Structural Flooding	Middle Indian Bend Wash	Town Staff	Mockingbird Lane and 54th Street	Flooding in Home
157	Road Flooding	Middle Indian Bend Wash	Town Staff	Mockingbird Lane and 54th Street	Heavy debris crossing street during storm events
158	Structural Flooding	Middle Indian Bend Wash	Town Staff	Senderostres M and Mockingbird Lane	Flooding in homes
159	Road Flooding	Middle Indian Bend Wash	Town Staff	62nd Street and Inidan Bend Wash	Raised golf cart path creates bowl for flooding
160	Road Flooding	Middle Indian Bend Wash	Town Staff	Morning Glory Rd and Caballo Dr	Major flooding with debris. Car has been stuck here in the past
161	Structural Flooding	Middle Indian Bend Wash	Town Staff	Morning Glory Rd and Caballo Dr	Flooding in homes
162	Structural Flooding	Middle Indian Bend Wash	Town Staff	59th Pl and Caballo Dr	Flooding in homes
163	Road Flooding	Middle Indian Bend Wash	Town Staff	59th Pl and Cherokee Wash	Significant mud and debris during common events
164	Structural Flooding	Middle Indian Bend Wash	Town Staff	58th Pl and Caballo Dr	Flooding in homes
165	Road Flooding	Middle Indian Bend Wash	Town Staff	58th Pl and Cherokee Wash	Significant mud and debris during common events
166	Structural Flooding	Middle Indian Bend Wash	Town Staff	58th Pl and Cherokee Wash	Flooding in homes
167	Road Flooding	Middle Indian Bend Wash	Town Staff	Doubletree Ranch Rd and Indian Bend Wash	Reported flood depths larger than four feet
168	Road Flooding	Middle Indian Bend Wash	Town Staff	Wash Crossing Desert Vista Rd	Debris causing flooding
169	Structural Flooding	Middle Indian Bend Wash	Town Staff	Paradise Canyon Rd and Las Brisas Ln	Flooding in homes
170	Structural Flooding	Middle Indian Bend Wash	Town Staff	Desert Vista Rd and Las Brisas Ln	Flooding in homes
171	Road Flooding	Middle Indian Bend Wash	Town Staff	Desert Vista Rd and Las Brisas Ln	Significant mud and debris during common events
172	Road Flooding	Middle Indian Bend Wash	Town Staff	Invergordon Road and Indian Bend Wash	Roadway overtopping
173	Structural Flooding	Middle Indian Bend Wash	Town Staff	Canta Redondo and Mockingbird Lane	Flooding in homes
174	Road Flooding	Middle Indian Bend Wash	Town Staff	Morning Glory Rd and Caballo Dr	Significant mud and debris are common during storm events
175	Structural Flooding	Middle Indian Bend Wash	Town Staff	Senderostres M and Calle Bruvira	Flooding in homes

176	Structural Flooding	Middle Indian Bend Wash	Town Staff	Mockingbird Lane and 54th Street	Flooding in homes
177	Road Flooding	Middle Indian Bend Wash	Town Staff	53rd Pl and Grovers Ave	Sediment and Debris
178	Road Flooding	Middle Indian Bend Wash	Town Staff	56th Street and Via Buena Vista	Sediment and Debris
179	Road Flooding	Middle Indian Bend Wash	Town Staff	Las Brisas Lane and Paradise Canyon Road	Sediment and Debris
180	Road Flooding	Middle Indian Bend Wash	Town Staff	Tatum Blvd and Foothill Drive	Sediment and Debris
181	Road Flooding	Middle Indian Bend Wash	Town Staff	52nd Street and Berniel Drive	Sediment and Debris
182	Road Flooding	Middle Indian Bend Wash	Town Staff	59th Street and Foothill Drive	Sediment and Debris
183	Road Flooding	Middle Indian Bend Wash	Town Staff	Crystal Ln and Sparkling Ln	Sediment and Debris
184	Road Flooding	Middle Indian Bend Wash	Town Staff	Via Buena Vista and 55th Pl	Sediment and Debris
185	Road Flooding	Middle Indian Bend Wash	Town Staff	Caballo Ln and 58th Pl	Sediment and Debris
186	Road Flooding	Middle Indian Bend Wash	Town Staff	Ave Del Sol and Via Buena Vista	Sediment and Debris
187	Road Flooding	Middle Indian Bend Wash	Town Staff	Mockingbird Lane and 52nd Pl	Sediment and Debris
188	Road Flooding	Middle Indian Bend Wash	Town Staff	59th Pl and Caballo Dr	Sediment and Debris
189	Road Flooding	Middle Indian Bend Wash	Town Staff	Shadow Mountain Rd and Roadrunner Rd	Sediment and Debris
190	Road Flooding	Middle Indian Bend Wash	Town Staff	53rd Street and Loma Ln	Sediment and Debris
191	Road Flooding	Middle Indian Bend Wash	Town Staff	Sherri Lane and Desert Park Pl	Sediment and Debris
192	Road Flooding	Middle Indian Bend Wash	Town Staff	Tatum Blvd and Moonlight Way	Sediment and Debris
193	Road Flooding	Middle Indian Bend Wash	Town Staff	50th St and Mountain View Rd	Sediment and Debris
194	Road Flooding	Public Works Storm Cleanup Priority List	Resident	7039 E Fanfol Dr	Road Inundation/Debris
195	Road Flooding	Reported by Resident	Resident	68th and Vermont	Road Inundation/Debris
196	Road Flooding	Reported by Resident	Resident	69th and Jackrabbit	Road Inundation/Debris

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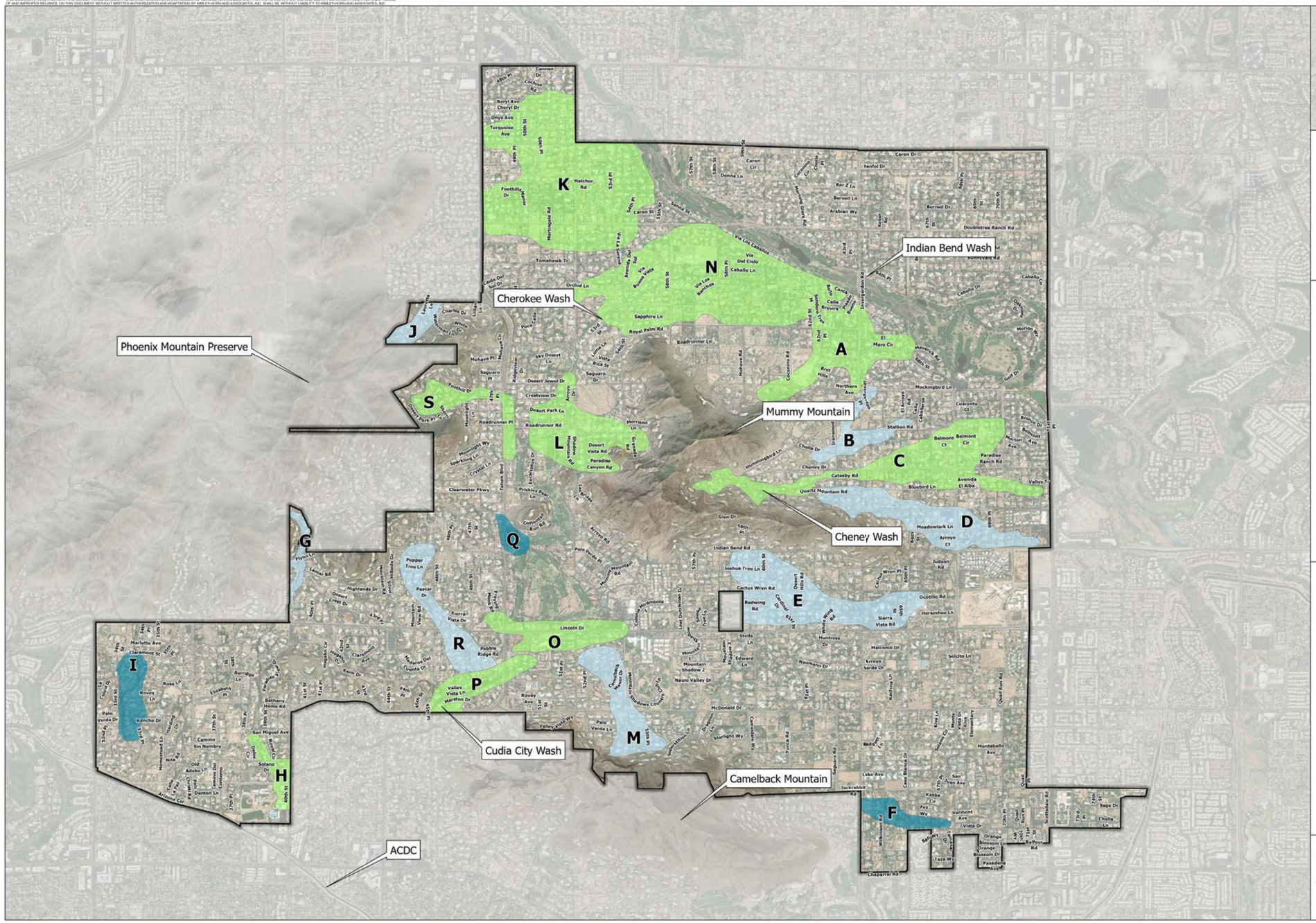

XIV. APPENDIX B – EXISTING INFRASTRUCTURE

EXISTING CULVERT IDENTIFICATION, STORM LEVEL PROTECTION, AND POTENTIAL IMPACTS TO EMERGENCY VEHICLE ACCESS

THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.

N

0 500 1,000 US Feet

EXISTING CULVERT SIZE

PARADISE VALLEY, AZ
STORM WATER MASTER PLAN

DESIGNED BY: PTB	PROJECT NUMBER 091054031	DATE: DEC 2024
DRAWN BY: PTB	SCALE: 1"= 800'	
CHECKED BY: GSB		

Legend

- Paradise Valley

Culvert Size (in)

- Box Culvert
- 12"-24"
- 27"-36"
- 38" - 42"
- 48"-60""
- 66" - 72"
- 120"

100-Year Maximum Flow Depth (ft)

- 0.0 - 0.25
- 0.251 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.0 - 27

Kimley»Horn
Engineering, Planning and Environmental Consultants
1661 East Camelback Road, Suite 400
Phoenix, Arizona 85016 (602) 944-5500

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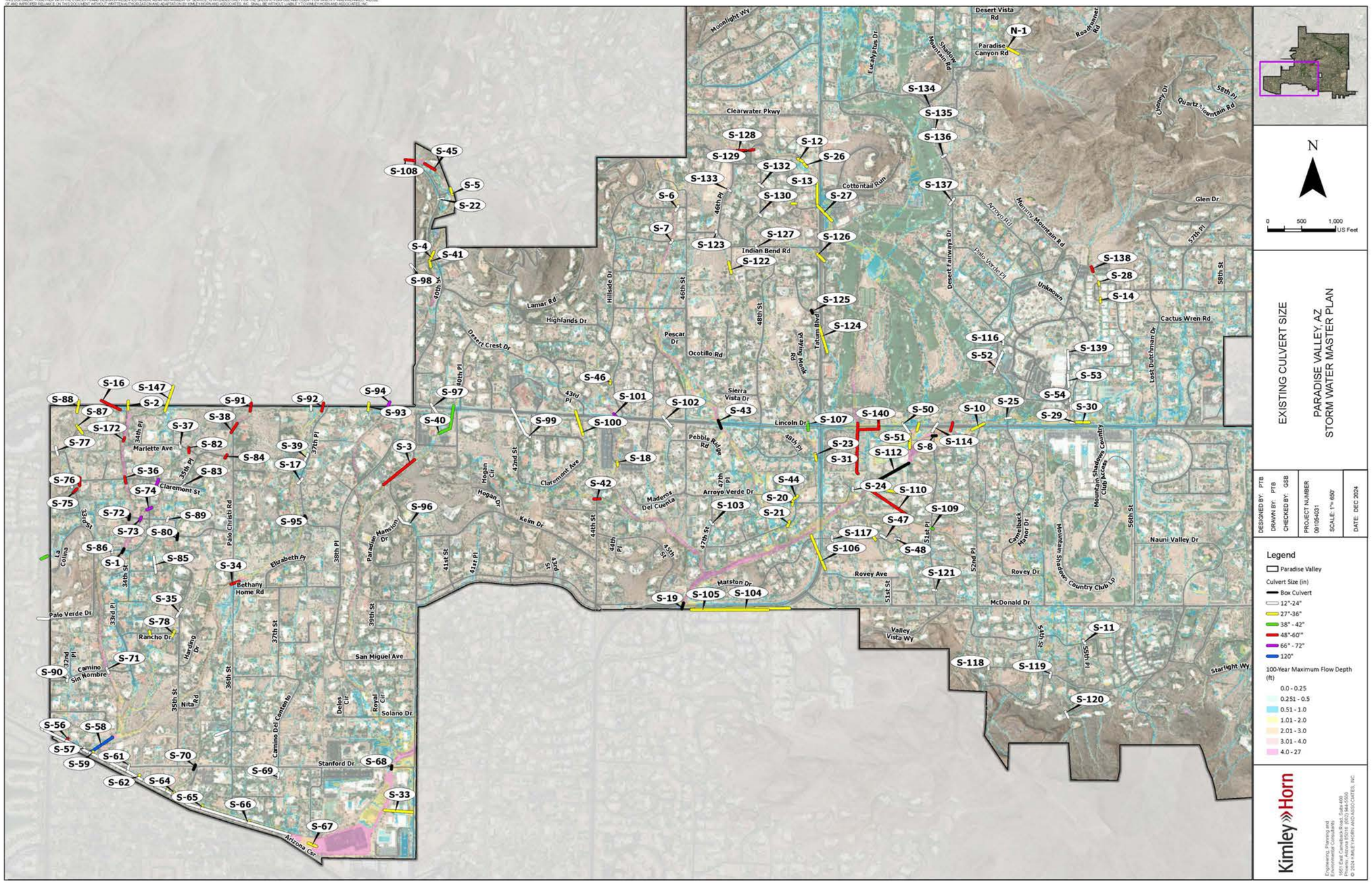
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0 500 1,000 US Feet
EXISTING CULVERT SIZE
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER 091054031
SCALE: 1"= 600'
DATE: DEC 2024
Legend
Paradise Valley
Culvert Size (in)
Box Culvert
12"-24"
27"-36"
38" - 42"
48"-60"
66" - 72"
120"
100-Year Maximum Flow Depth (ft)
0.0 - 0.25
0.251 - 0.5
0.51 - 1.0
1.01 - 2.0
2.01 - 3.0
3.01 - 4.0
4.0 - 27
Kimley»Horn
Engineering, Planning and Environmental Consultants
7500 East Camelback Rd, Suite 103
Scottsdale, AZ 85251 (480) 948-5560
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Desert Vista Rd
Paradise Canyon Rd
Roadrunner Rd
Eucalyptus Dr
Shadow Mountain Rd
Quartz Mountain Rd
58th Pl
Cherry Dr
Clearwater Pkwy
Moonlight Wy
Cottontail Run
Glen Dr
Arroyo Rd
Mummy Mountain Rd
Desert Fairways Dr
Palo Verde Pl
Unknown
57th Pl
58th St
Indian Bend Rd
Lamar Rd
Highlands Dr
Hillside Dr
46th St
48th St
Pescar Dr
Ocotillo Rd
Tatum Blvd
Monterey Rd
Desert Crest Dr
40th St
40th Pl
43rd Pl
Sierra Vista Dr
Lincoln Dr
Pebble Beach Rd
48th Pl
Cactus Wren Rd
Lost Dutchman Dr
Marlette Ave
34th Pl
35th Pl
37th Pl
Claremont St
Hogan Cir
42nd St
Claremont Ave
Arroyo Verde Dr
17th Pl
17th St
Madonna Del Cuenta
Kesin Dr
44th St
44th Pl
45th St
Mountain Shadows Country Club Access
Cantaback Manor Dr
Mountain Shadows Country Club Dr
56th St
Nauni Valley Dr
Rovey Ave
Rovey Dr
51st St
51st Pl
52nd Pl
Marston Dr
McDonald Dr
Valley Vista Wy
54th St
55th Pl
Starlight Wy
Palo Christi Rd
34th St
La Colina
Elizabeth Pl
Bethany Home Rd
38th Pl
Paradise Mansion Dr
41st St
41st Pl
Palo Verde Dr
33rd Pl
Camino Sin Nombre
32nd Pl
Rancho Dr
Harding Dr
37th St
39th St
San Miguel Ave
35th St
Nita Rd
36th St
Camino Del Contento
Delos Cir
Royal Cir
Solano Dr
Stanford Dr
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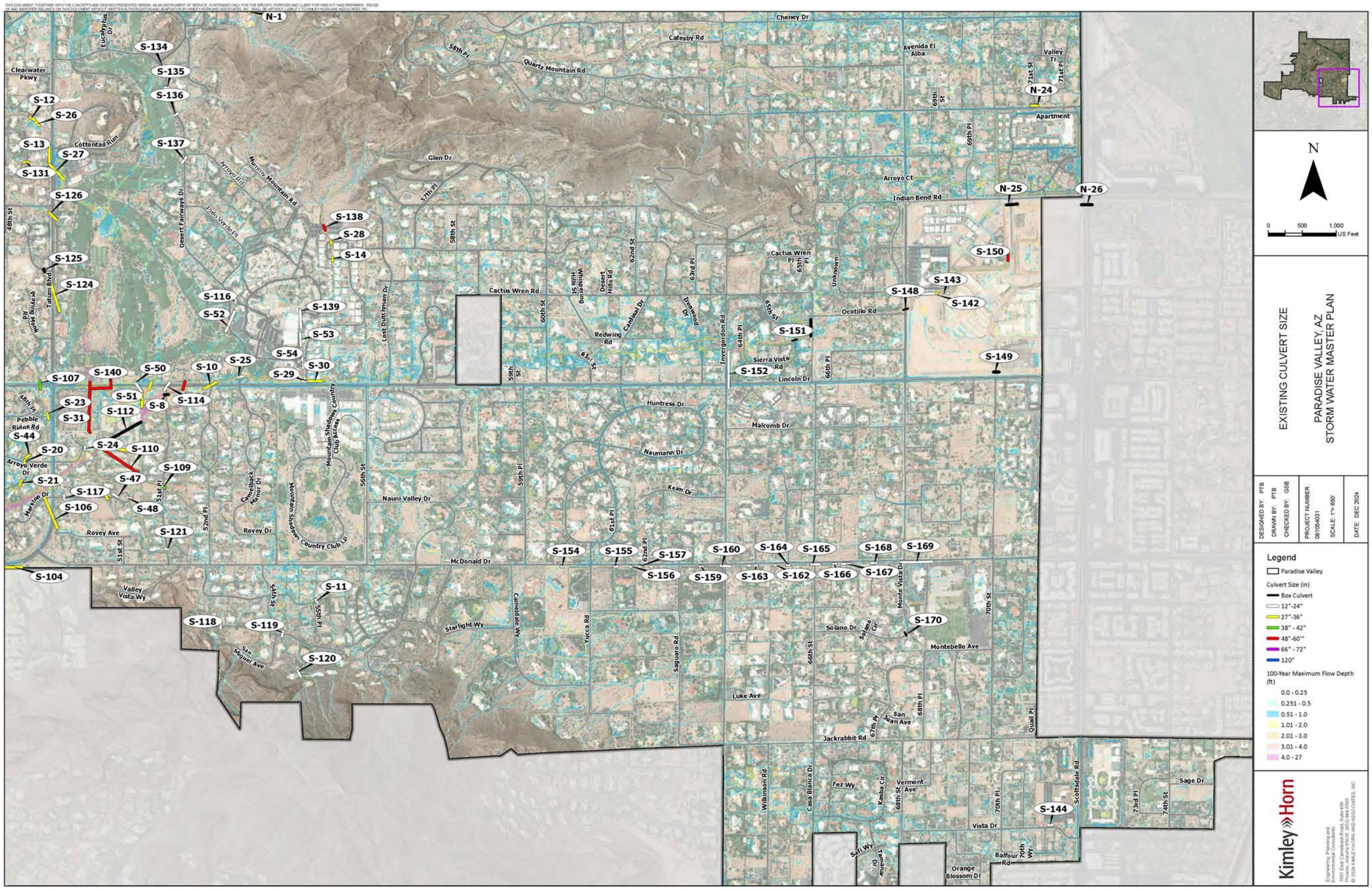
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Cheney Dr
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Quartz Mountain Rd
Avenida El Alba
Valley Tr
Apartment
Glen Dr
Arroyo Ct
Indian Bend Rd
Cactus Wren Rd
Ocotillo Rd
Sierra Vista Rd
Lincoln Dr
Huntress Dr
Malcomb Dr
Naumann Dr
Keim Dr
Nauni Valley Dr
McDonald Dr
Starlight Wy
Solano Dr
Montebello Ave
Luke Ave
Jackrabbit Rd
Vista Dr
Orange Blossom Dr
Balfour Rd
Sage Dr
Clearwater Pkwy
Cottontail Run
Arroyo Rd
Mummy Mountain Rd
Palo Verde Pl
Desert Fairways Dr
Lost Dutchman Dr
Redwing Rd
Cardinal Dr
Desert Hills Rd
Whispering Hills St
Inverness Dr
Inverness Rd
Unknown
Tatum Blvd
Pebble Ridge Rd
Arroyo Verde Dr
Marston Dr
Rovey Ave
Rovey Dr
Valley Vista Wy
San Miguel Ave
Camelback Manor Dr
Mountain Shadows Country Club Dr
Mountain Shadows Country Club Acres
Camelback Rd
Yucca Rd
Saguaro Rd
Cameldale Wy
Monte Vista Dr
Solano Cir
Wilkinson Rd
Casa Blanca Dr
Fez Wy
Kaeba Cir
Vermont Ave
Scottsdale Rd
Quail Pl
San Juan Ave
Safi Wy
Tentative Dr
Lafayette Blvd
Country Club Dr
48th St
51st St
52nd Pl
56th St
57th Pl
58th St
59th Pl
60th St
61st St
62nd Pl
63rd Pl
64th Pl
65th Pl
66th St
66th Pl
67th Pl
68th St
68th Pl
69th St
69th Pl
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70th Pl
70th Wy
71st St
71st Pl
73rd Pl
74th St
N
0 500 1,000 US Feet
EXISTING CULVERT SIZE
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER 061054031
SCALE: 1"= 800'
DATE: DEC 2024
Legend
Paradise Valley
Culvert Size (in)
Box Culvert
12"-24"
27"-36"
38" - 42"
48"-60"
66" - 72"
120"
100-Year Maximum Flow Depth (ft)
0.0 - 0.25
0.251 - 0.5
0.51 - 1.0
1.01 - 2.0
2.01 - 3.0
3.01 - 4.0
4.0 - 27
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Engineering, Planning and Environmental Consultants
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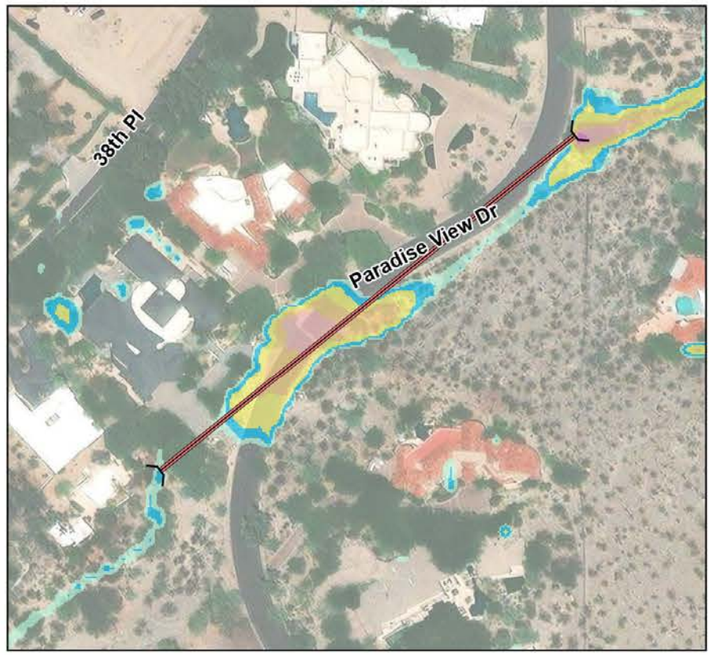
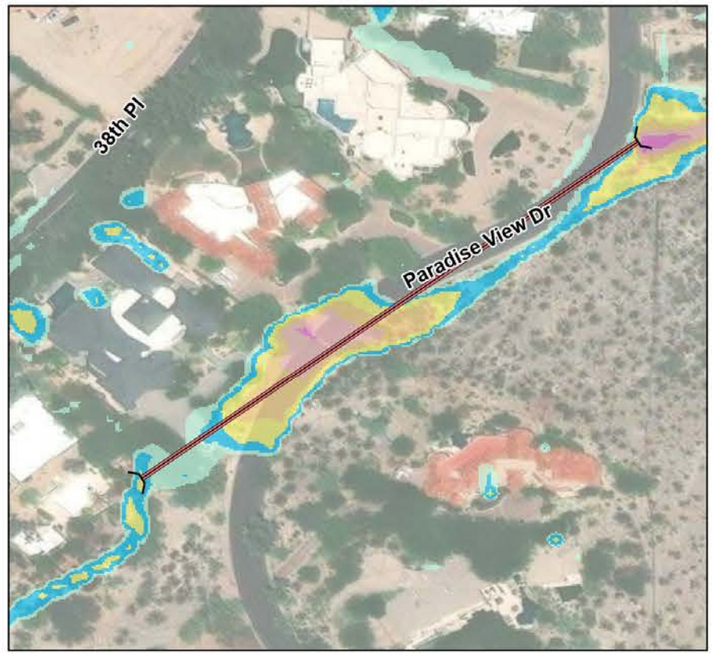
Possible Emergency Vehicle Access Restriction Areas: S-3

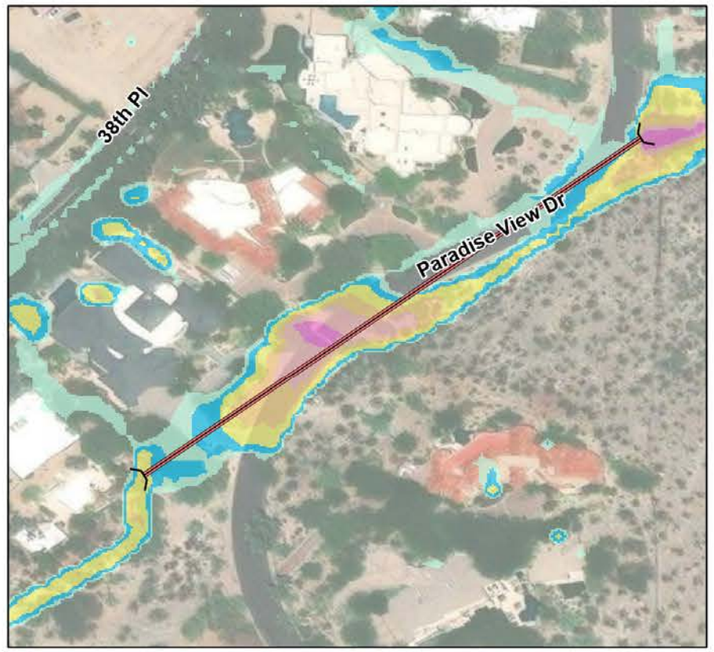
2-Year, 6-Hour



10-Year, 6-Hour



100-Year, 6-Hour



100-Year Maximum Depth Overtopping the Road : 4.3 ft

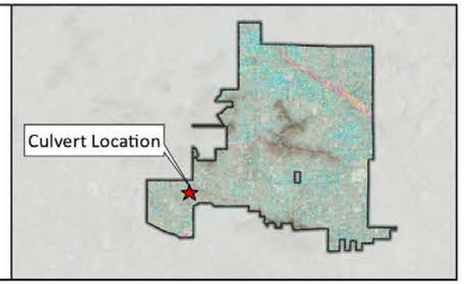
N

0 75 150 300 Feet

Legend

Hydraulic Structures
Culvert

Maximum Water Depth (ft)
0.0 - 0.25
0.251 - 0.5
0.51 - 1.0
1.01 - 2.0
2.01 - 3.0
3.01 - 4.0
4.0 - 27



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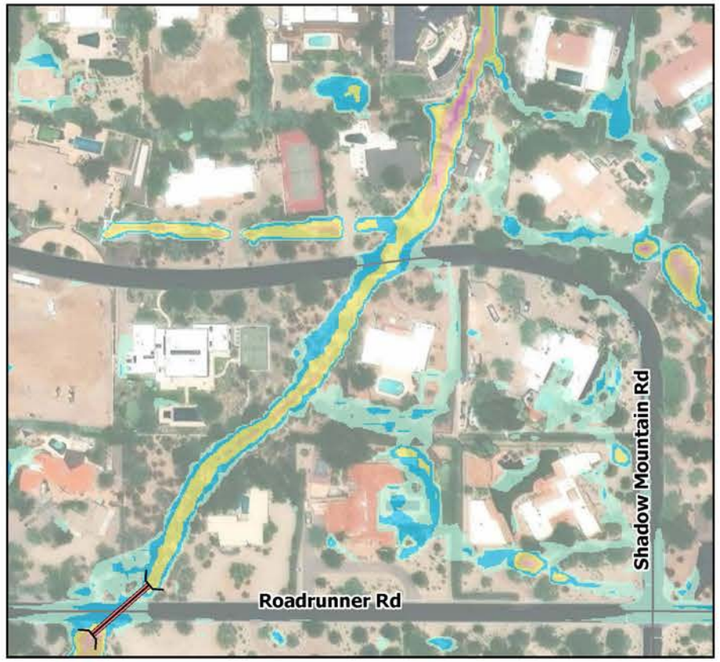
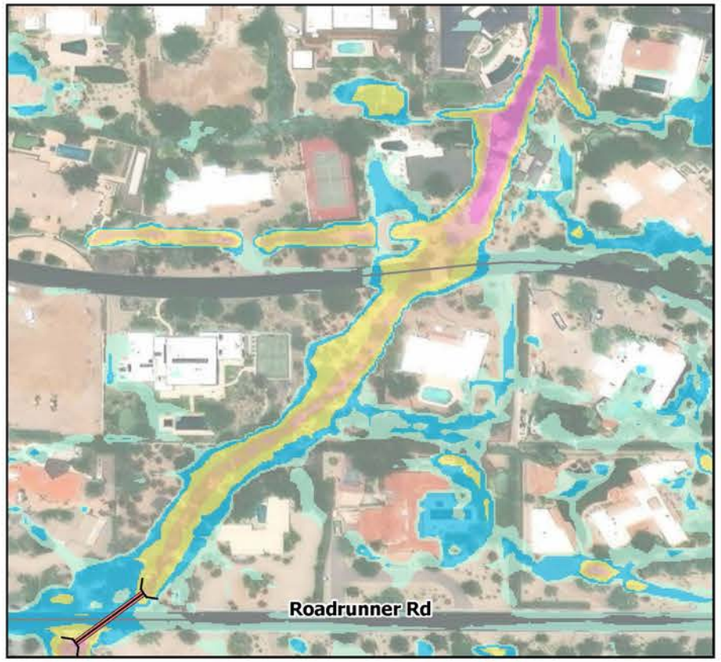
Engineering, Planning and Environmental Consultants

Possible Emergency Vehicle Access Restriction Areas: Shadow Mountain Rd Low Water Crossing

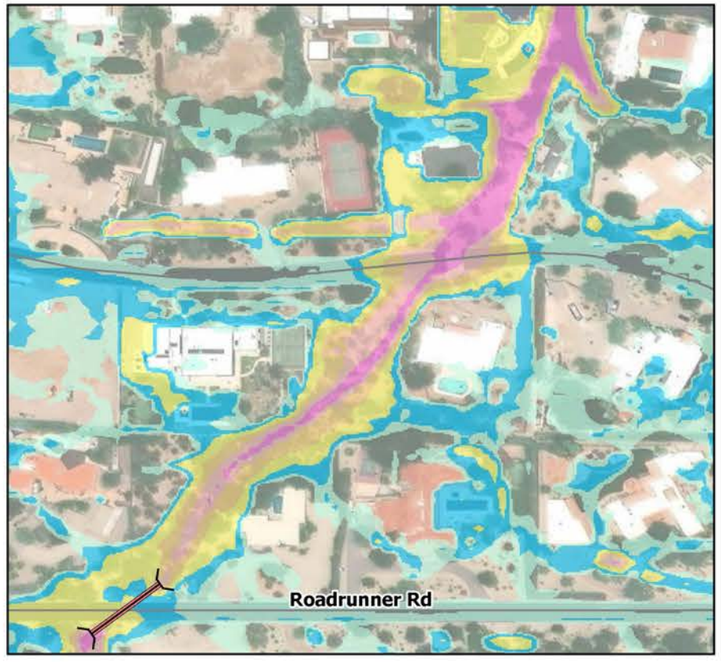
2-Year, 6-Hour



10-Year, 6-Hour



100-Year, 6-Hour



100-Year Maximum Depth Overtopping the Road : 5.1 ft

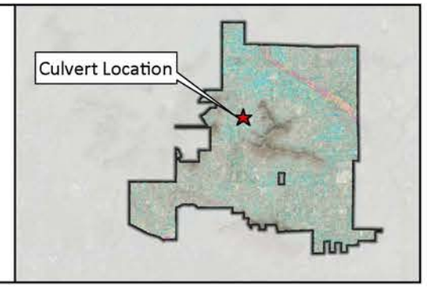
N

0 100 200 400 Feet

Legend

Hydraulic Structures
- Culvert

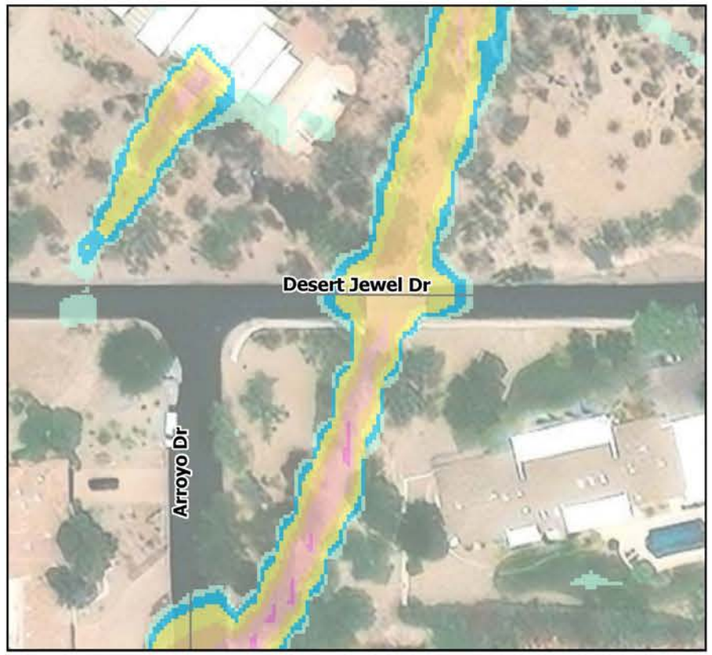
Maximum Water Depth (ft)
- 0.0 - 0.25
- 0.251 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.0 - 27



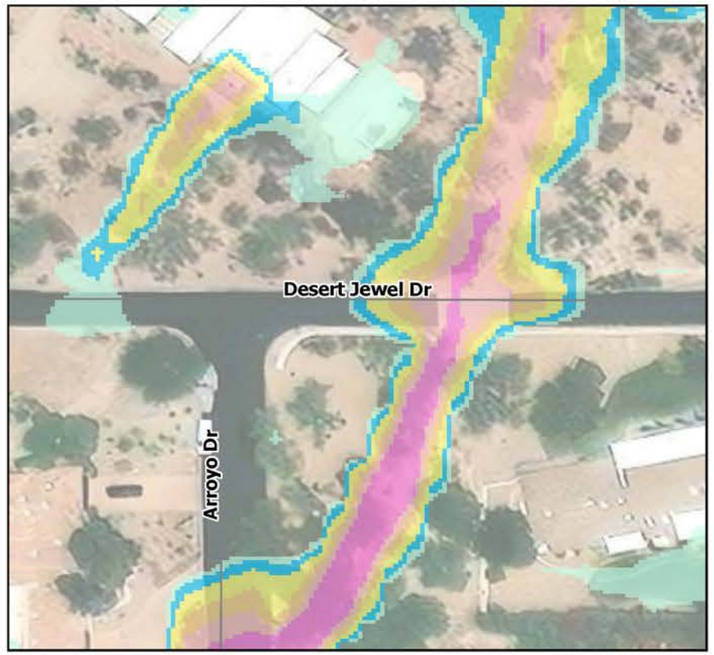
2024 KIMLEY-HORN AND ASSOCIATES, INC.
Engineering, Planning and Environmental Consultants

Possible Emergency Vehicle Access Restriction Areas: Desert Jewel Dr Low Water Crossing

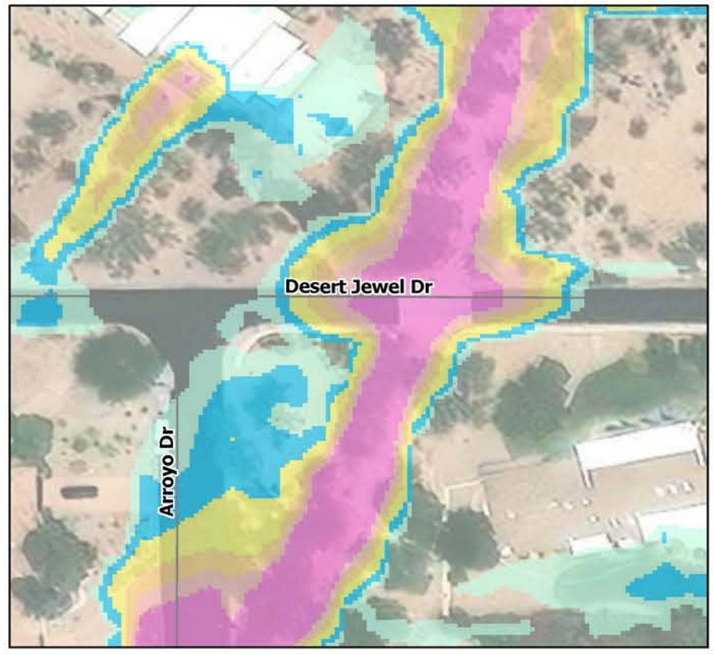
2-Year, 6-Hour



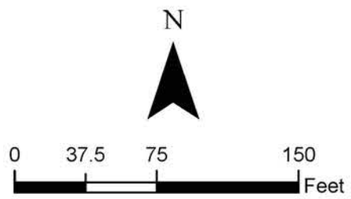
10-Year, 6-Hour



100-Year, 6-Hour



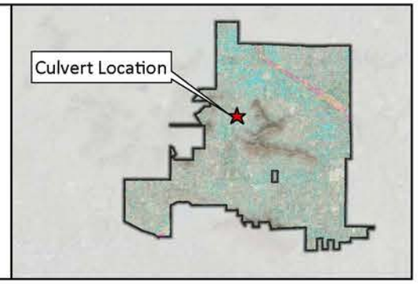
100-Year Maximum Depth Overtopping the Road : 6.1 ft



Legend

Hydraulic Structures
- Culvert

Maximum Water Depth (ft)
- 0.0 - 0.25
- 0.251 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.0 - 27



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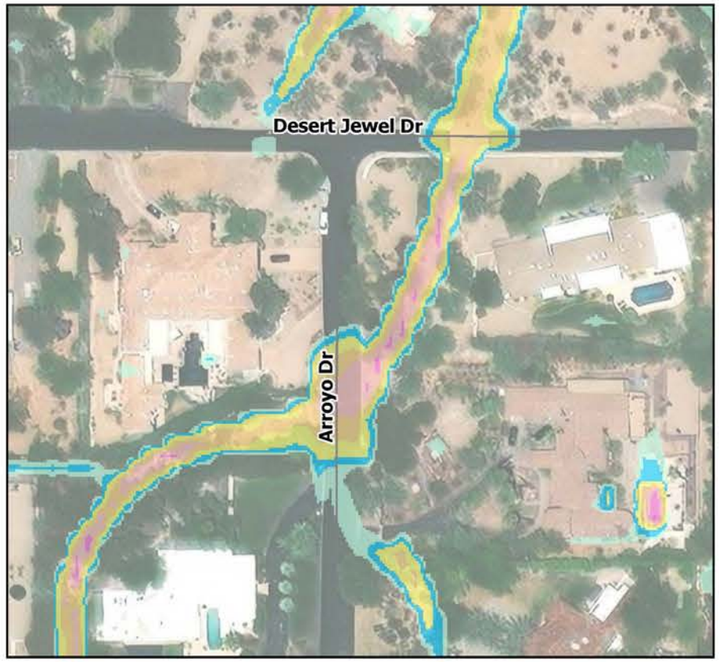
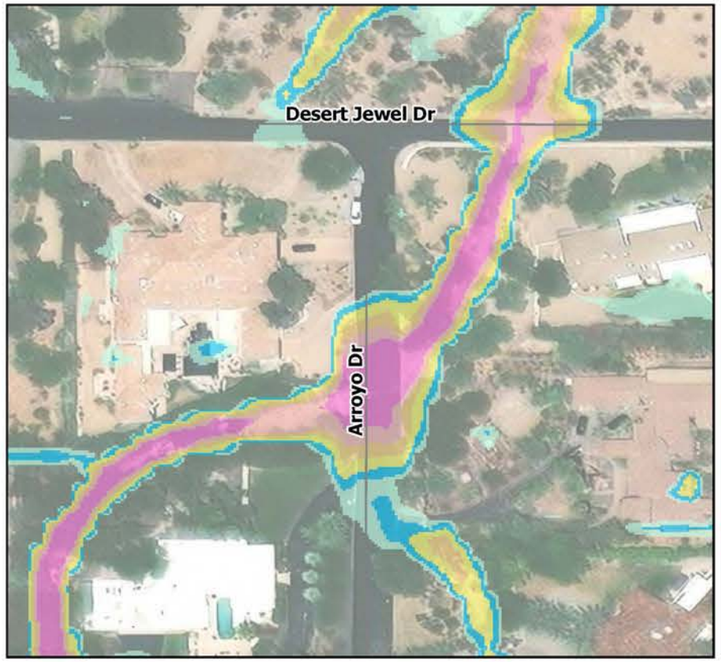
Possible Emergency Vehicle Access Restriction Areas: Arroyo Dr Low Water Crossing

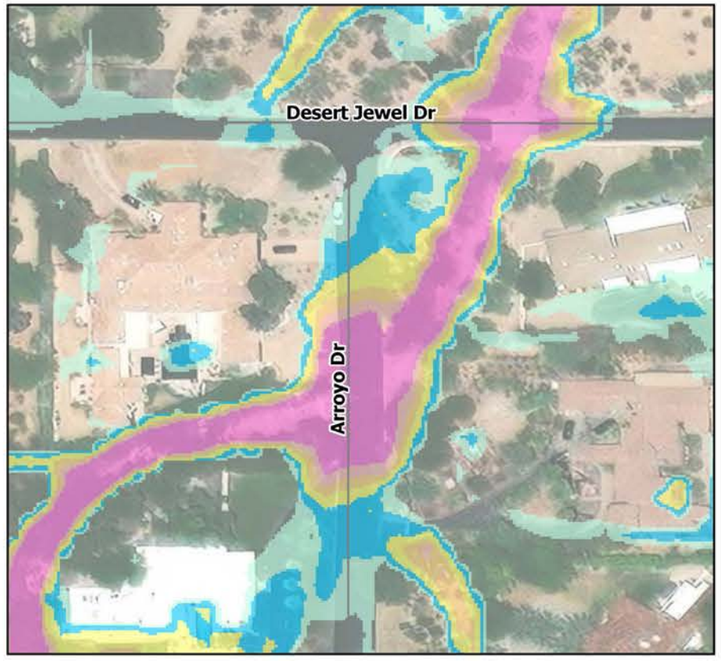
2-Year, 6-Hour



10-Year, 6-Hour



100-Year, 6-Hour



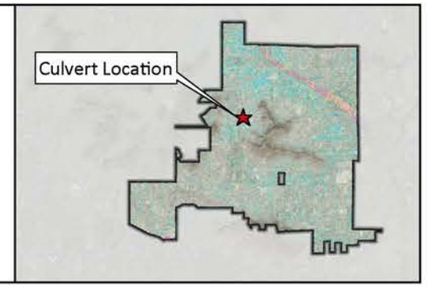
100-Year Maximum Depth Overtopping the Road : 8.0 ft

N

0 50 100 200 Feet

Legend

Hydraulic Structures	Maximum Water Depth (ft)	
Culvert	0.0 - 0.25	1.01 - 2.0
	0.251 - 0.5	2.01 - 3.0
	0.51 - 1.0	3.01 - 4.0
		4.0 - 27



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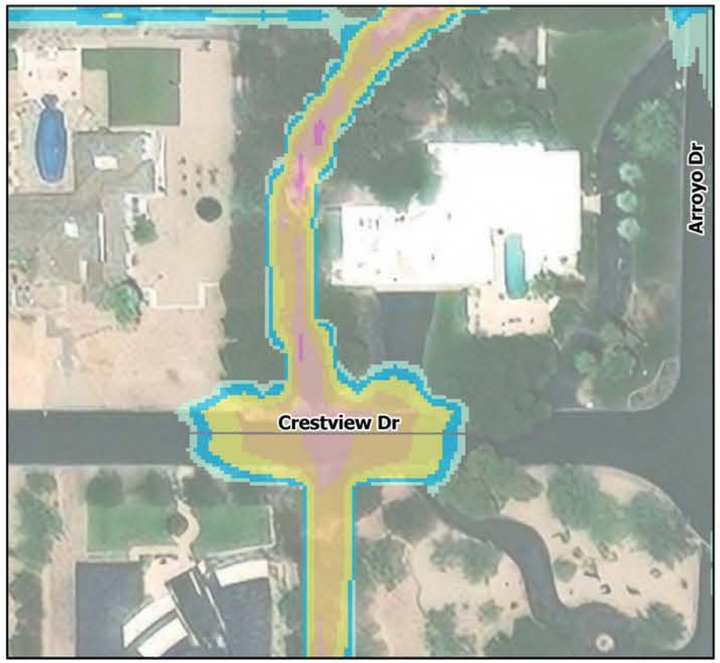
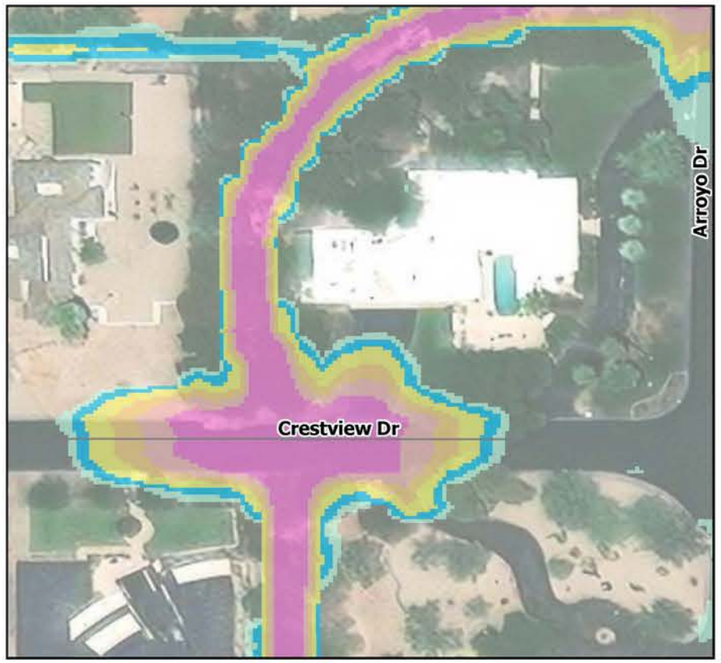
Possible Emergency Vehicle Access Restriction Areas: Crestview Dr Low Water Crossing

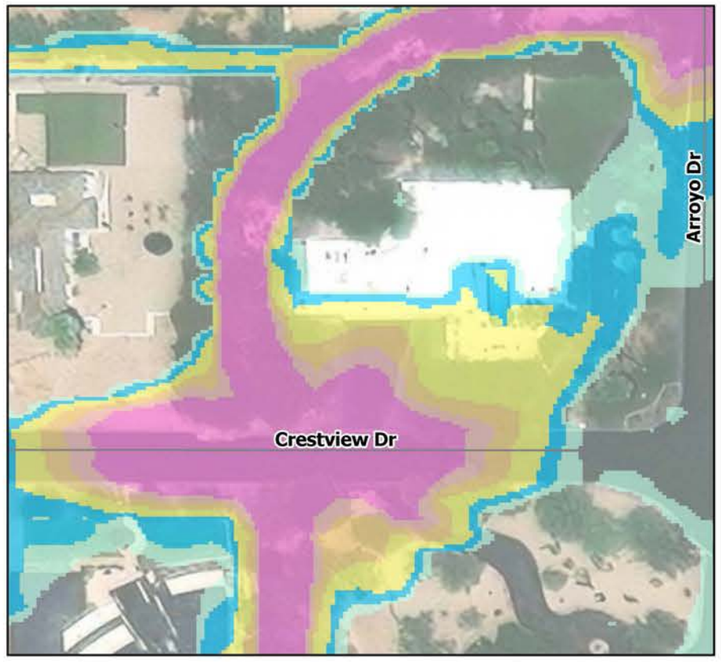
2-Year, 6-Hour



10-Year, 6-Hour



100-Year, 6-Hour



100-Year Maximum Depth Overtopping the Road : 8.4 ft

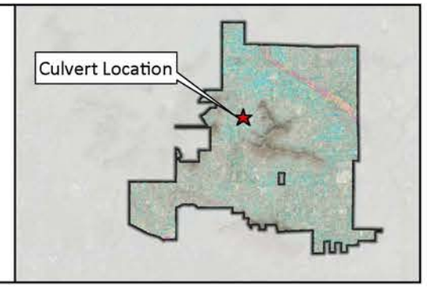
N

0 37.5 75 150 Feet

Legend

Hydraulic Structures
- Culvert

Maximum Water Depth (ft)
- 0.0 - 0.25
- 0.251 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.0 - 27



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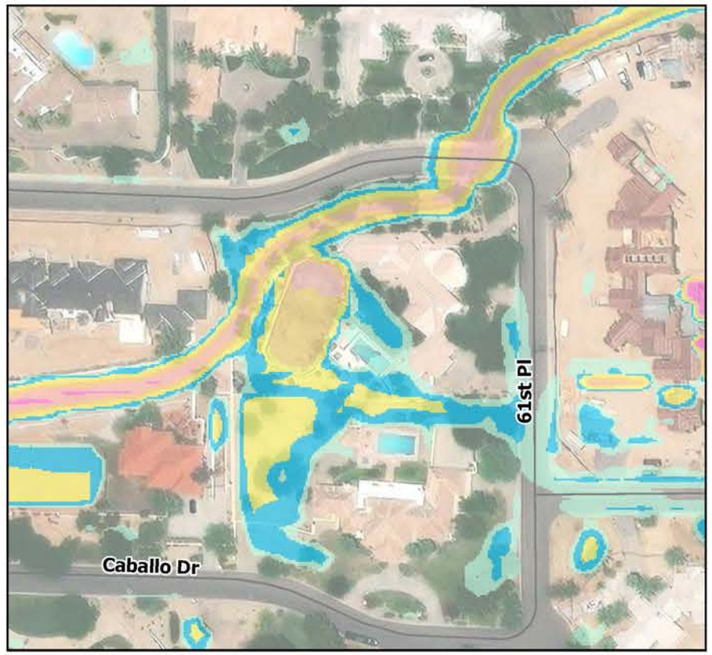
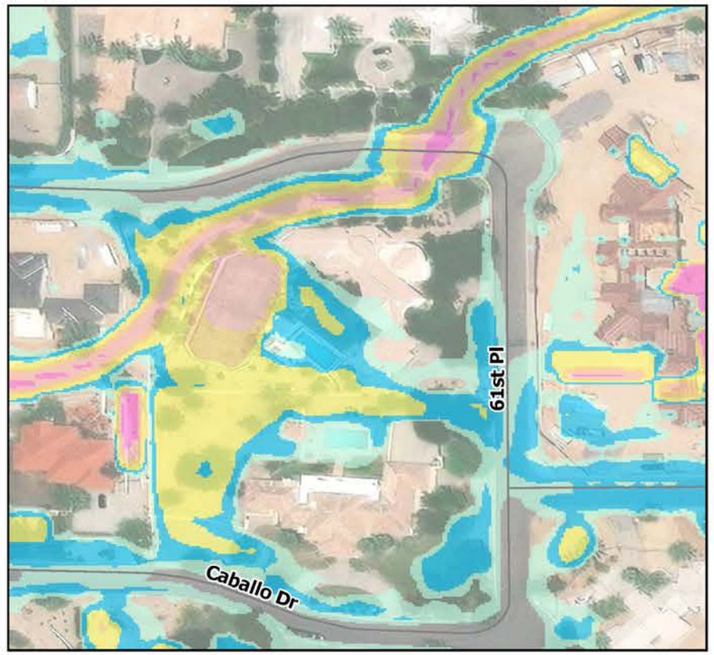
Possible Emergency Vehicle Access Restriction Areas: Caballo Ln

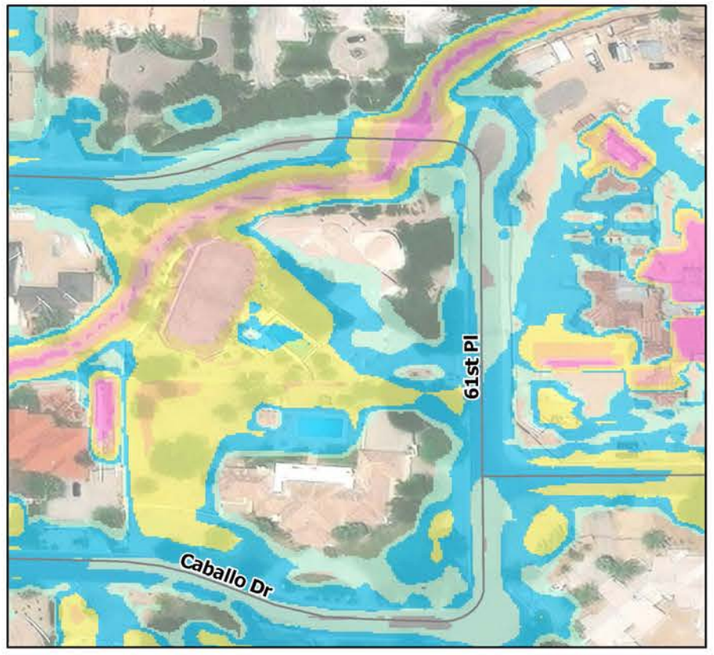
2-Year, 6-Hour



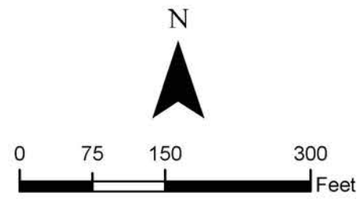
10-Year, 6-Hour



100-Year, 6-Hour

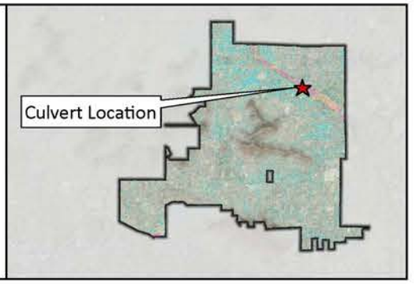


100-Year Maximum Depth Overtopping the Road : 4.7 ft



Legend

Hydraulic Structures	Maximum Water Depth (ft)	
Culvert	0.0 - 0.25	1.01 - 2.0
	0.251 - 0.5	2.01 - 3.0
	0.51 - 1.0	3.01 - 4.0
		4.0 - 27



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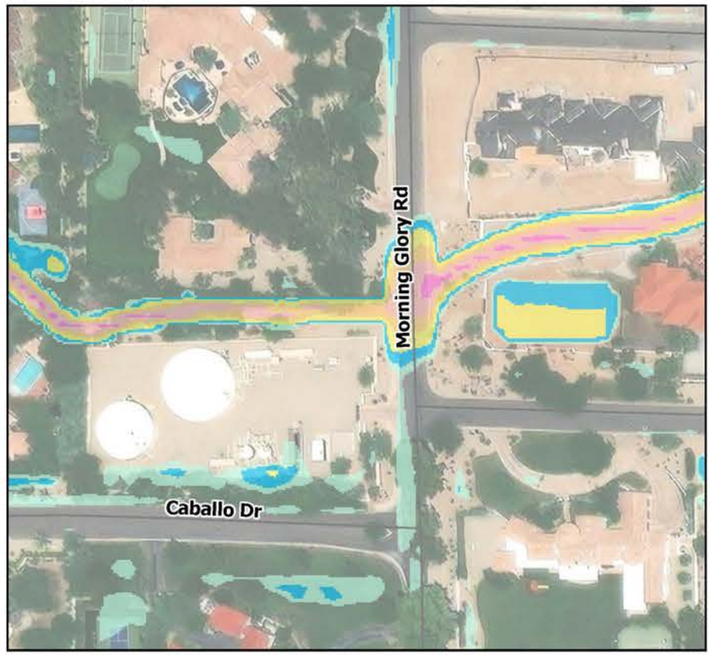
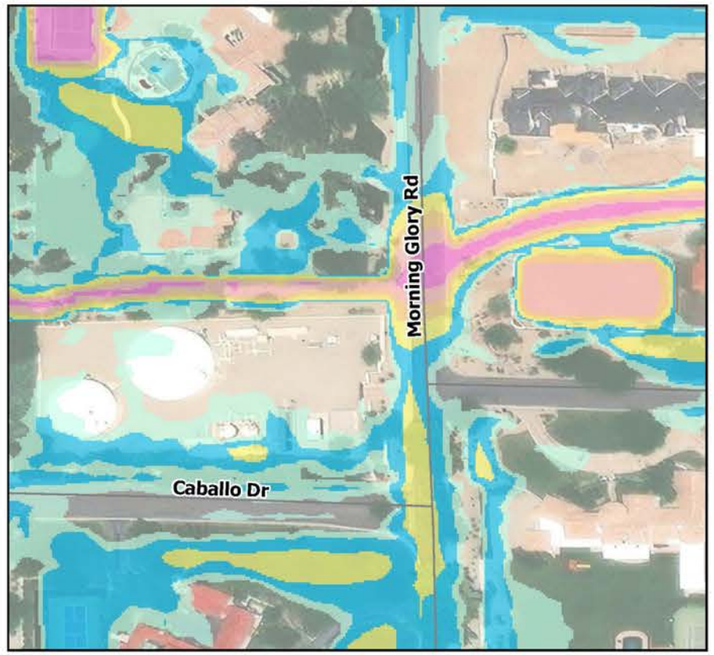
Possible Emergency Vehicle Access Restriction Areas: Morning Glory Rd Low Water Crossing

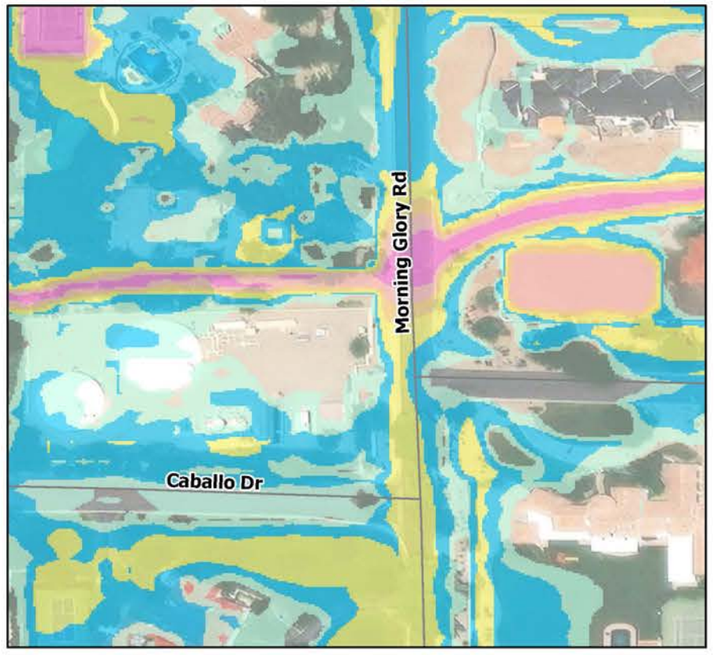
2-Year, 6-Hour



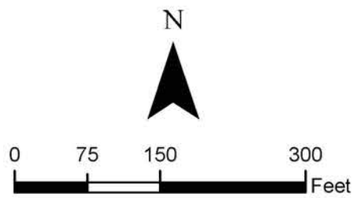
10-Year, 6-Hour



100-Year, 6-Hour



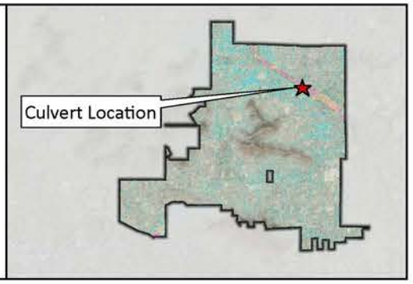
100-Year Maximum Depth Overtopping the Road : 5.3 ft



Legend

Hydraulic Structures
- Culvert

Maximum Water Depth (ft)
- 0.0 - 0.25
- 0.251 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.0 - 27



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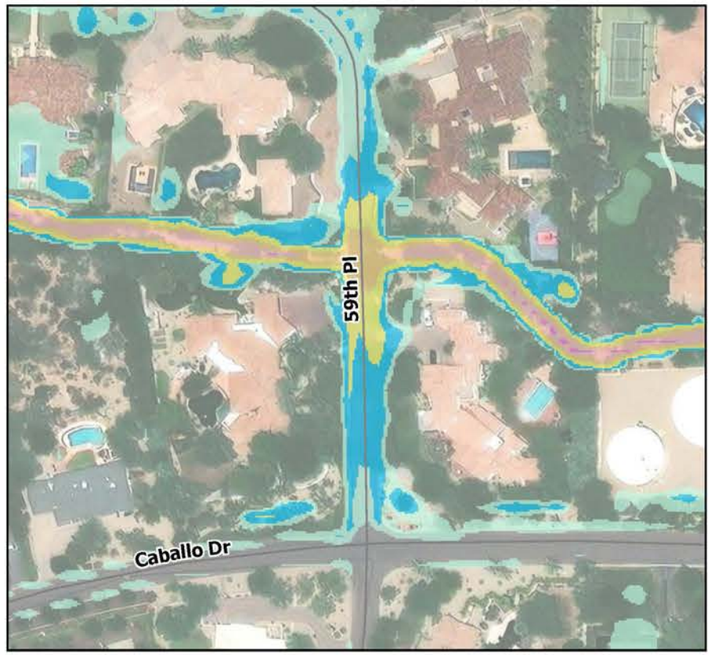
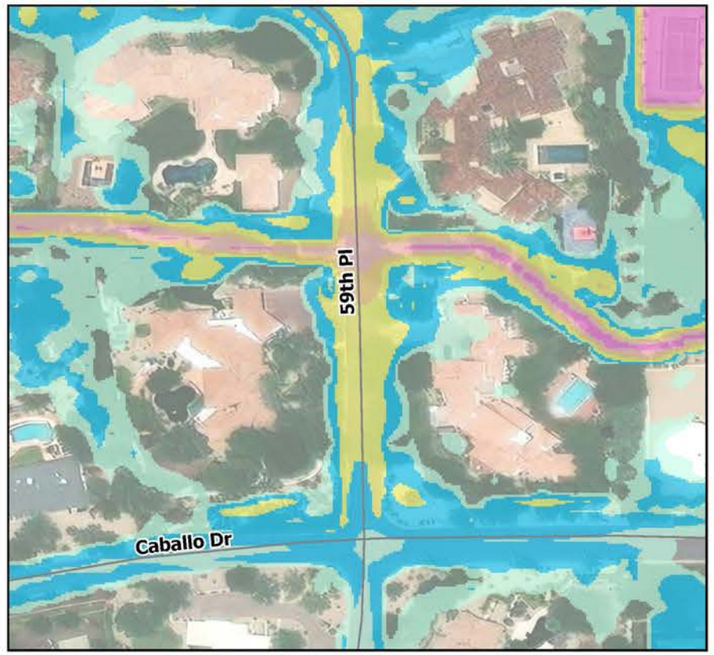
Possible Emergency Vehicle Access Restriction Areas: 59th Pl Low Water Crossing

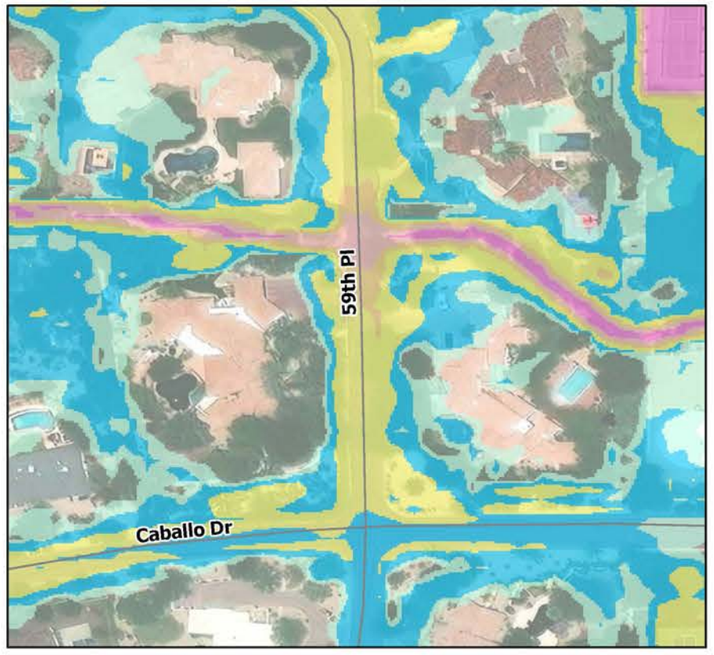
2-Year, 6-Hour



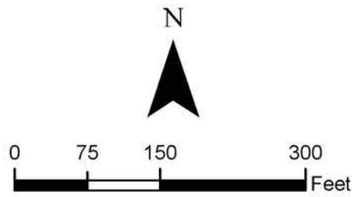
10-Year, 6-Hour



100-Year, 6-Hour

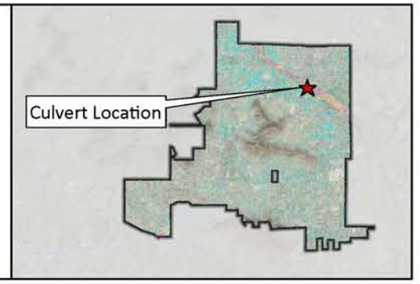


100-Year Maximum Depth Overtopping the Road : 3.8 ft



Legend

Hydraulic Structures	Maximum Water Depth (ft)	
Culvert	0.0 - 0.25	1.01 - 2.0
	0.251 - 0.5	2.01 - 3.0
	0.51 - 1.0	3.01 - 4.0
		4.0 - 27



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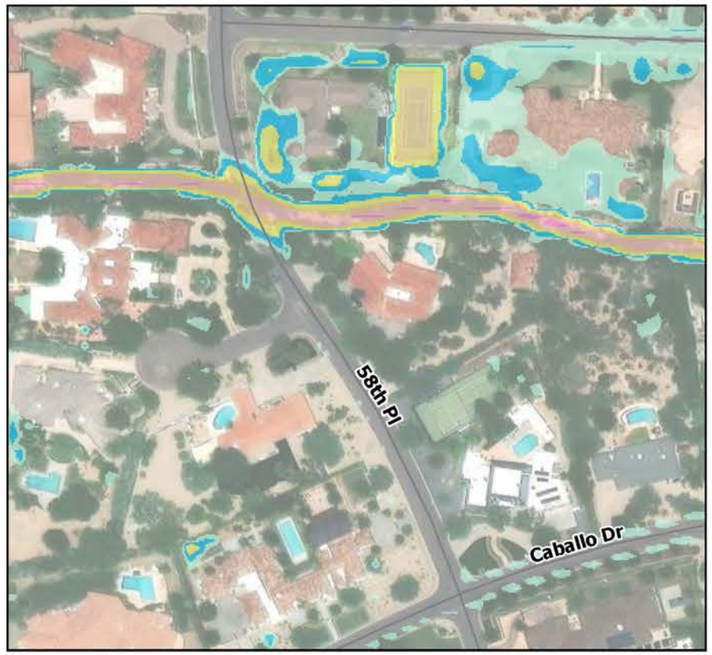
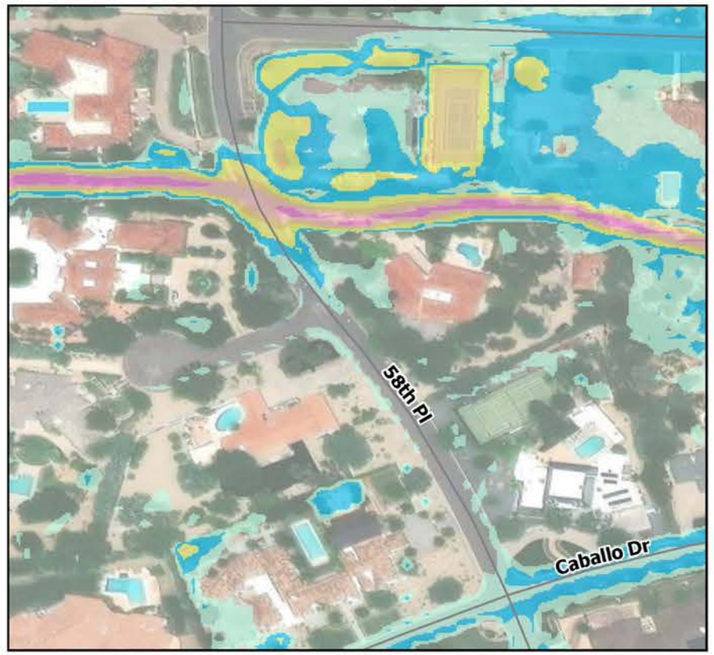
Possible Emergency Vehicle Access Restriction Areas: 58th Pl Low Water Crossing

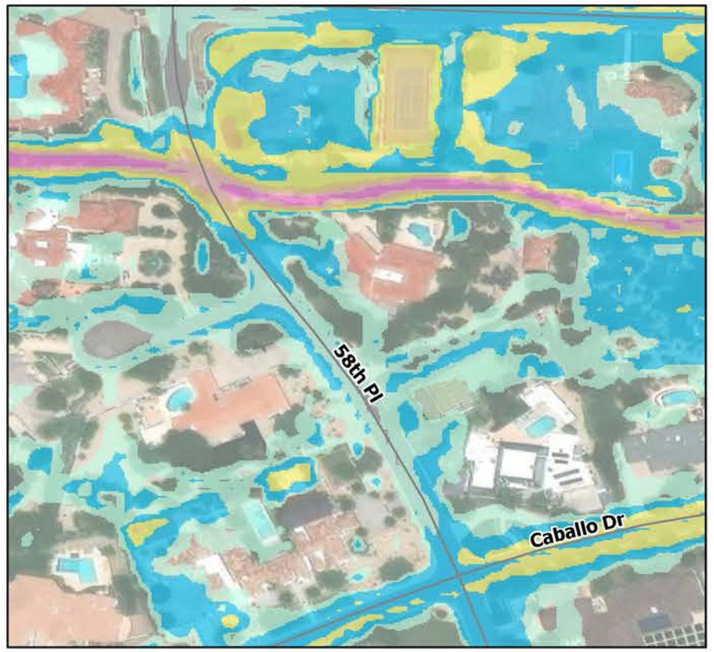
2-Year, 6-Hour



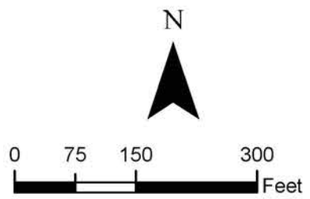
10-Year, 6-Hour



100-Year, 6-Hour

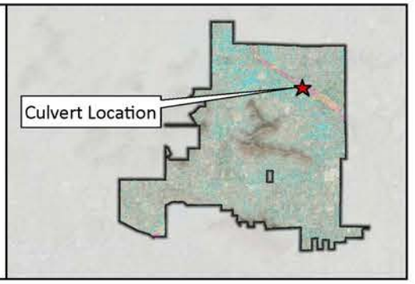


100-Year Maximum Depth Overtopping the Road : 4.2 ft



Legend

Hydraulic Structures	Maximum Water Depth (ft)	
Culvert	0.0 - 0.25	1.01 - 2.0
	0.251 - 0.5	2.01 - 3.0
	0.51 - 1.0	3.01 - 4.0
		4.0 - 27



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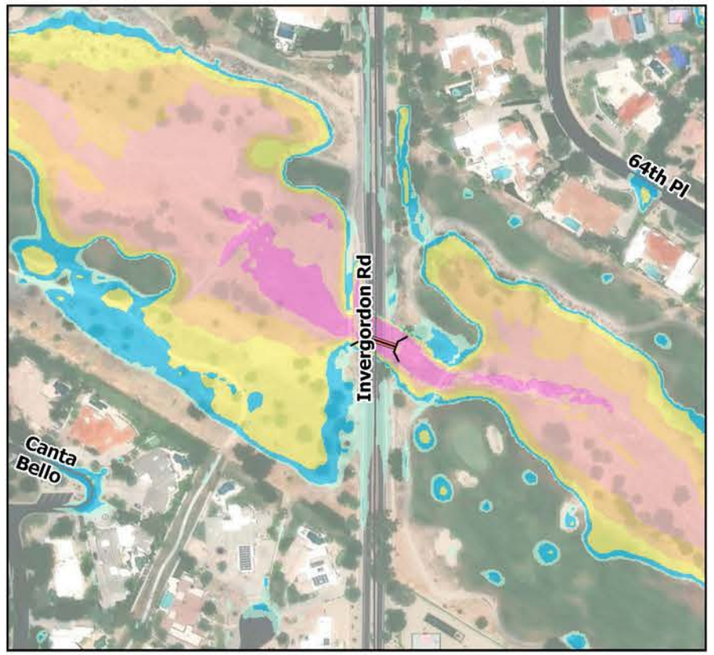
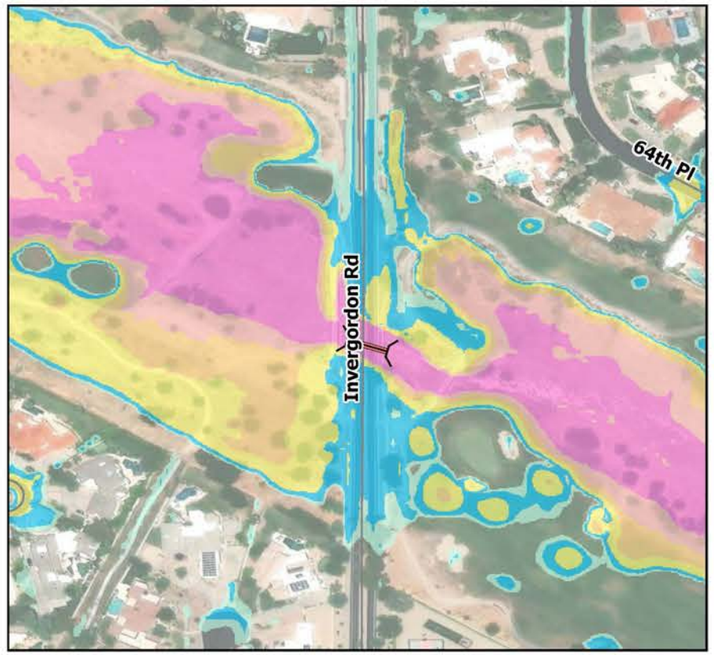
Possible Emergency Vehicle Access Restriction Areas: N-21

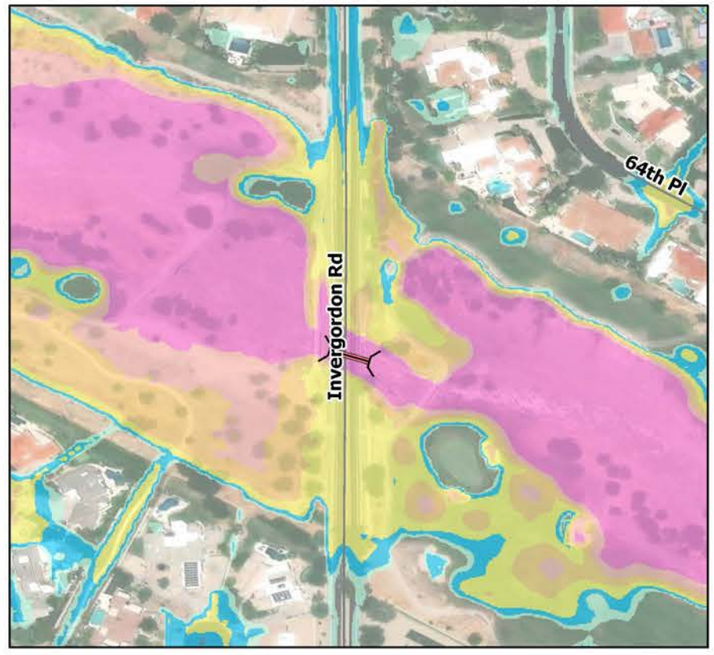
2-Year, 6-Hour



10-Year, 6-Hour



100-Year, 6-Hour



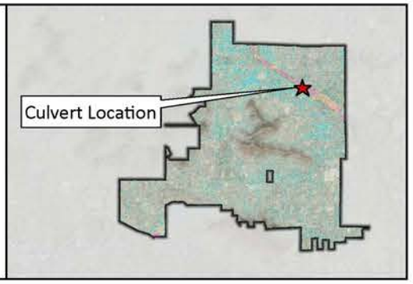
100-Year Maximum Depth Overtopping the Road : 11 ft

N

0 75 150 300 Feet

Legend

Hydraulic Structures	Maximum Water Depth (ft)	
Culvert	0.0 - 0.25	1.01 - 2.0
	0.251 - 0.5	2.01 - 3.0
	0.51 - 1.0	3.01 - 4.0
		4.0 - 27



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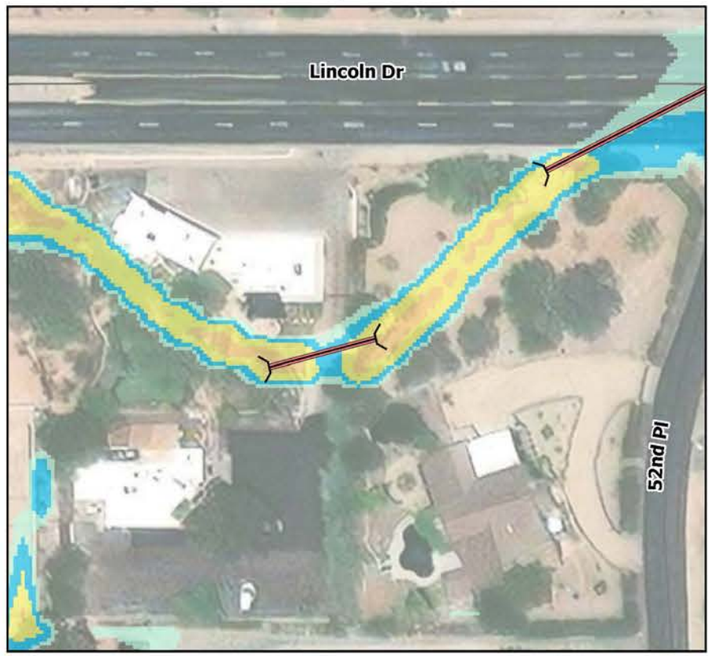
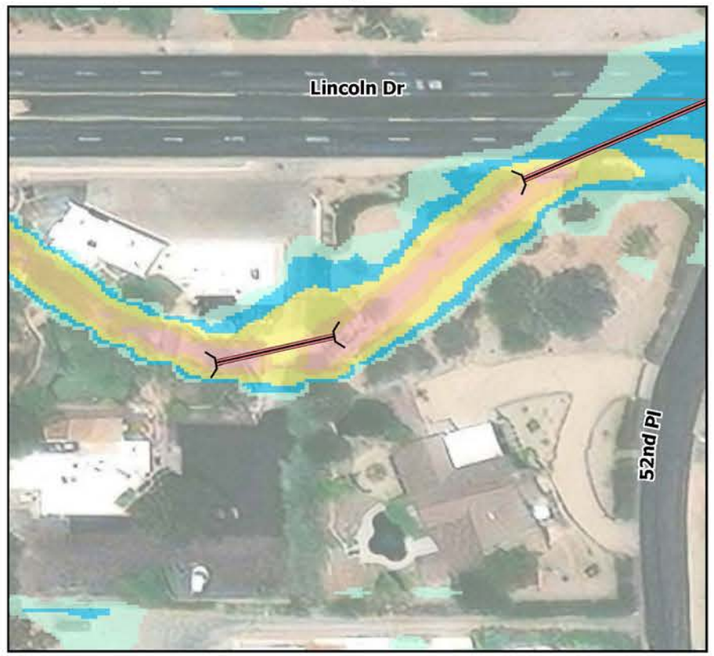
Possible Emergency Vehicle Access Restriction Areas: S-9

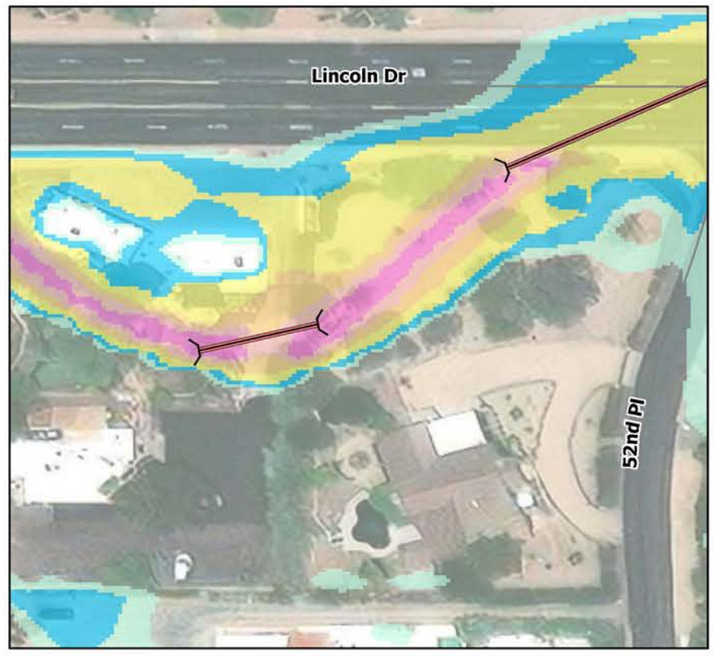
2-Year, 6-Hour



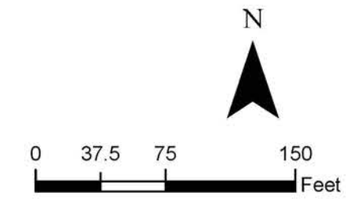
10-Year, 6-Hour



100-Year, 6-Hour



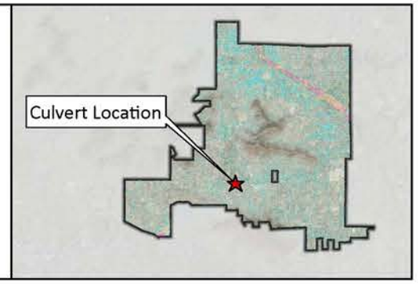
100-Year Maximum Depth Overtopping the Road : 3.6



Legend

Hydraulic Structures
- Culvert

Maximum Water Depth (ft)
- 0.0 - 0.25
- 0.251 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.0 - 27



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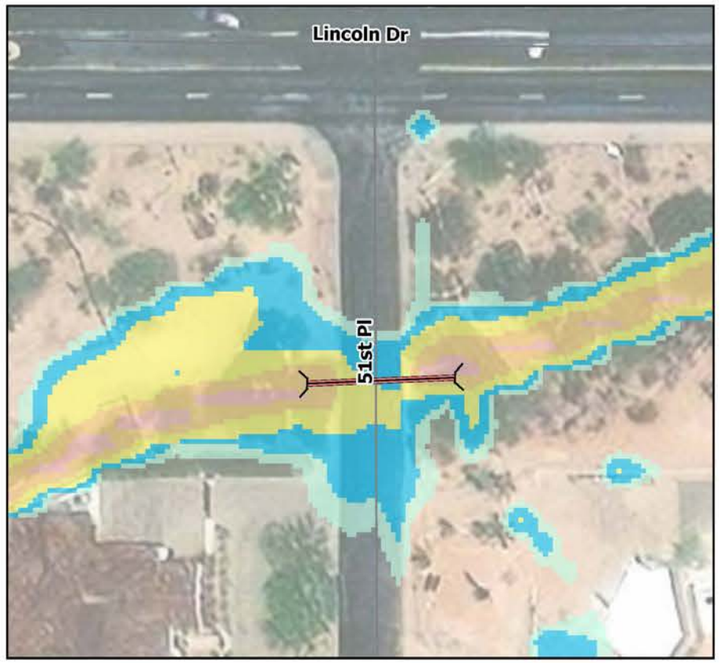
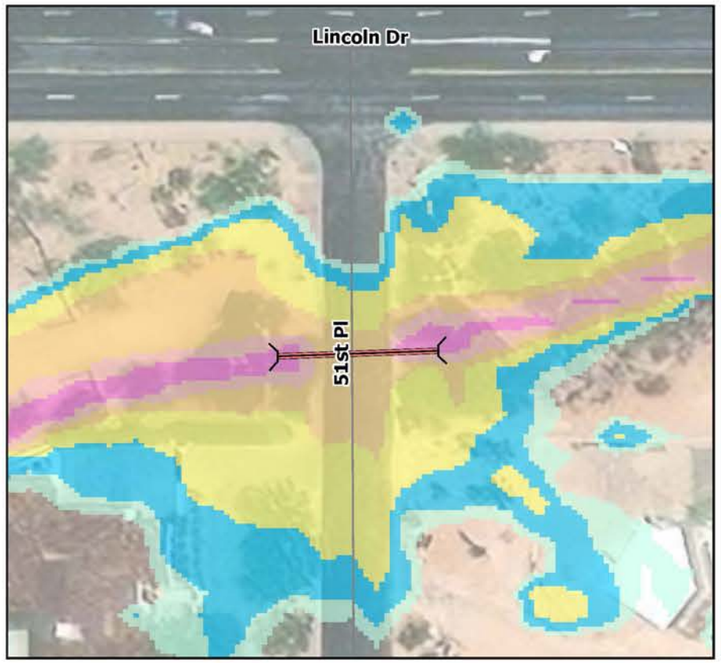
Engineering, Planning and Environmental Consultants

Possible Emergency Vehicle Access Restriction Areas: S-8

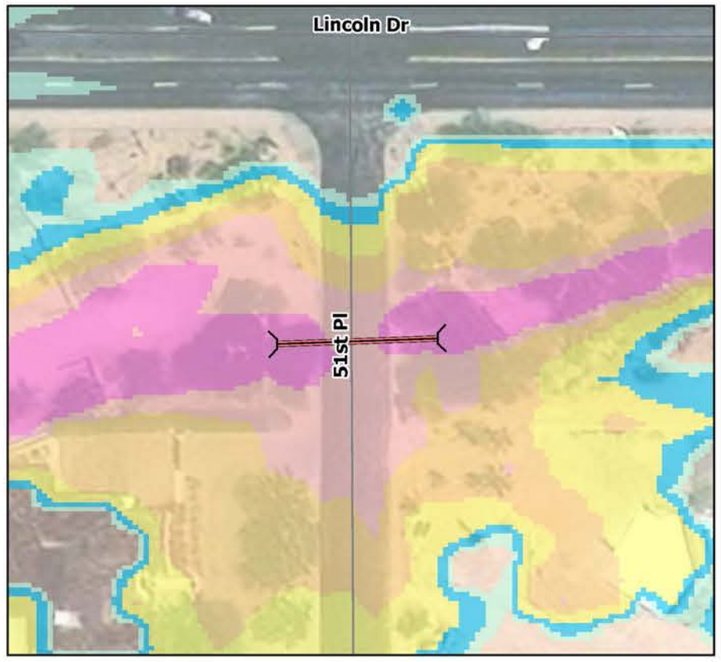
2-Year, 6-Hour



10-Year, 6-Hour



100-Year, 6-Hour



100-Year Maximum Depth Overtopping the Road : 4.8 ft

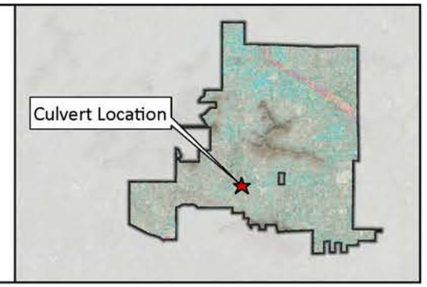
N

0 50 100 200 Feet

Legend

Hydraulic Structures
Culvert

Maximum Water Depth (ft)
0.0 - 0.25
0.251 - 0.5
0.51 - 1.0
1.01 - 2.0
2.01 - 3.0
3.01 - 4.0
4.0 - 27



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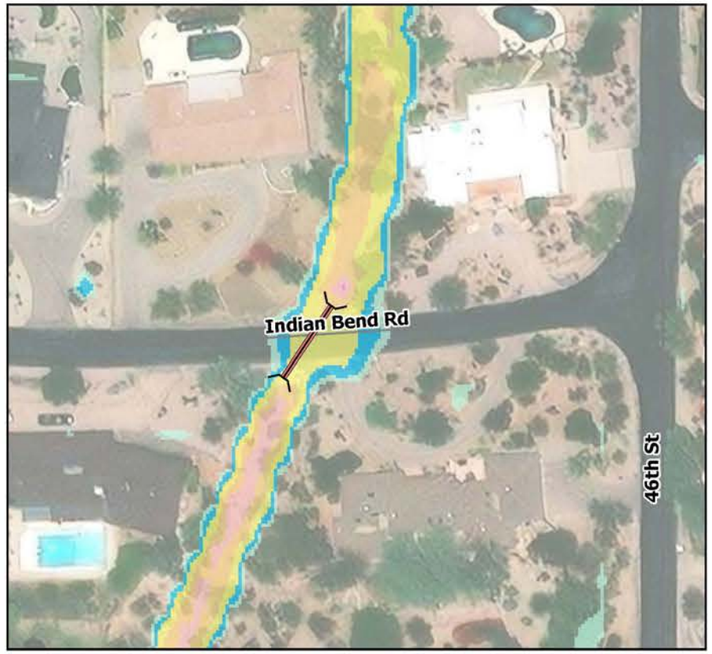
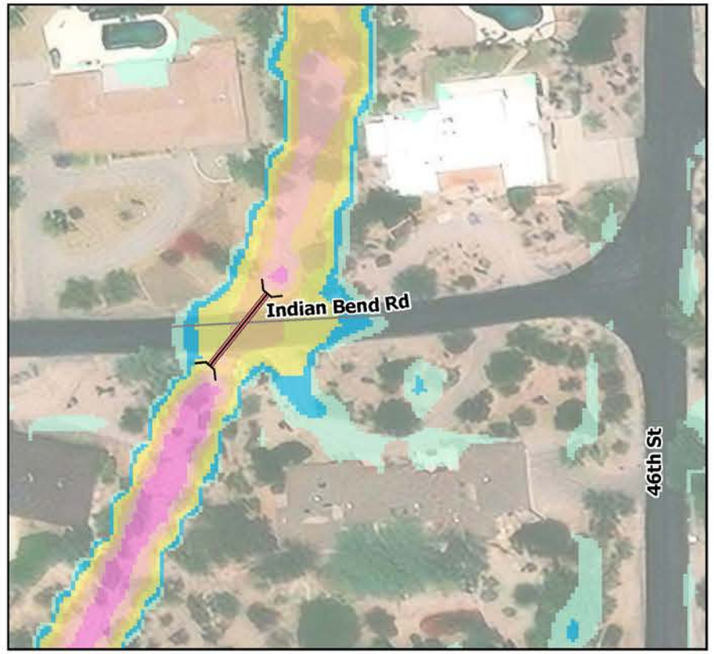
Engineering, Planning and Environmental Consultants

Possible Emergency Vehicle Access Restriction Areas: S-7

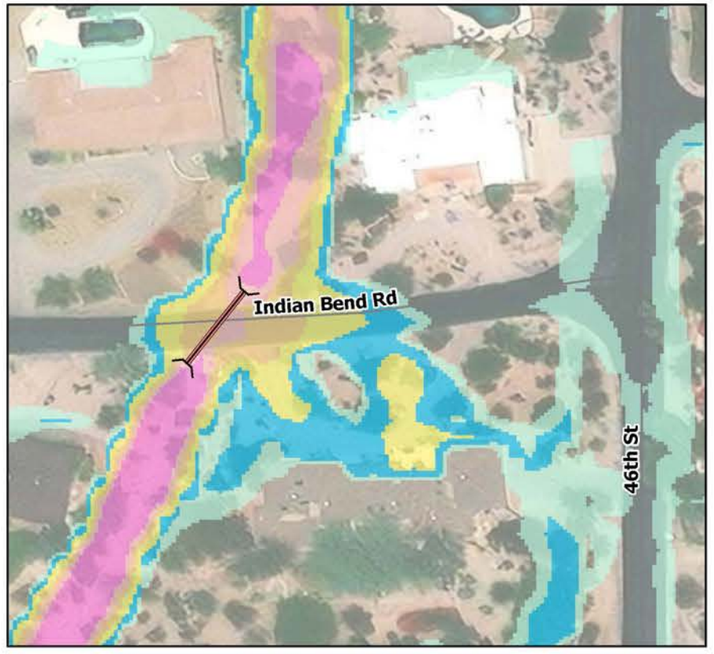
2-Year, 6-Hour



10-Year, 6-Hour



100-Year, 6-Hour



100-Year Maximum Depth Overtopping the Road : 3.6 ft

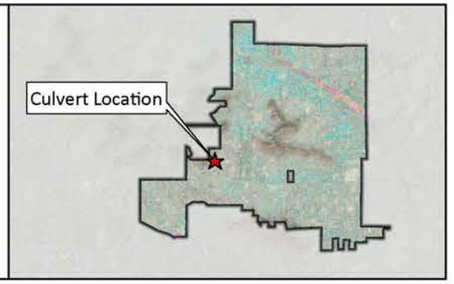
N

0 37.5 75 150
Feet

Legend

Hydraulic Structures
Culvert

Maximum Water Depth (ft)
0.0 - 0.25
0.251 - 0.5
0.51 - 1.0
1.01 - 2.0
2.01 - 3.0
3.01 - 4.0
4.0 - 27



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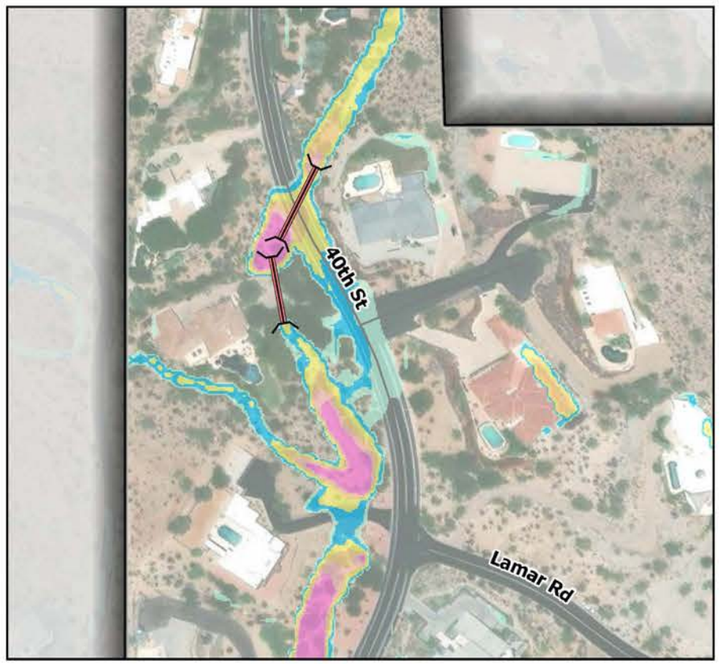
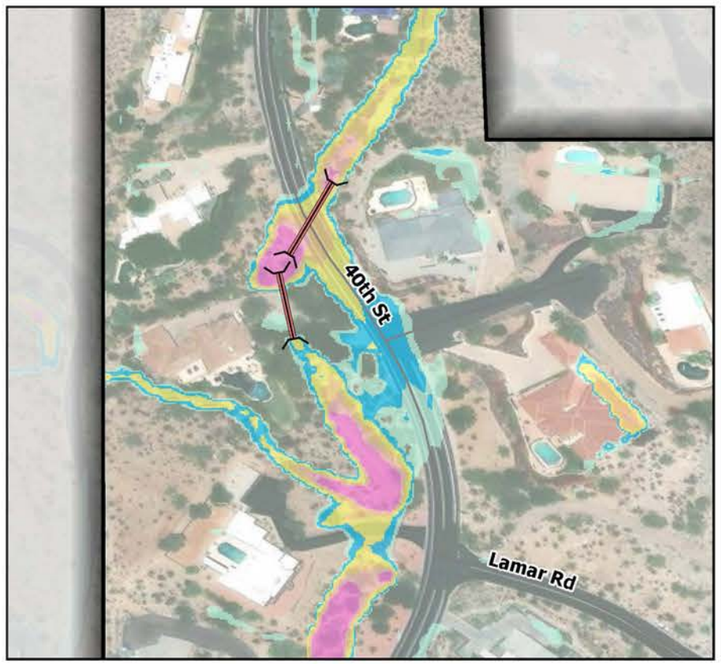
Engineering, Planning and Environmental Consultants

Possible Emergency Vehicle Access Restriction Areas: S-3

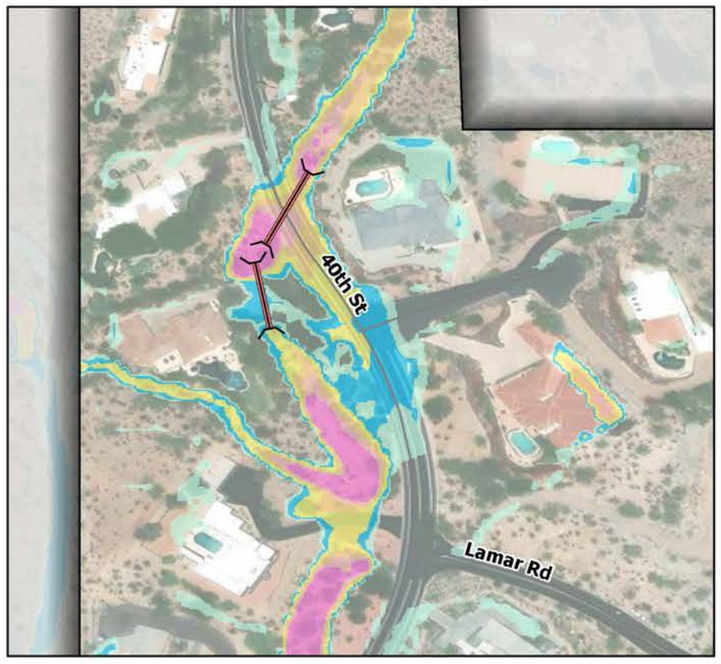
2-Year, 6-Hour



10-Year, 6-Hour



100-Year, 6-Hour



100-Year Maximum Depth Overtopping the Road : 3.9 ft

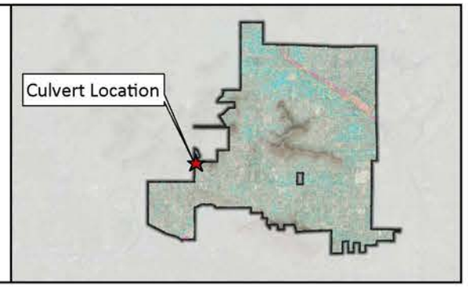
N

0 100 200 400 Feet

Legend

Hydraulic Structures
Culvert

Maximum Water Depth (ft)
0.0 - 0.25
0.251 - 0.5
0.51 - 1.0
1.01 - 2.0
2.01 - 3.0
3.01 - 4.0
4.0 - 27



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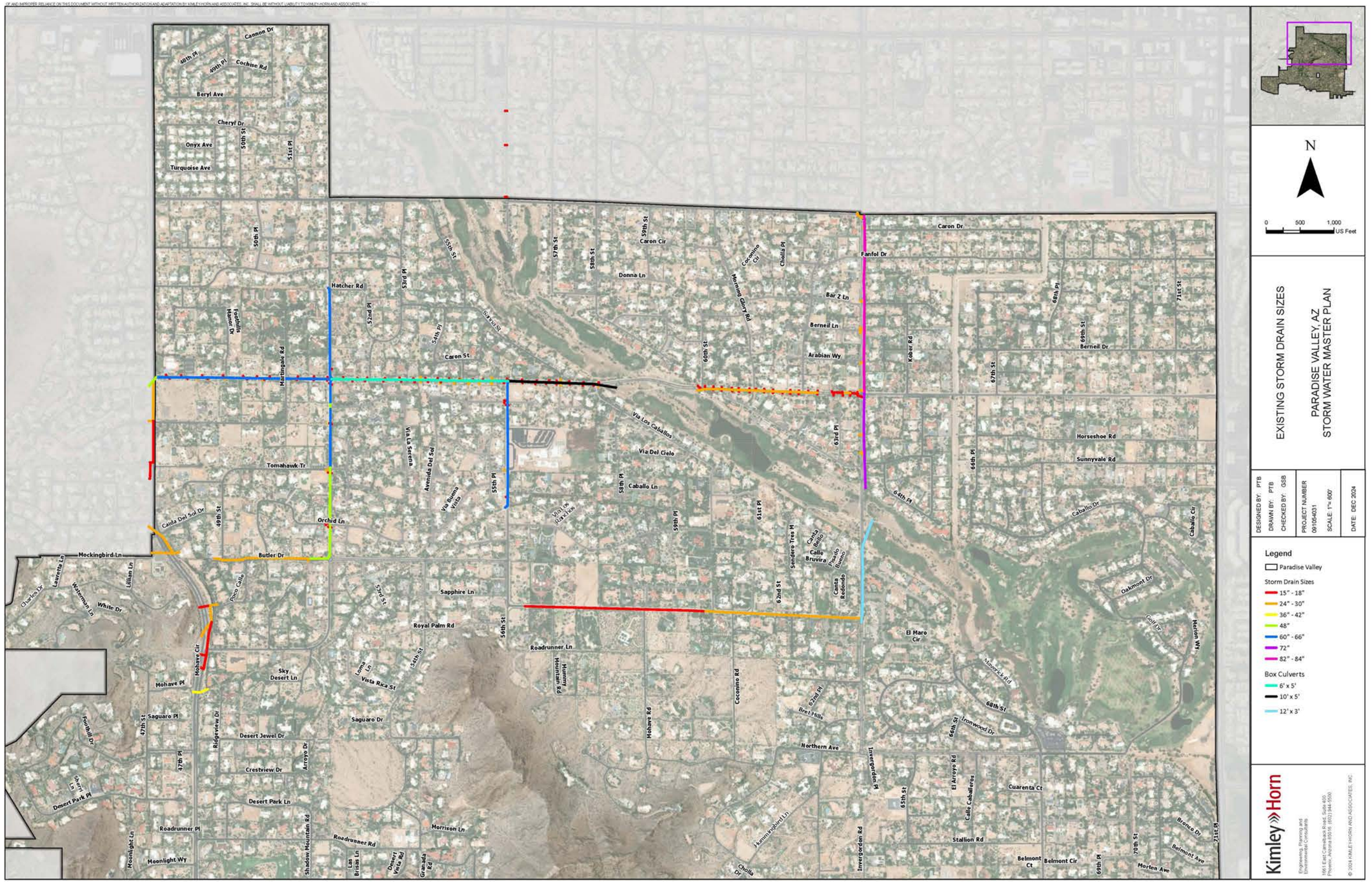
Engineering, Planning and Environmental Consultants

XIV. APPENDIX B – EXISTING INFRASTRUCTURE

STORM DRAIN IDENTIFICATION, CAPACITY, AND UNDERSIZED INLETS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Cheryl Dr
Onyx Ave
Turquoise Ave
50th St
51st Pl
50th Pl
Hatcher Rd
53rd Pl
52nd Pl
54th Pl
Caron St
Foothills Manor Dr
Hartingale Rd
55th St
57th St
58th St
59th St
Caron Cir
Donna Ln
Cocomino Cir
Chella Pl
Hermit Glory Rd
Bar Z Ln
Berneil Ln
Arabian Wy
60th St
Fanfol Dr
Caron Dr
Kaler Rd
67th St
68th Pl
69th St
Berneil Dr
71st St
Via Los Caballos
Via Del Cielo
Caballo Ln
58th Pl
59th Pl
61st Pl
63rd Pl
Sanders Tres M
Canta Bello
Calle Bruviva
Prado Bueno
Canta Redondo
62nd St
64th Pl
66th Pl
Horseshoe Rd
Sunnyvale Rd
Caballo Dr
Caballo Cir
Oakmont Dr
Golf Dr
Marion Wy
El Maro Cir
Maverick Rd
68th St
Ironwood Dr
66th St
Tomahawk Tr
Via La Serena
Avenida Del Sol
Via Buena Vista
55th Pl
Orchid Ln
Canda Del Sol Dr
49th St
Butler Dr
Mockingbird Ln
Laurenta Ln
Charles Dr
Watermann Ln
Lillian Ln
White Dr
Paso Calle
53rd St
Sapphire Ln
Royal Palm Rd
56th St
Roadrunner Ln
Hummingbird Ln
Mohave Cir
Mohave Pl
Sky Desert Ln
Loma Ln
Vista Rica St
54th St
Saguaro Pl
Saguaro Dr
Foothill Dr
47th St
Ridgeview Dr
Desert Jewel Dr
47th Pl
Crestview Dr
Arroyo Dr
Sherri Ln
Desert Park Pl
Desert Park Ln
Roadrunner Pl
Moonlight Ln
Moonlight Wy
Shadow Mountain Rd
Roadrunner Rd
Las Brisas Ln
Desert Vista Rd
Granada Rd
Morrison Ln
Mohave Rd
Cocomino Rd
63rd Pl
Bret Hills
Northern Ave
Hummingbird Ln
Cholla Dr
Inverlordon Dr
65th St
El Arroyo Rd
Calle Caballeros
Cuarenta Ct
Stallion Rd
Belmont Ct
Belmont Cir
69th Pl
70th St
Bronco Dr
Belmont Ave
Morten Ave
71st St
N
0
500
1,000
US Feet
EXISTING STORM DRAIN SIZES
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER
081054031
SCALE: 1"= 600'
DATE: DEC 2024
Legend
Paradise Valley
Storm Drain Sizes
15" - 18"
24" - 30"
36" - 42"
48"
60" - 66"
72"
82" - 84"
Box Culverts
6' x 5'
10' x 5'
12' x 3'
Kimley»Horn
Engineering, Planning and Environmental Consultants
1661 East Camelback Road, Suite 400
Phoenix, Arizona 85016 (602) 944-5500
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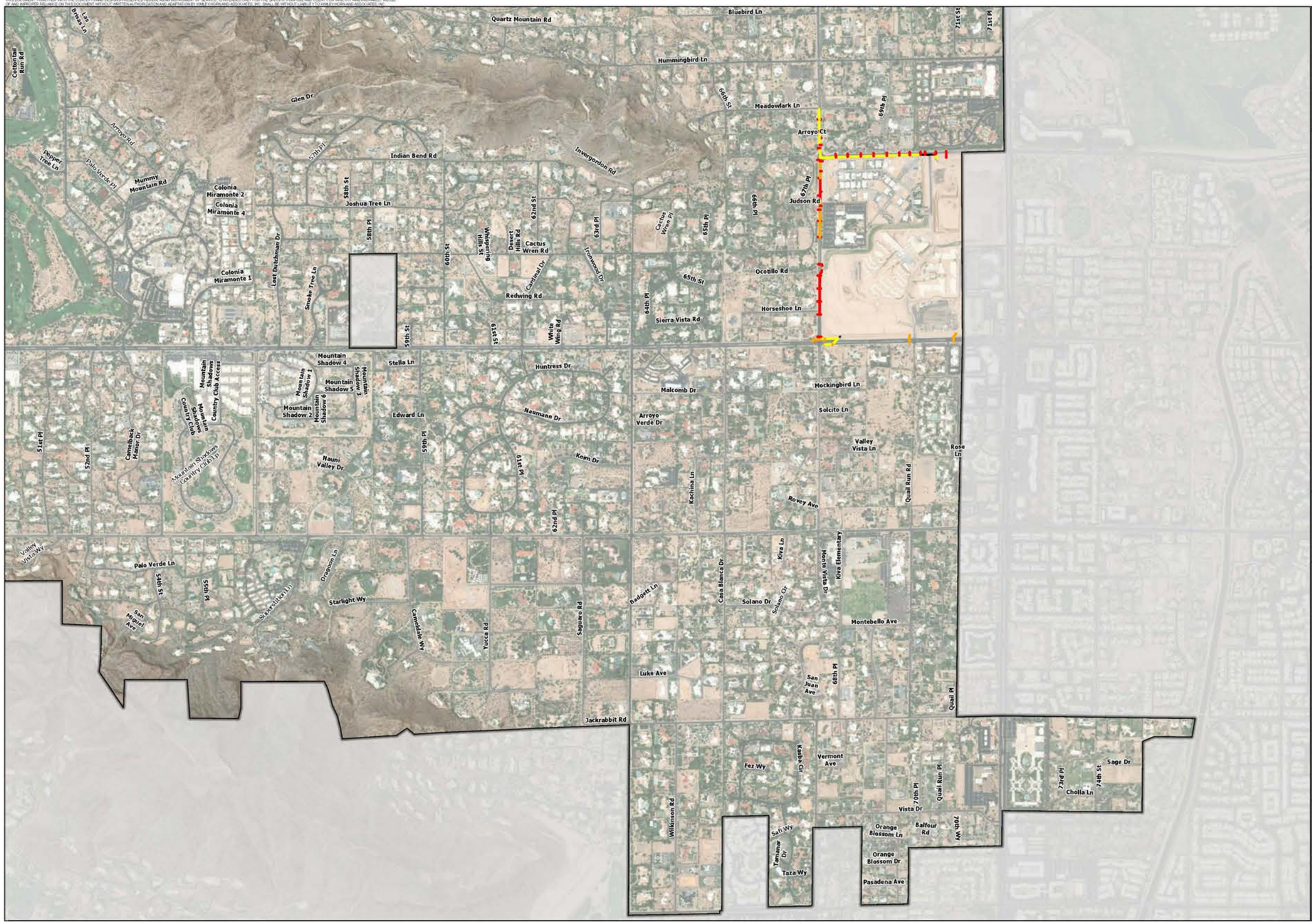

EXISTING STORM DRAIN SIZES

PARADISE VALLEY, AZ
STORM WATER MASTER PLAN

DESIGNED BY: PTB	PROJECT NUMBER 091054031	SCALE: 1"= 600'	DATE: DEC 2024
DRAWN BY: PTB			
CHECKED BY: GSB			

Legend

- Paradise Valley

Storm Drain Sizes

- 15" - 18"
- 24" - 30"
- 36" - 42"
- 48"
- 60" - 66"
- 72"
- 82" - 84"

Box Culverts

- 6' x 5'
- 10' x 5'
- 12' x 3'

Kimley»Horn
Engineering, Planning and Environmental Consultants
1661 East Camelback Road, Suite 400
Phoenix, Arizona 85016 (602) 944-5500

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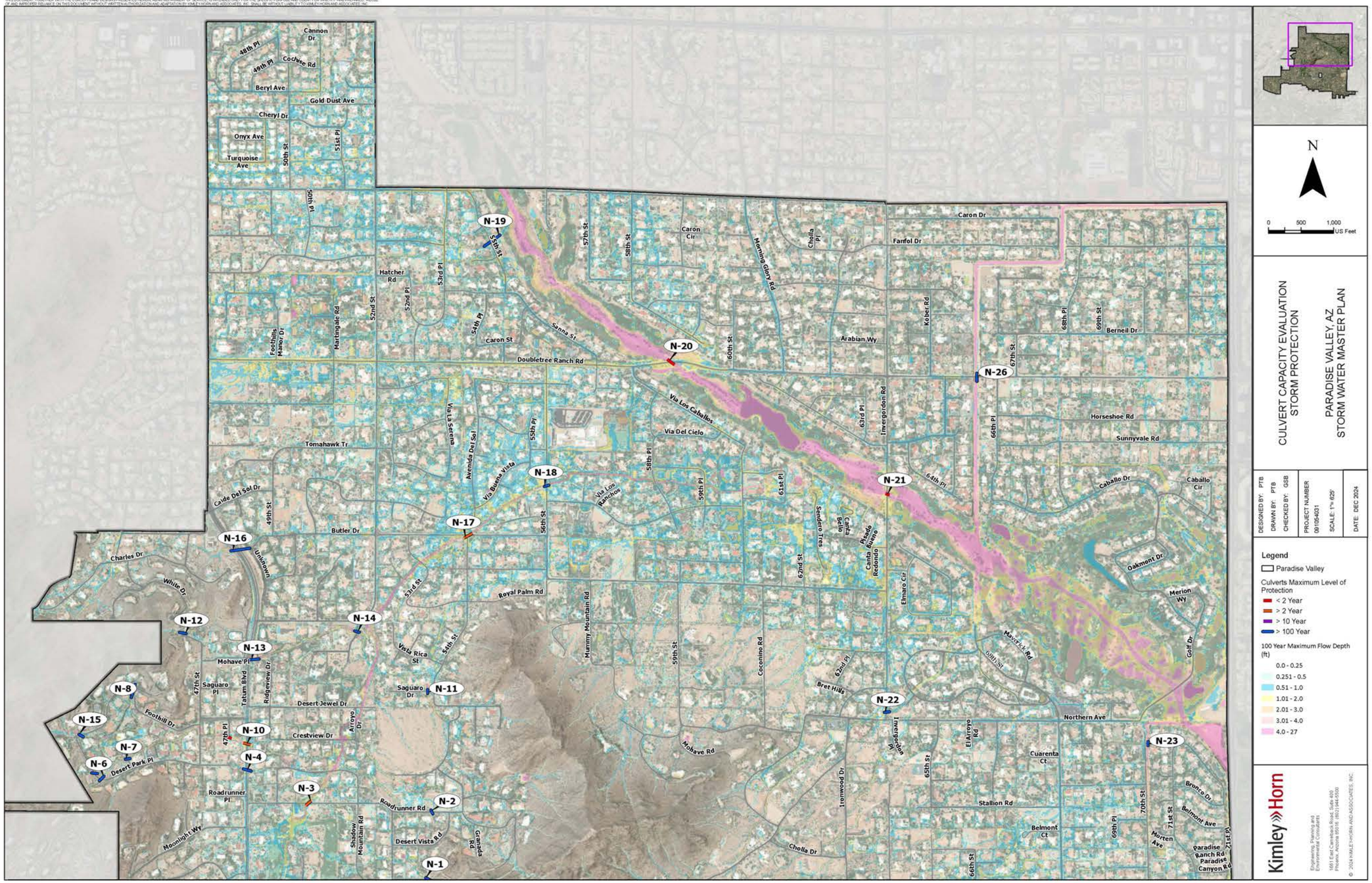
N
0 500 1,000 US Feet
CULVERT CAPACITY EVALUATION
STORM PROTECTION
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER 061054031
SCALE: 1"= 825'
DATE: DEC 2024
Legend
Paradise Valley
Culverts Maximum Level of Protection
< 2 Year
> 2 Year
> 10 Year
> 100 Year
100 Year Maximum Flow Depth (ft)
0.0 - 0.25
0.251 - 0.5
0.51 - 1.0
1.01 - 2.0
2.01 - 3.0
3.01 - 4.0
4.0 - 27
Kimley»Horn
Engineering, Planning and Environmental Consultants
1661 East Camelback Road, Suite 300, Phoenix, Arizona 85016, (602) 944-5500
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
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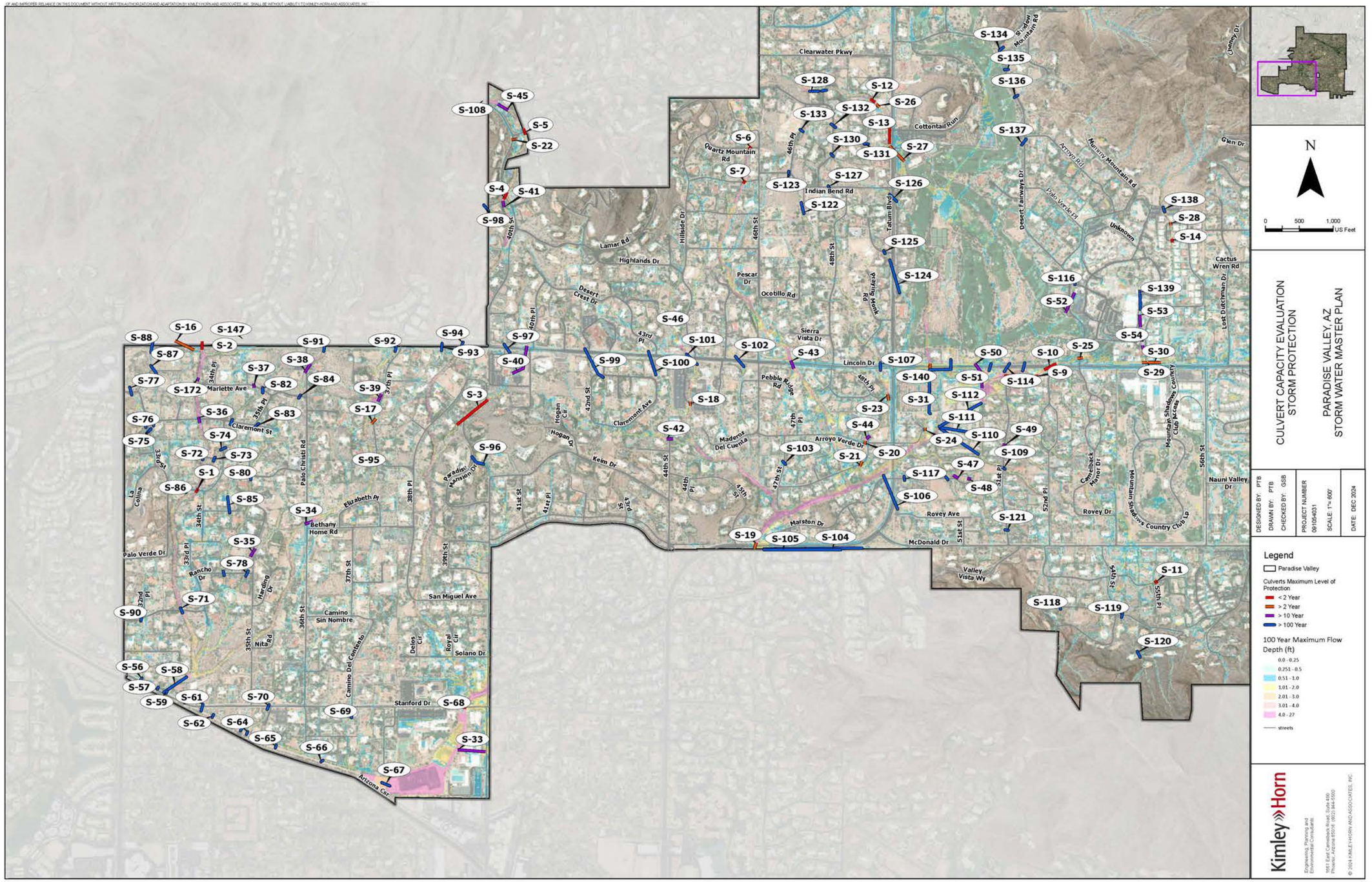
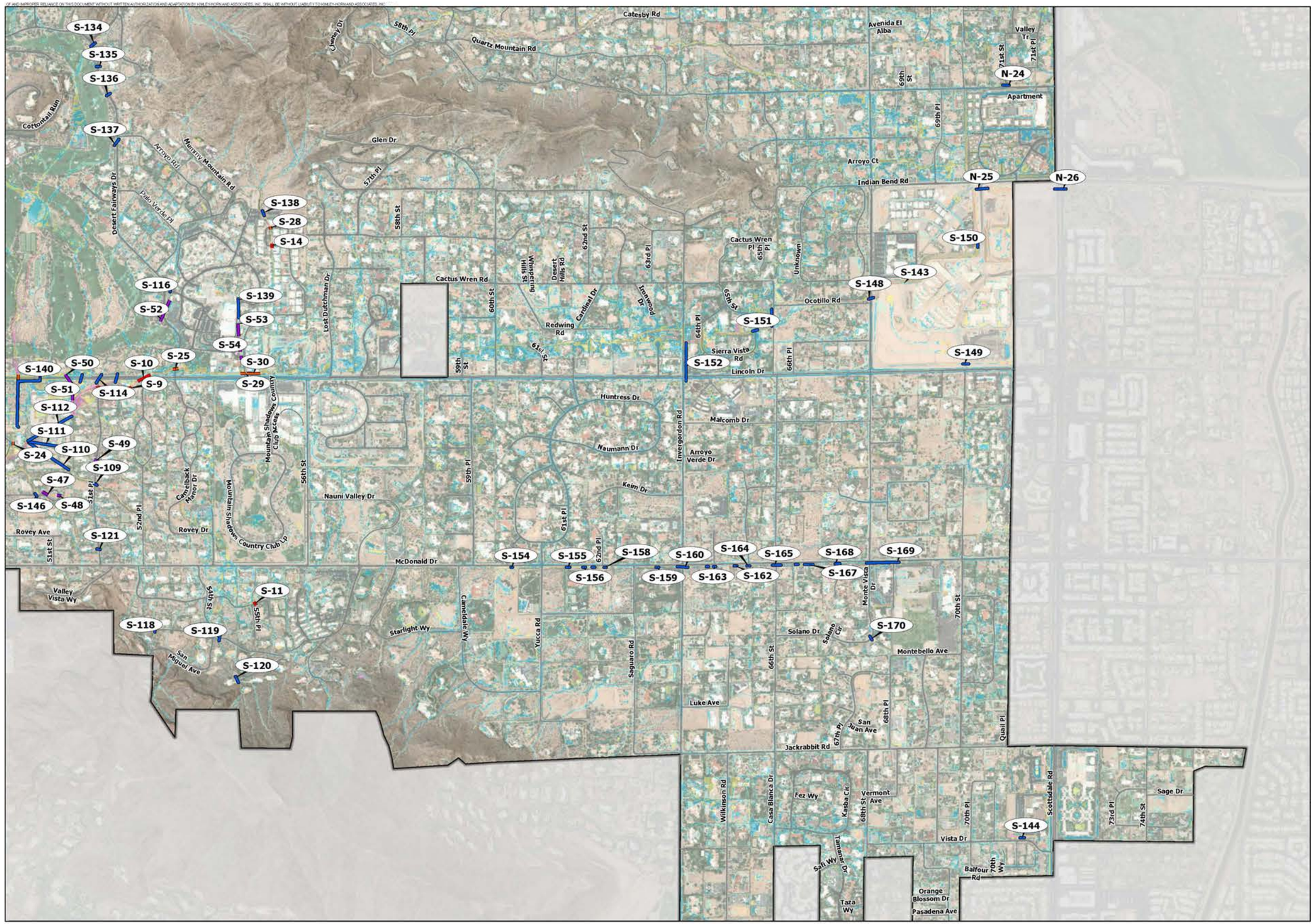
N-22
N-23
N-26
Cannon Dr
48th Pl
49th Pl
Cochise Rd
Beryl Ave
Gold Dust Ave
Cheryl Dr
Onyx Ave
Turquoise Ave
50th St
51st Pl
50th Pl
Hatcher Rd
52nd Pl
53rd Pl
52nd St
54th Pl
55th St
Caron St
Sanna St
Doubletree Ranch Rd
57th St
58th St
Caron Cir
Morning Glory Rd
Cheila Pl
Caron Dr
Fanfol Dr
Arabian Wy
60th St
Kobet Rd
68th Pl
69th St
Berneil Dr
67th St
Horseshoe Rd
66th Pl
Sunnyvale Rd
Foothills Manor Dr
Martingale Rd
Tomahawk Tr
Via La Serena
Avenida Del Sol
55th Pl
Via Buena Vista
Via Los Caballos
Via Del Cielo
63rd Pl
Evergreen Rd
58th Pl
59th Pl
61st Pl
64th Pl
Caballo Dr
Caballo Cir
Caide Del Sol Dr
49th St
Butler Dr
56th St
Via Los Rancheros
Sendero Tres
Calle Del Rancho Redondo
62nd St
Oakmont Dr
Merion Wy
Charles Dr
White Dr
Unknown
53rd St
Royal Palm Rd
Hummingbird Rd
Elmaro Cir
Golf Dr
Mohave Pl
Ridgeview Dr
47th St
Saguaro Pl
Tatum Blvd
Saguaro Dr
Vista Rica St
54th St
Hummy Mountain Rd
59th St
Coconino Rd
62nd Pl
Bret Hills
Mayer Ln Rd
68th St
Desert Jewel Dr
Foothill Dr
Desert Park Pl
47th Pl
Crestview Dr
Arroyo Dr
Mohave Rd
Ironwood Dr
Ironwood Rd
El Arroyo Rd
65th St
Northern Ave
Cuarenta Ct
Roadrunner Pl
Roadrunner Rd
Moonlight Wy
Shadow Mountain Rd
Desert Vista Rd
Granada Rd
Stallion Rd
Belmont Ct
Cholla Dr
66th St
70th St
71st St
69th Pl
Bronco Dr
Belmont Ave
Morten Ave
Paradise Ranch Rd
Paradise Canyon Rd
71st Pl


CULVERT CAPACITY EVALUATION
STORM PROTECTION
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
N
0 500 1,000 US Feet
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER 091054031
SCALE: 1"= 600'
DATE: DEC 2024
Legend
Paradise Valley
Culverts Maximum Level of Protection
< 2 Year
> 2 Year
> 10 Year
> 100 Year
100 Year Maximum Flow Depth (ft)
0.0 - 0.25
0.251 - 0.5
0.51 - 1.0
1.01 - 2.0
2.01 - 3.0
3.01 - 4.0
4.0 - 27
streets
Kimley»Horn
Engineering, Planning and Environmental Consultants
1661 East Camelback Road, Suite 300
Phoenix, Arizona 85016 (602) 944-5500
© 2024 KIMLEY-HORN AND ASSOCIATES, INC.
Clearwater Pkwy
Lamar Rd
Highlands Dr
Desert Crest Dr
Pescar Dr
Ocotillo Rd
Sierra Vista Dr
Lincoln Dr
Pebble Ridge Rd
Indian Bend Rd
Cottontail Run
Quartz Mountain Rd
Arroyo Rd
Mummy Mountain Rd
Glen Dr
Desert Fairways Dr
Palo Verde Pl
Unknown
Cactus Wren Rd
Lost Dutchman Dr
Tatum Blvd
Hillside Dr
Pueblo Manor Rd
Claremont Ave
Hogan Cir
Hogan Dr
Keim Dr
Madeira Del Cuenta
Arroyo Verde Dr
Marston Dr
McDonald Dr
Rovey Ave
Rovey Dr
Valley Vista Wy
Mountain Shadows Country Club Dr
Mountain Shadows Country Club Lp
Nauni Valley Dr
Palo Christi Rd
Paradise Mansion Dr
Elizabeth Pl
Bethany Home Rd
Palo Verde Dr
Rancho Dr
Harding Dr
Camino Sin Nombre
Camino Del Contento
San Miguel Ave
Solano Dr
Stanford Dr
Arizona Cir
Delos Cir
Royal Cir
Nita Rd
Marlette Ave
Claremont St
Quartz Mountain Rd
Shadow Mountain Rd
Cheney Dr
S-1 S-2 S-3 S-4 S-5 S-6 S-7 S-10 S-11 S-12 S-13 S-14 S-17 S-18 S-19 S-20 S-21 S-22 S-23 S-24 S-25 S-26 S-27 S-28 S-29 S-30 S-31 S-33 S-34 S-35 S-36 S-37 S-38 S-39 S-40 S-41 S-42 S-43 S-44 S-45 S-46 S-47 S-48 S-49 S-50 S-51 S-52 S-53 S-54 S-56 S-57 S-58 S-59 S-61 S-62 S-64 S-65 S-66 S-67 S-68 S-69 S-70 S-71 S-72 S-73 S-74 S-75 S-76 S-77 S-78 S-80 S-82 S-83 S-84 S-85 S-86 S-87 S-88 S-90 S-91 S-92 S-93 S-94 S-95 S-96 S-97 S-98 S-99 S-100 S-101 S-102 S-103 S-104 S-105 S-106 S-107 S-108 S-109 S-110 S-111 S-112 S-114 S-116 S-117 S-118 S-119 S-120 S-121 S-122 S-123 S-124 S-125 S-126 S-127 S-128 S-130 S-131 S-132 S-133 S-134 S-135 S-136 S-137 S-138 S-139 S-140 S-147 S-172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Quartz Mountain Rd
Glen Dr
Arroyo Rd
Mummy Mountain Rd
Desert Fairways Dr
Palo Verde Pl
Cottontail Run
Lost Dutchman Dr
Cactus Wren Rd
Whispering Hills St
Desert Hills Rd
Cardinal Dr
Redwing Rd
Ironwood Dr
Sierra Vista Rd
Lincoln Dr
Ocotillo Rd
Indian Bend Rd
Arroyo Ct
Avenida El Alba
Valley Tr
Apartment
Huntress Dr
Malcomb Dr
Naumann Dr
Arroyo Verde Dr
Keim Dr
Nauni Valley Dr
Rovey Ave
Rovey Dr
McDonald Dr
Valley Vista Wy
Starlight Wy
San Miguel Ave
Yucca Rd
Saguaro Rd
Camelback Mountain
Solano Dr
Montebello Ave
Luke Ave
Jackrabbit Rd
San Juan Ave
Monte Vista Dr
Vista Dr
Balfour Rd
Orange Blossom Dr
Pasadena Ave
Taza Wy
Fez Wy
Vermont Ave
Casa Blanca Dr
Wilkinson Rd
Scottsdale Rd
Sage Dr
Quail Pl
Mountain Shadows Country Club Lp
Mountain Shadows Country Club Access
Camelback Manor Dr
Tramonto Dr
Sail Wy
Kasba Cir
Solano Cir
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57th St
59th Pl
61st Pl
62nd Pl
N
0
500
1,000
US Feet
CULVERT CAPACITY EVALUATION
STORM PROTECTION
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER
091054031
SCALE: 1"= 600'
DATE: DEC 2024
Legend
Paradise Valley
Culverts Maximum Level of Protection
< 2 Year
> 2 Year
> 10 Year
> 100 Year
100 Year Maximum Flow Depth (ft)
0.0 - 0.25
0.251 - 0.5
0.51 - 1.0
1.01 - 2.0
2.01 - 3.0
3.01 - 4.0
4.0 - 27
streets
Kimley»Horn
Engineering, Planning and Environmental Consultants
1661 East Camelback Road, Suite 400
Phoenix, Arizona 85016 (602) 944-5500
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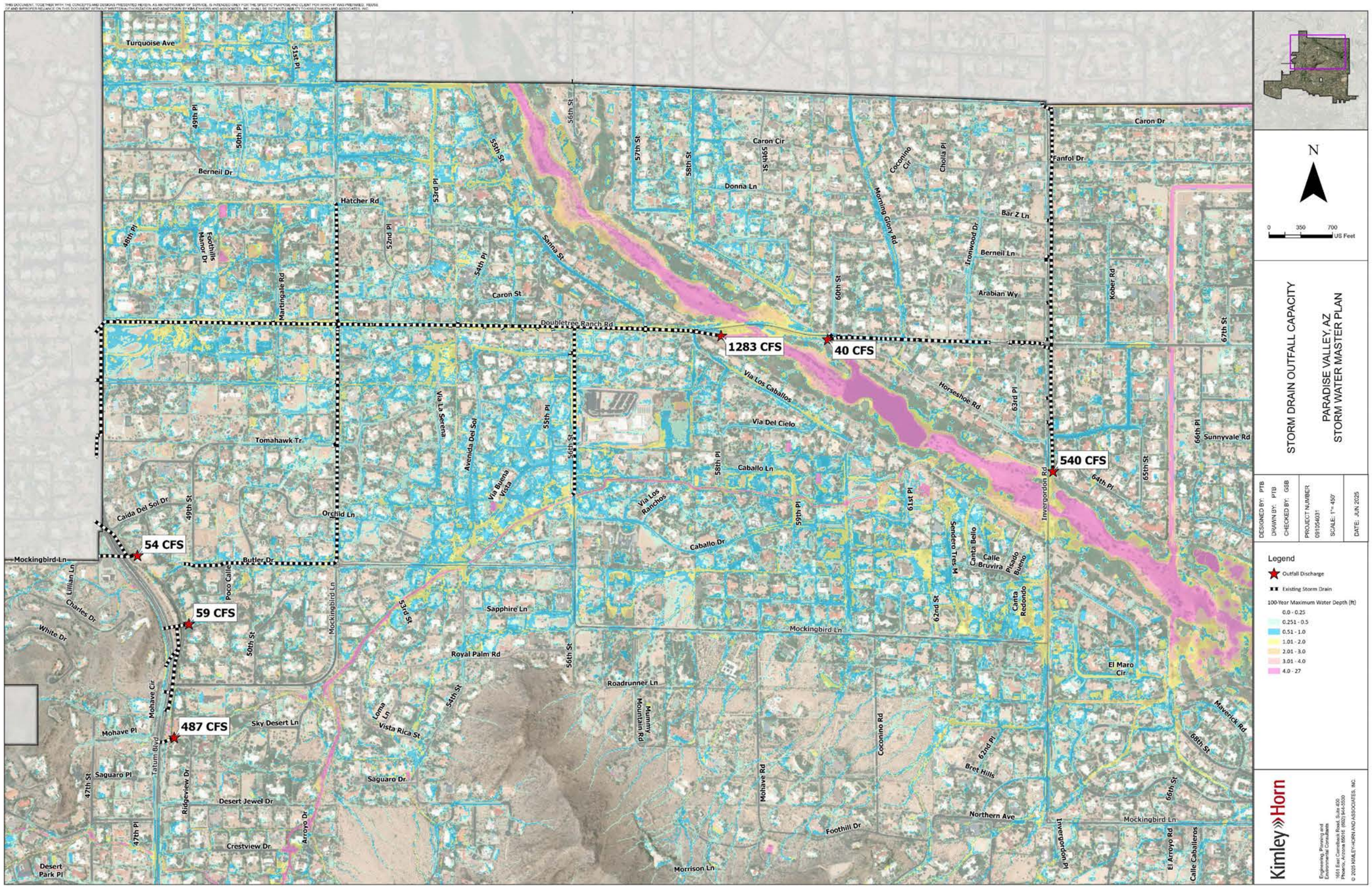
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51st Pl
49th Pl
50th Pl
Berneil Dr
Hatcher Rd
48th Pl
Foothills Manor Dr
Martingale Rd
52nd Pl
53rd Pl
55th St
54th Pl
Sahma St
Caron St
Doubletree Ranch Rd
55th St
57th St
58th St
Caron Cir
59th St
Donna Ln
Coconino Cir
Cholla Pl
Morning Glory Rd
Ironwood Dr
Bar Z Ln
Berneil Ln
Arabian Wy
60th St
Caron Dr
Fanfol Dr
Kober Rd
67th St
1283 CFS
40 CFS
Via Los Caballos
Horseshoe Rd
63rd Pl
Via Del Cielo
Tomahawk Tr
Via La Serena
Avenida Del Sol
55th Pl
56th St
Via Buena Vista
58th Pl
Caballo Ln
Via Los Ranchos
59th Pl
61st Pl
Caballo Dr
Sendero Tres M
Canta Bello
Calle Brúvira
Pisado Bueno
Canta Redondo
Invergordon Rd
540 CFS
64th Pl
65th St
66th Pl
Sunnyvale Rd
Caida Del Sol Dr
49th St
Orchid Ln
54 CFS
Mockingbird Ln
Butler Dr
Poco Calle
Lillian Ln
Charles Dr
White Dr
59 CFS
50th St
Mockingbird Ln
53rd St
Sapphire Ln
Royal Palm Rd
56th St
Roadrunner Ln
Mummy Mountain Rd
54th St
Loma Ln
Vista Rica St
Mohave Cir
Mohave Pl
487 CFS
Sky Desert Ln
Tatum Blvd
Saguaro Pl
47th St
Ridgeview Dr
Saguaro Dr
Desert Jewel Dr
47th Pl
Arroyo Dr
Crestview Dr
Desert Park Pl
Coconino Rd
Mohave Rd
62nd Pl
Bret Hills
Foothill Dr
Morrison Ln
62nd St
Canta Redondo
Northern Ave
El Maro Cir
Maverick Rd
68th St
66th St
Mockingbird Ln
El Arroyo Rd
Calle Caballeros
N
0 350 700 US Feet
STORM DRAIN OUTFALL CAPACITY
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER 091054031
SCALE: 1"= 450'
DATE: JUN 2025
Legend
Outfall Discharge
Existing Storm Drain
100-Year Maximum Water Depth (ft)
0.0 - 0.25
0.251 - 0.5
0.51 - 1.0
1.01 - 2.0
2.01 - 3.0
3.01 - 4.0
4.0 - 27
Kimley»Horn
Engineering, Planning and Environmental Consultants
1661 East Camelback Road, Suite 400
Phoenix, Arizona 85016 (602) 944-5500
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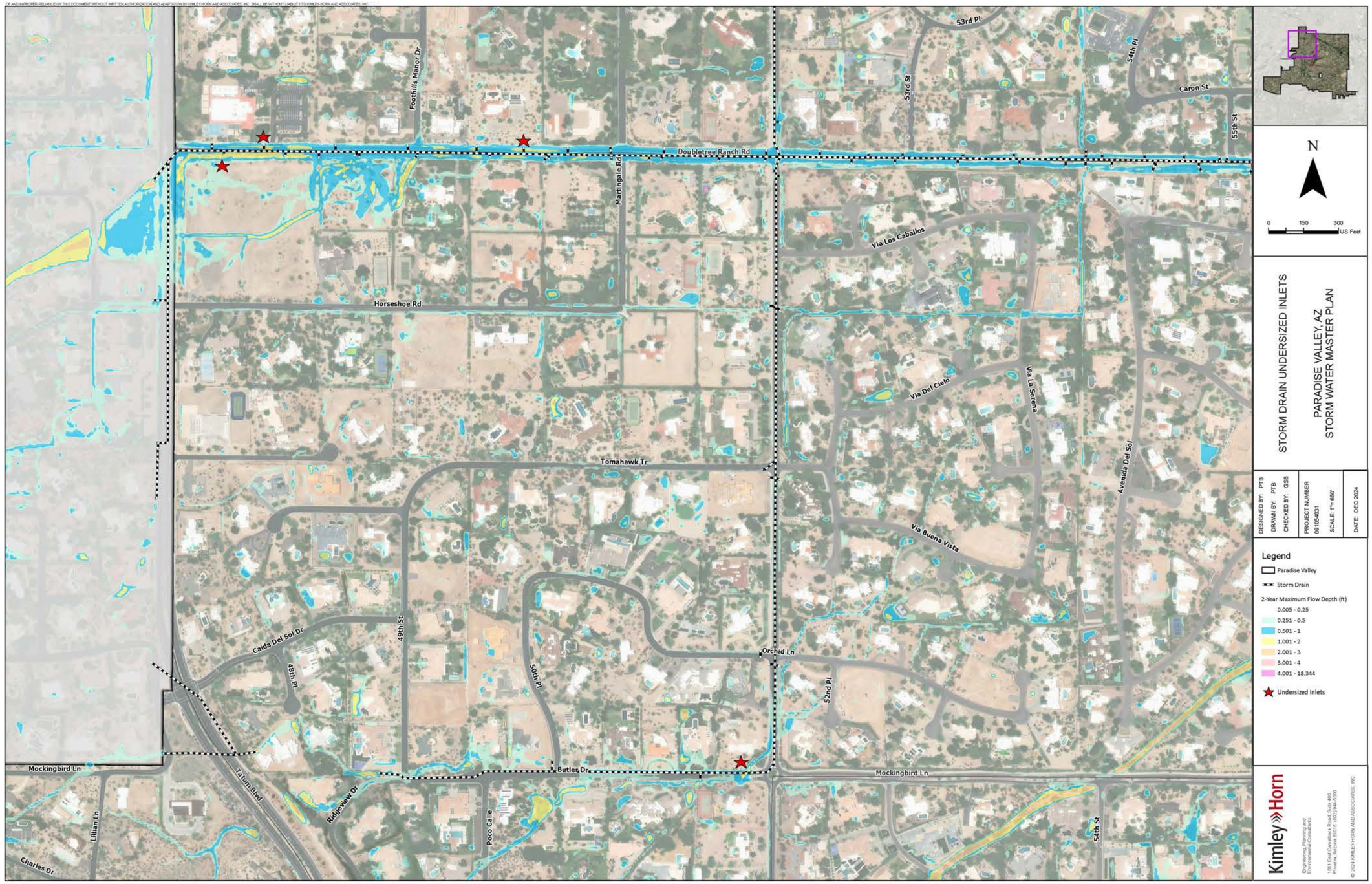
Foothills Manor Dr
Doubletree Ranch Rd
Martingale Rd
53rd Pl
53rd St
54th Pl
Caron St
55th St
Via Los Caballos
Horseshoe Rd
Via Del Cielo
Via La Serena
Avenida Del Sol
Tomahawk Tr
Via Buena Vista
Caida Del Sol Dr
48th Pl
49th St
50th Pl
Orchid Ln
52nd Pl
Mockingbird Ln
Tatum Blvd
Butler Dr
Ridgeview Dr
Poco Calle
54th St
Lillian Ln
Charles Dr
N
0 150 300 US Feet
STORM DRAIN UNDERSIZED INLETS
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER 091054031
SCALE: 1"= 650'
DATE: DEC 2024
Legend
Paradise Valley
Storm Drain
2-Year Maximum Flow Depth (ft)
0.005 - 0.25
0.251 - 0.5
0.501 - 1
1.001 - 2
2.001 - 3
3.001 - 4
4.001 - 18.344
Undersized Inlets
Kimley»Horn
Engineering, Planning and Environmental Consultants
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XV. APPENDIX C – FLOOD HAZARD ANALYSIS

ADJACENT FLOW DEPTH TO BUILDINGS

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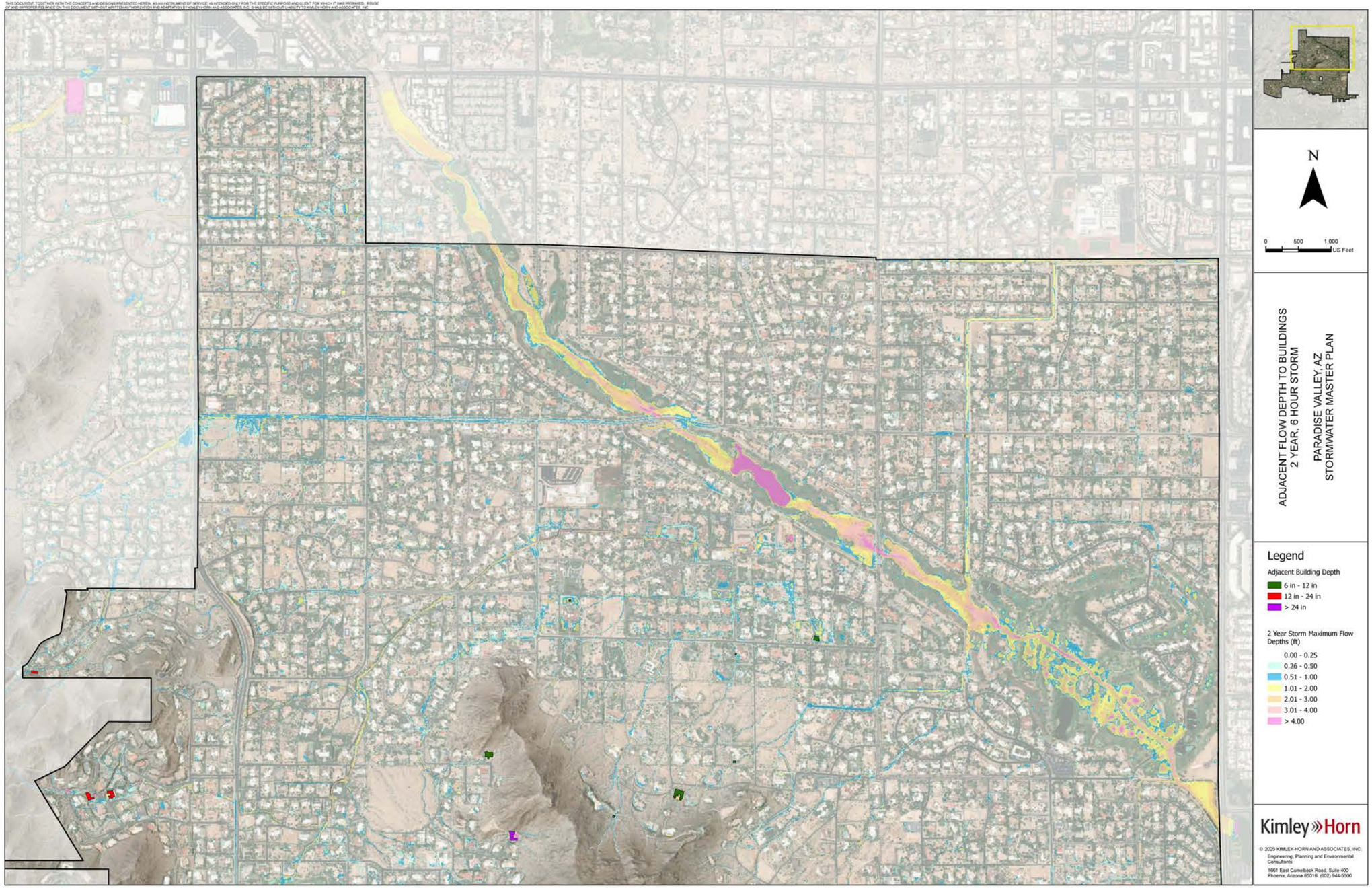

N

0 500 1,000 US Feet

ADJACENT FLOW DEPTH TO BUILDINGS
2 YEAR, 6 HOUR STORM

PARADISE VALLEY, AZ
STORMWATER MASTER PLAN

Legend

Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

2 Year Storm Maximum Flow Depths (ft)
- 0.00 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- > 4.00

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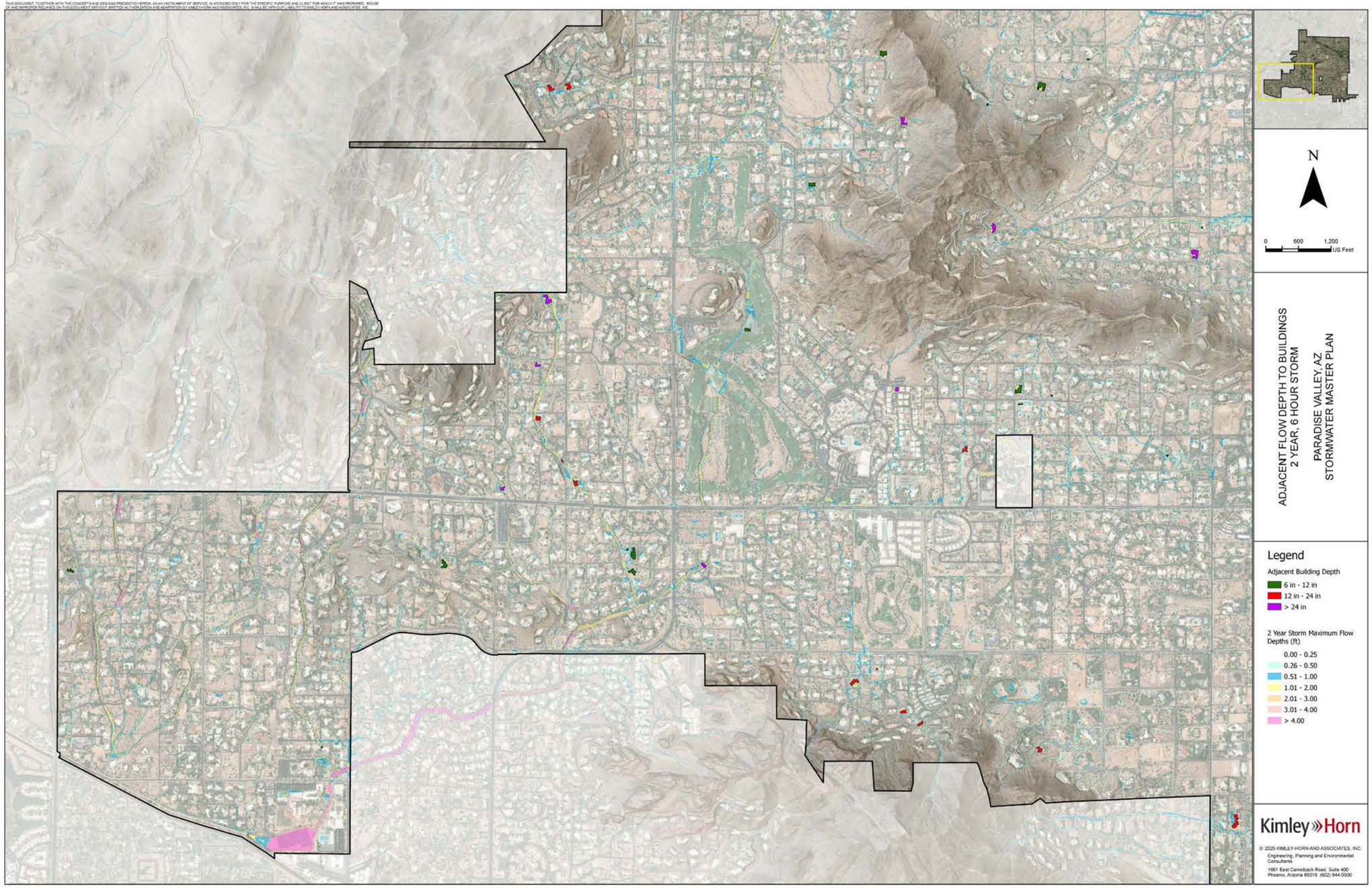

N

0 600 1,200 US Feet

ADJACENT FLOW DEPTH TO BUILDINGS
2 YEAR, 6 HOUR STORM

PARADISE VALLEY, AZ
STORMWATER MASTER PLAN

Legend

Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

2 Year Storm Maximum Flow Depths (ft)
- 0.00 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- > 4.00

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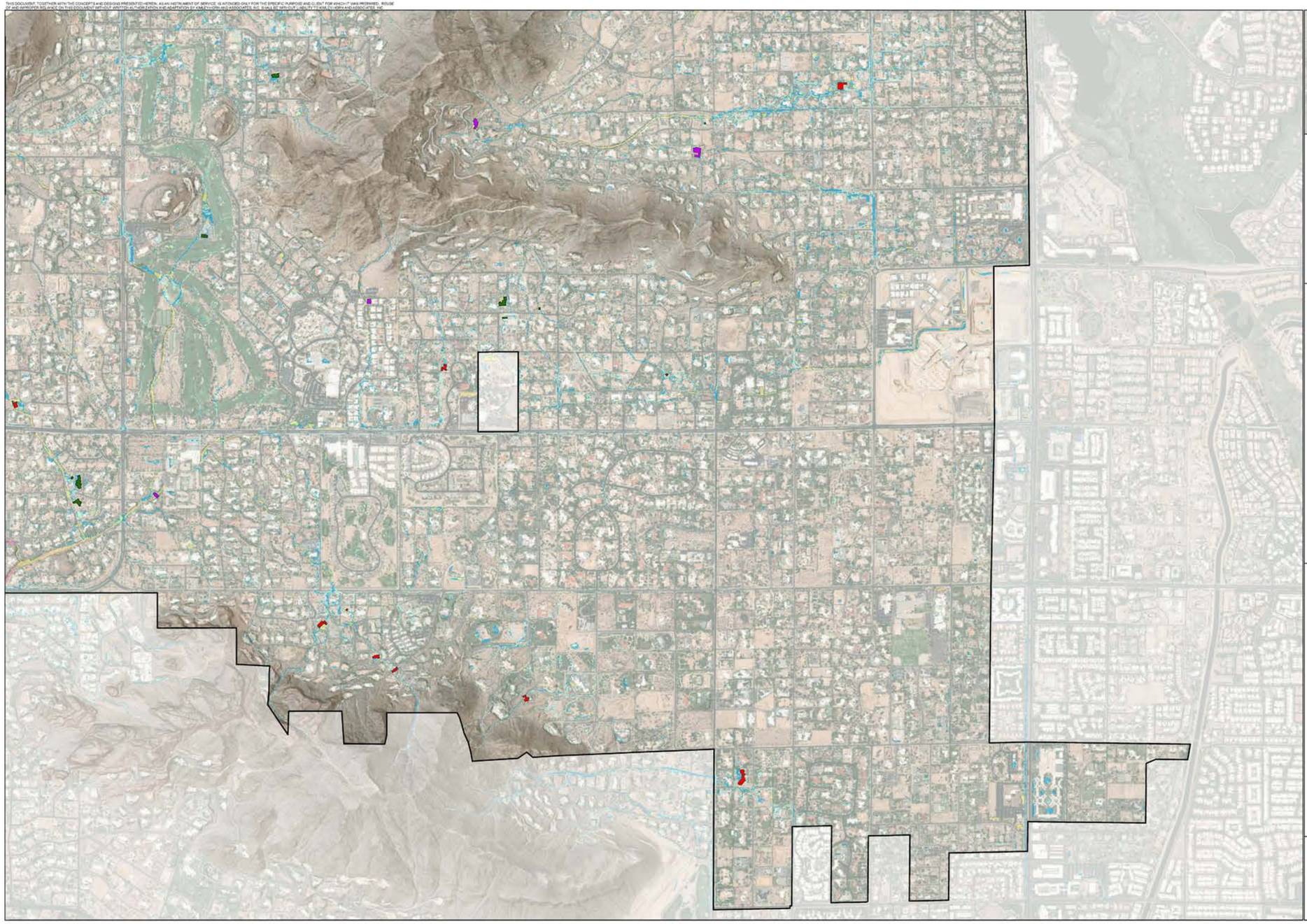

N

0 600 1,200
US Feet

ADJACENT FLOW DEPTH TO BUILDINGS
2 YEAR, 6 HOUR STORM
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN

Legend

Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

2 Year Storm Maximum Flow Depths (ft)
- 0.00 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- > 4.00

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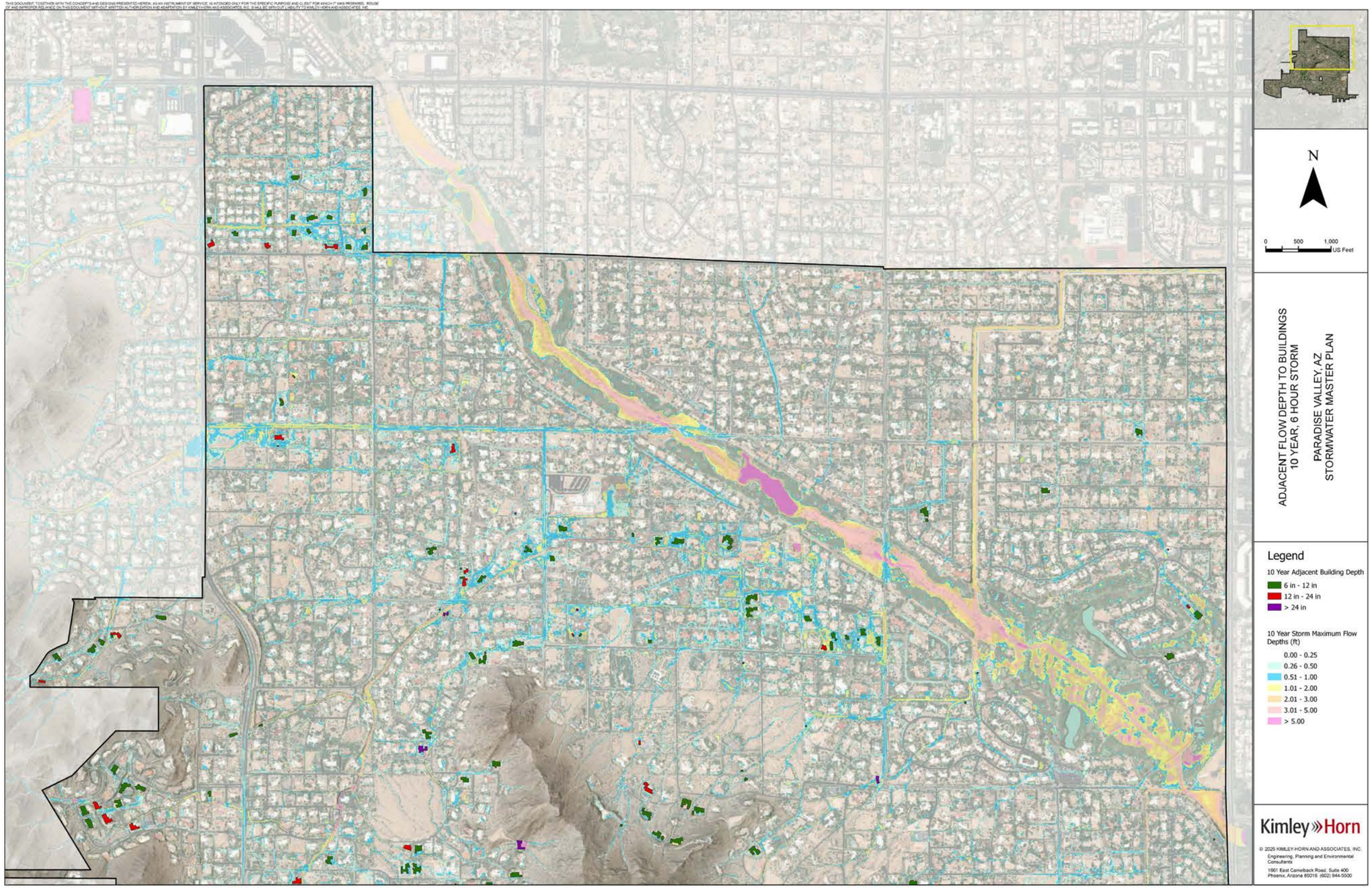

N

0 500 1,000 US Feet

ADJACENT FLOW DEPTH TO BUILDINGS
10 YEAR, 6 HOUR STORM

PARADISE VALLEY, AZ
STORMWATER MASTER PLAN

Legend

10 Year Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

10 Year Storm Maximum Flow Depths (ft)
- 0.00 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 3.00
- 3.01 - 5.00
- > 5.00

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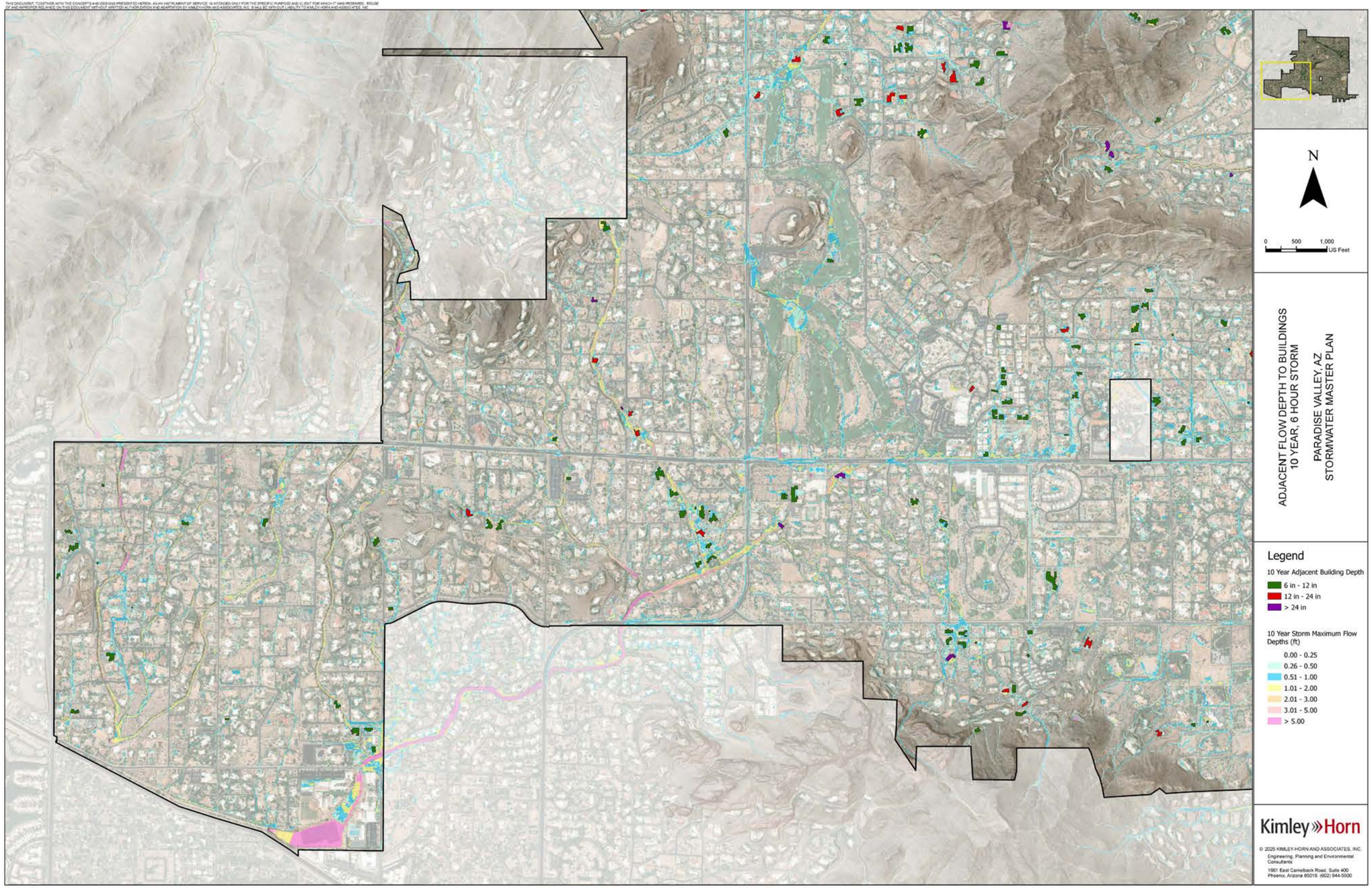

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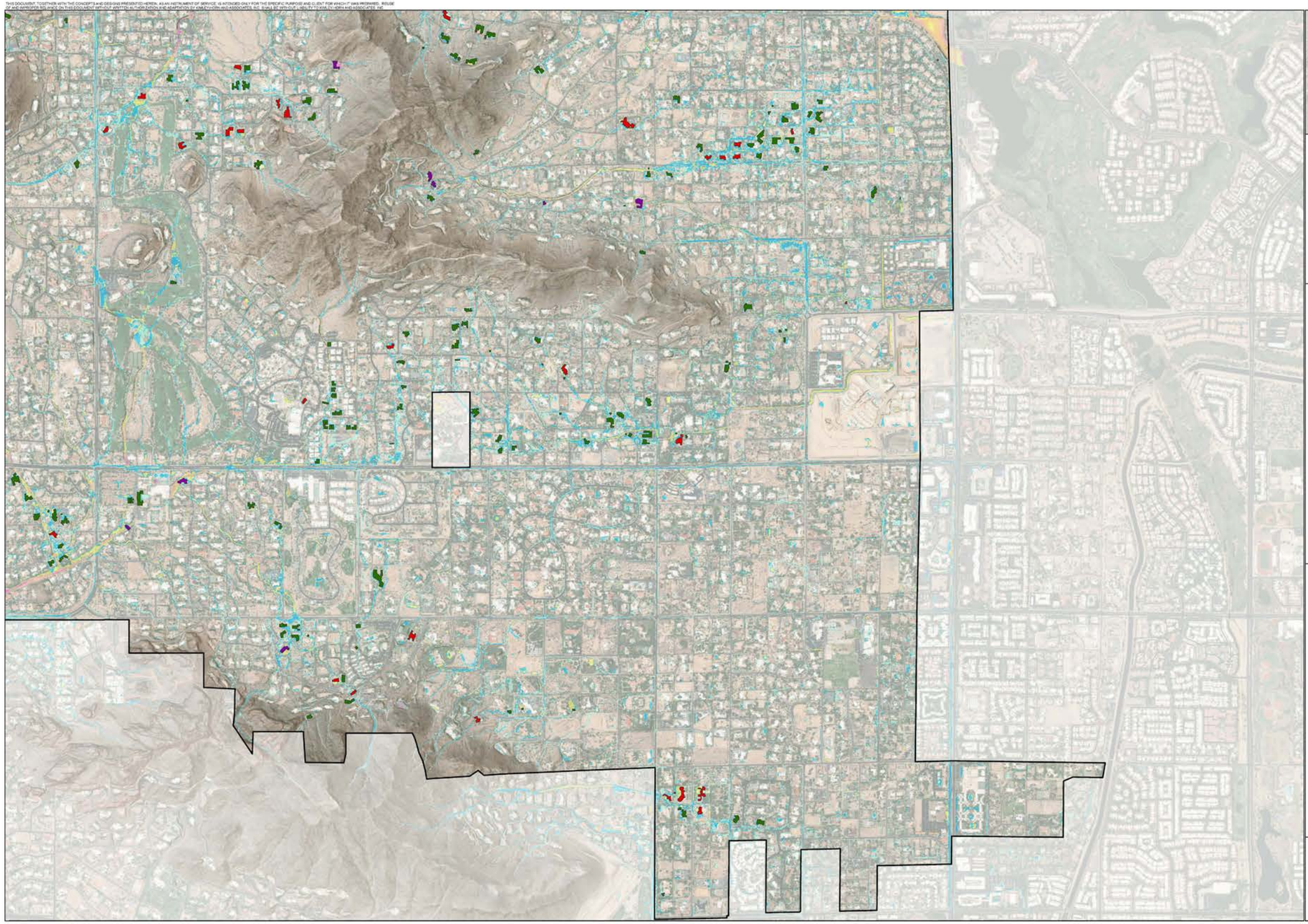

N

0 600 1,200
US Feet

ADJACENT FLOW DEPTH TO BUILDINGS
10 YEAR, 6 HOUR STORM
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN

Legend

10 Year Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

10 Year Storm Maximum Flow Depths (ft)
- 0.00 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 3.00
- 3.01 - 5.00
- > 5.00

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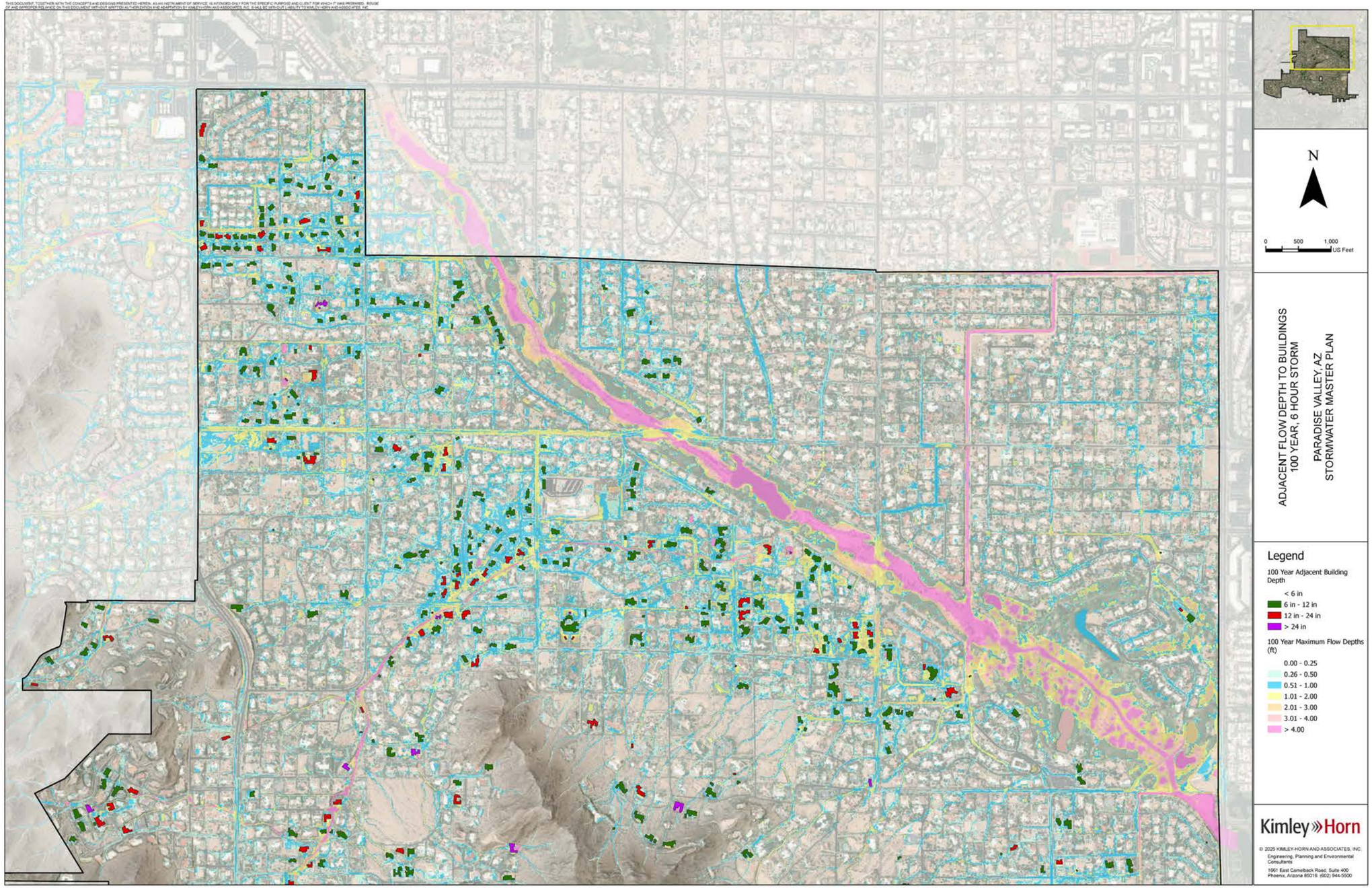

N

0 500 1,000 US Feet

ADJACENT FLOW DEPTH TO BUILDINGS
100 YEAR, 6 HOUR STORM

PARADISE VALLEY, AZ
STORMWATER MASTER PLAN

Legend

100 Year Adjacent Building Depth

- < 6 in
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

100 Year Maximum Flow Depths (ft)

- 0.00 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- > 4.00

Kimley»Horn

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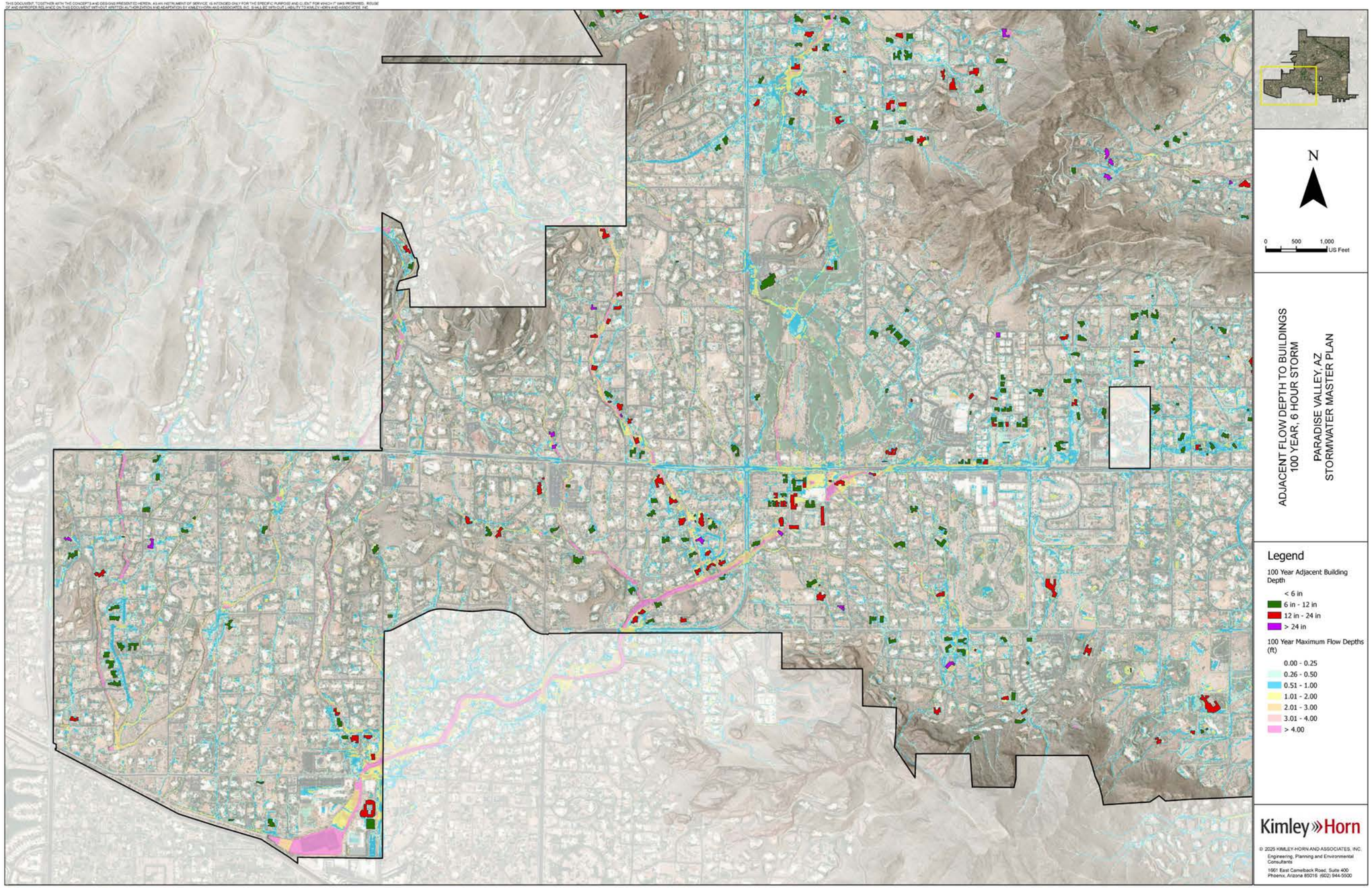

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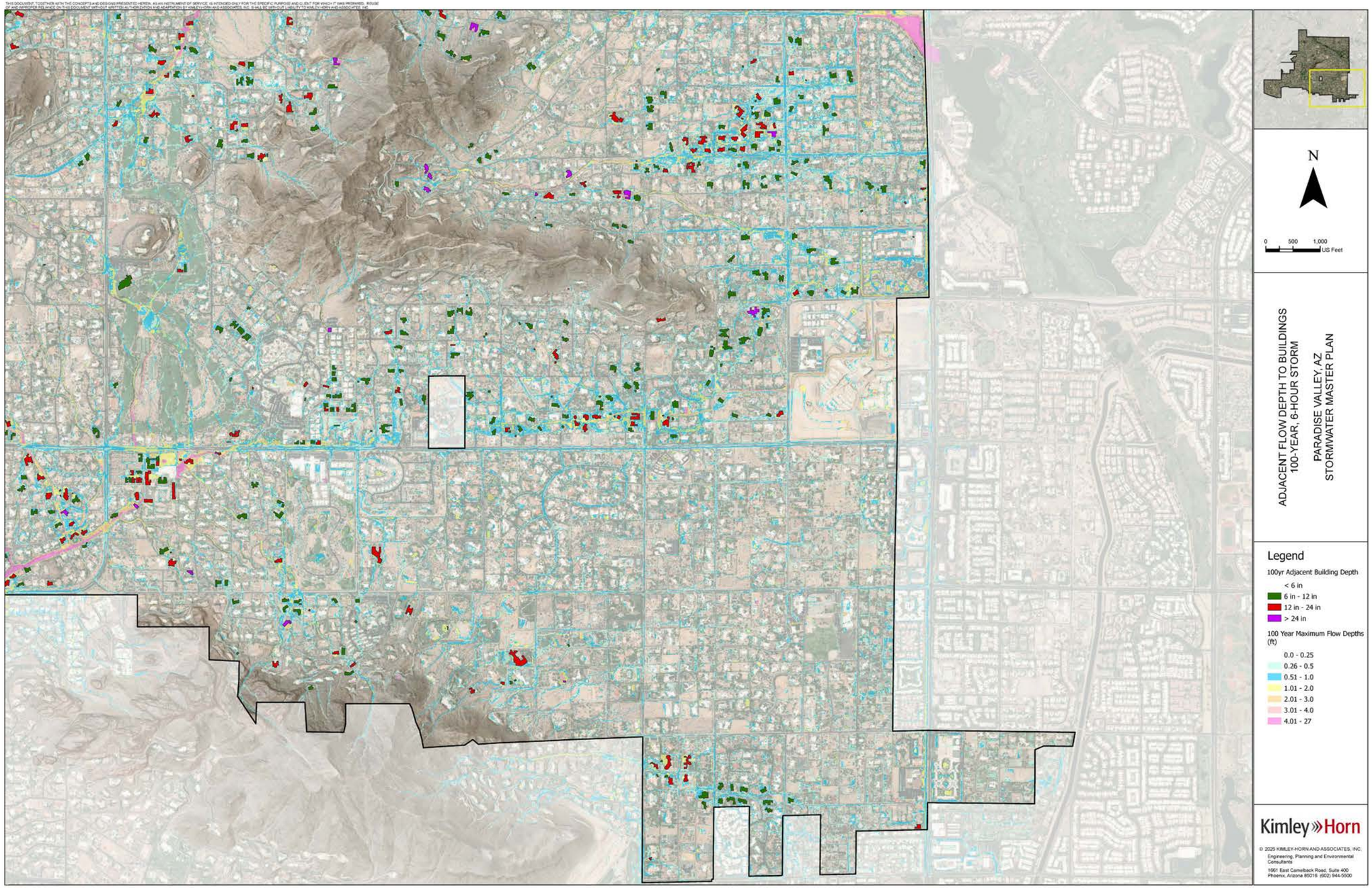

N

0 500 1,000 US Feet

ADJACENT FLOW DEPTH TO BUILDINGS
100-YEAR, 6-HOUR STORM
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN

Legend

100yr Adjacent Building Depth
- < 6 in
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

100 Year Maximum Flow Depths (ft)
- 0.0 - 0.25
- 0.26 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.01 - 27

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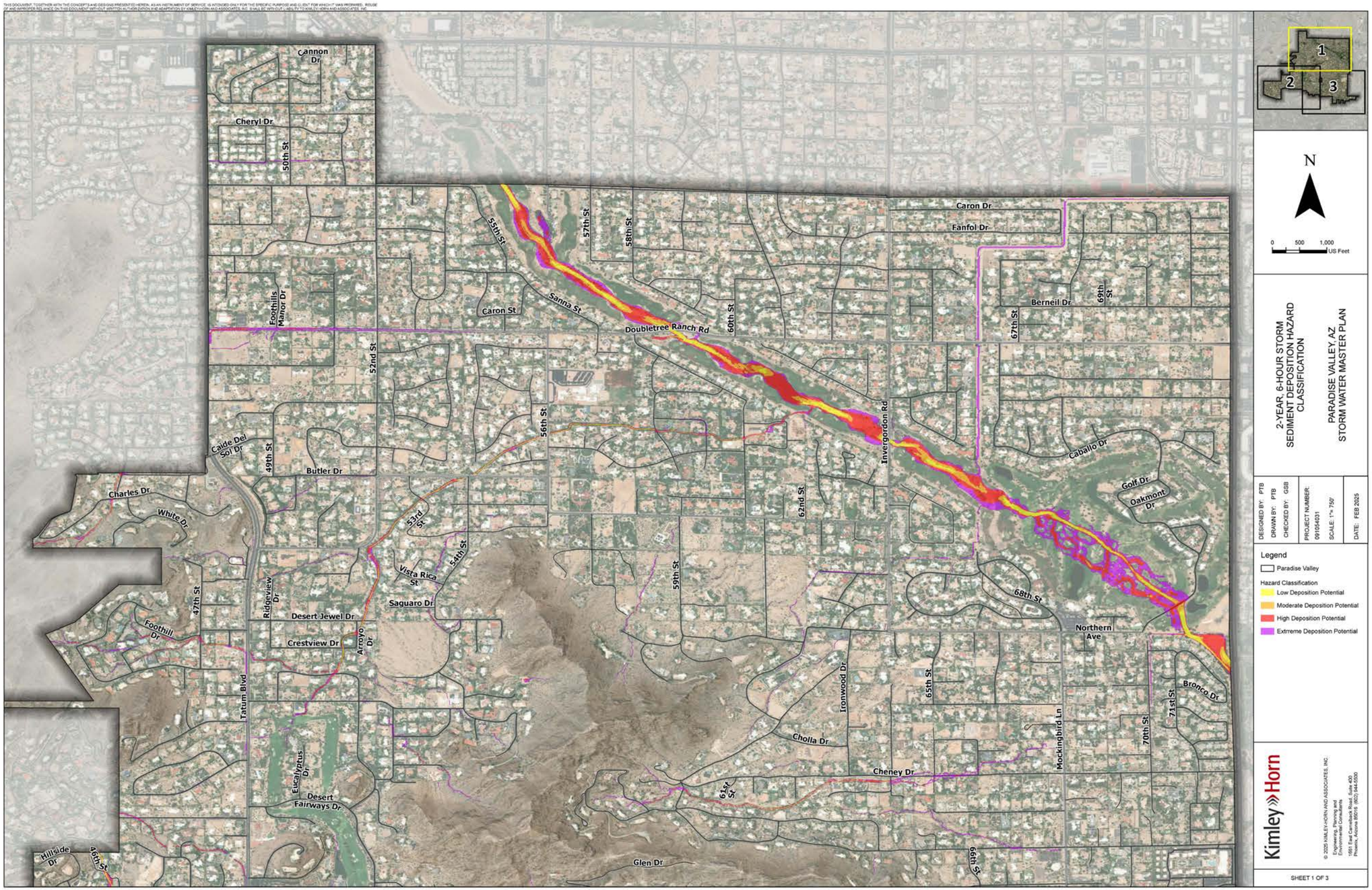
XV. APPENDIX C – FLOOD HAZARD ANALYSIS

SEDIMENT AND EROSION RISK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55th St
57th St
58th St
Caron Dr
Fanfol Dr
Foothills Manor Dr
Caron St
Sanna St
Doubletree Ranch Rd
60th St
Berneil Dr
67th St
69th St
52nd St
56th St
Invergordon Rd
Caballo Dr
Golf Dr
Oakmont Dr
Calde Del Sol Dr
49th St
Butler Dr
Charles Dr
White Dr
53rd St
54th St
Vista Rica St
62nd St
59th St
68th St
Northern Ave
Saguaro Dr
Desert Jewel Dr
Ridgeview Dr
47th St
Foothill Dr
Crestview Dr
Arroyo Dr
Tatum Blvd
Ironwood Dr
65th St
Bronco Dr
71st St
70th St
Mockingbird Ln
Cholla Dr
Cheney Dr
Eucalyptus Dr
Desert Fairways Dr
61st St
Hillside Dr
46th St
Glen Dr
66th St
1
2
3
N
0 500 1,000 US Feet
2-YEAR, 6-HOUR STORM
SEDIMENT DEPOSITION HAZARD
CLASSIFICATION
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER: 091054031
SCALE: 1"= 750'
DATE: FEB 2025
Legend
Paradise Valley
Hazard Classification
Low Deposition Potential
Moderate Deposition Potential
High Deposition Potential
Extreme Deposition Potential
Kimley»Horn
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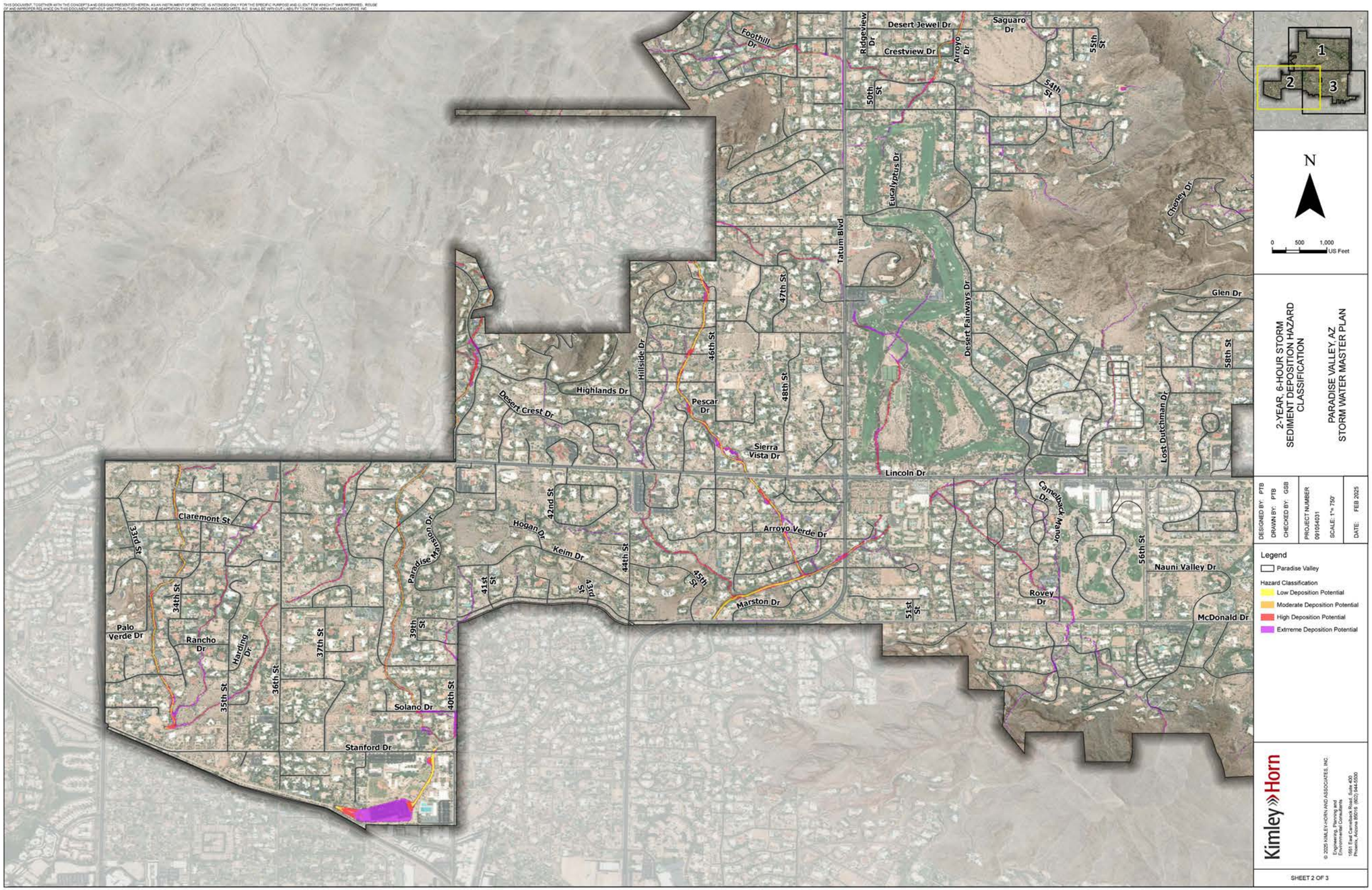

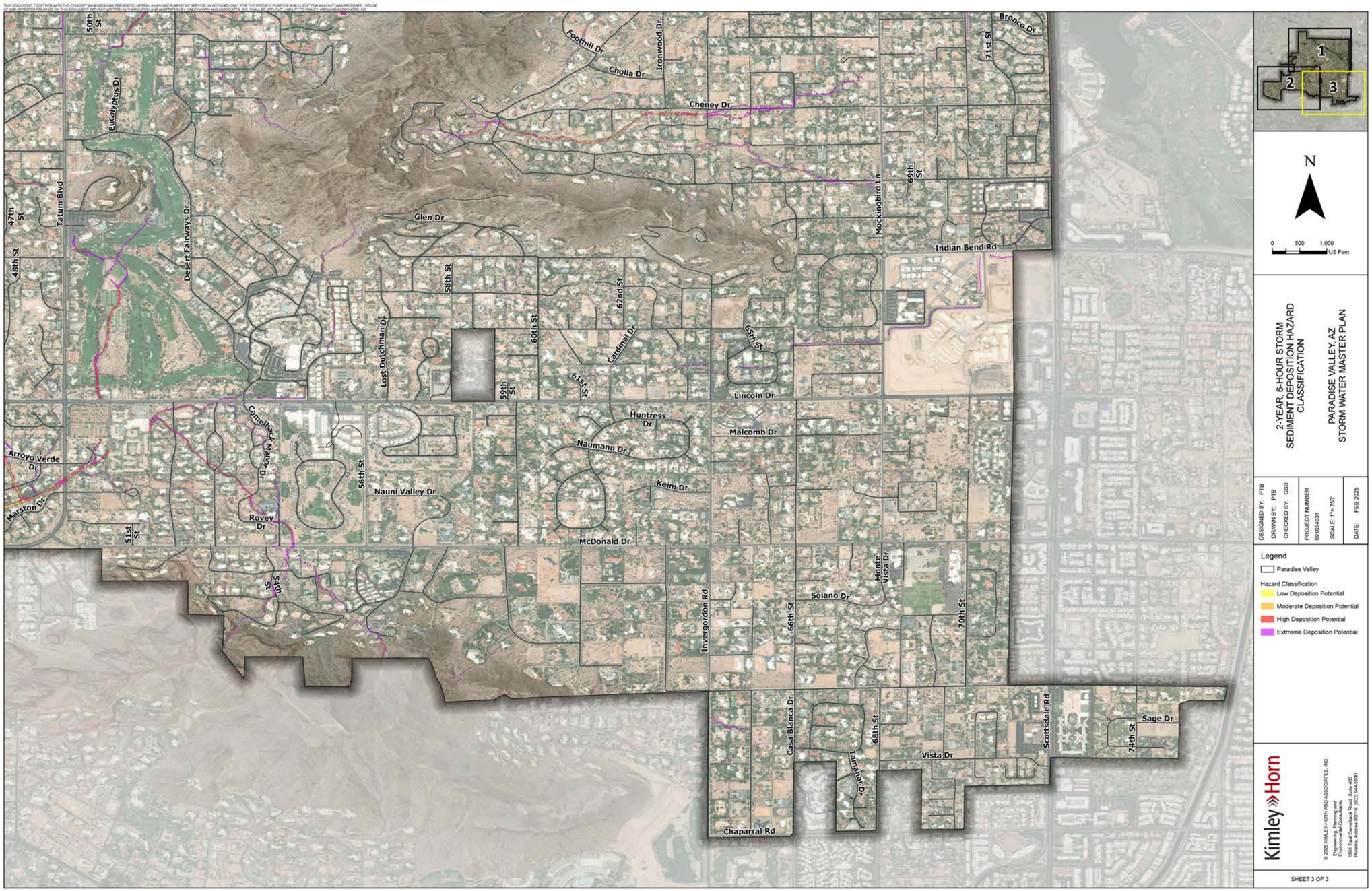
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Foothill Dr
Cholla Dr
Ironwood Dr
Cheney Dr
71st St
Bronco Dr
47th St
Tatum Blvd
48th St
Desert Fairways Dr
Glen Dr
Mockingbird Ln
69th St
Indian Bend Rd
58th St
62nd St
Lost Dutchman Dr
60th St
Cardinal Dr
65th St
59th St
61st St
Lincoln Dr
Huntress Dr
Malcomb Dr
Naumann Dr
Keim Dr
Arroyo Verde Dr
Camelback Mano Dr
56th St
Nauni Valley Dr
Marston Dr
Rovey Dr
51st St
McDonald Dr
54th St
Invergordon Rd
Monte Vista Dr
Solano Dr
66th St
70th St
Casa Blanca Dr
68th St
Tamarral Dr
Vista Dr
Scottsdale Rd
74th St
Sage Dr
Chaparral Rd
1
2
3
N
0 500 1,000
US Feet
2-YEAR, 6-HOUR STORM
SEDIMENT DEPOSITION HAZARD
CLASSIFICATION
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER
091054031
SCALE: 1" = 750'
DATE: FEB 2025
Legend
Paradise Valley
Hazard Classification
Low Deposition Potential
Moderate Deposition Potential
High Deposition Potential
Extreme Deposition Potential
Kimley»Horn
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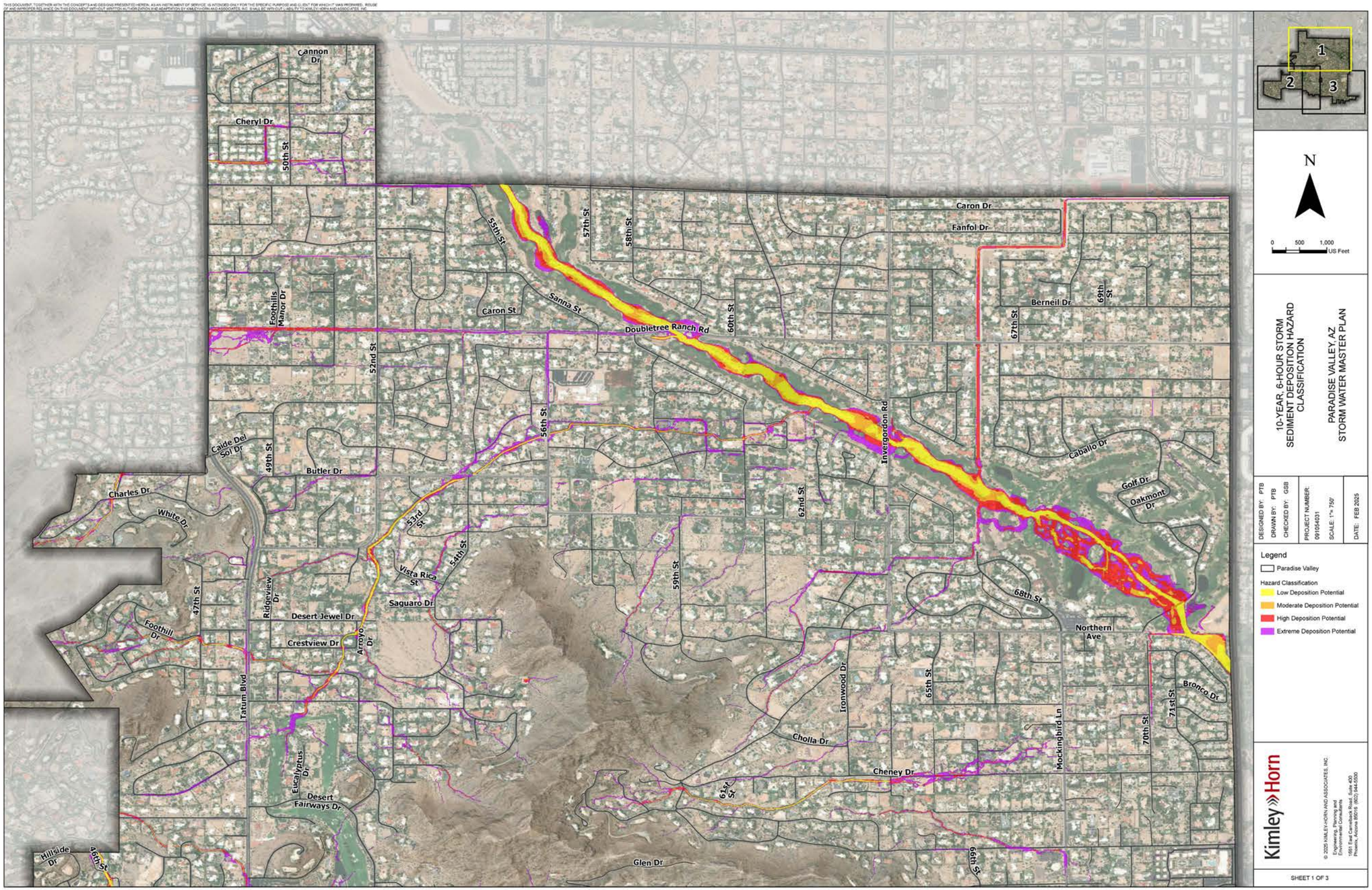
SHEET 3 OF 3


Cannon Dr
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Fanfol Dr
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Sanna St
Doubletree Ranch Rd
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52nd St
56th St
Invergordon Rd
Caballo Dr
Golf Dr
Oakmont Dr
Calde Del Sol Dr
49th St
Butler Dr
Charles Dr
White Dr
53rd St
62nd St
Vista Rica St
54th St
59th St
68th St
47th St
Ridgeview Dr
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Northern Ave
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70th St
Eucalyptus Dr
Cheney Dr
61st St
Desert Fairways Dr
Hillside Dr
46th St
Glen Dr
66th St
1
2
3
N
0 500 1,000 US Feet
10-YEAR, 6-HOUR STORM
SEDIMENT DEPOSITION HAZARD
CLASSIFICATION
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER: 091064031
SCALE: 1"= 750'
DATE: FEB 2025
Legend
Paradise Valley
Hazard Classification
Low Deposition Potential
Moderate Deposition Potential
High Deposition Potential
Extreme Deposition Potential
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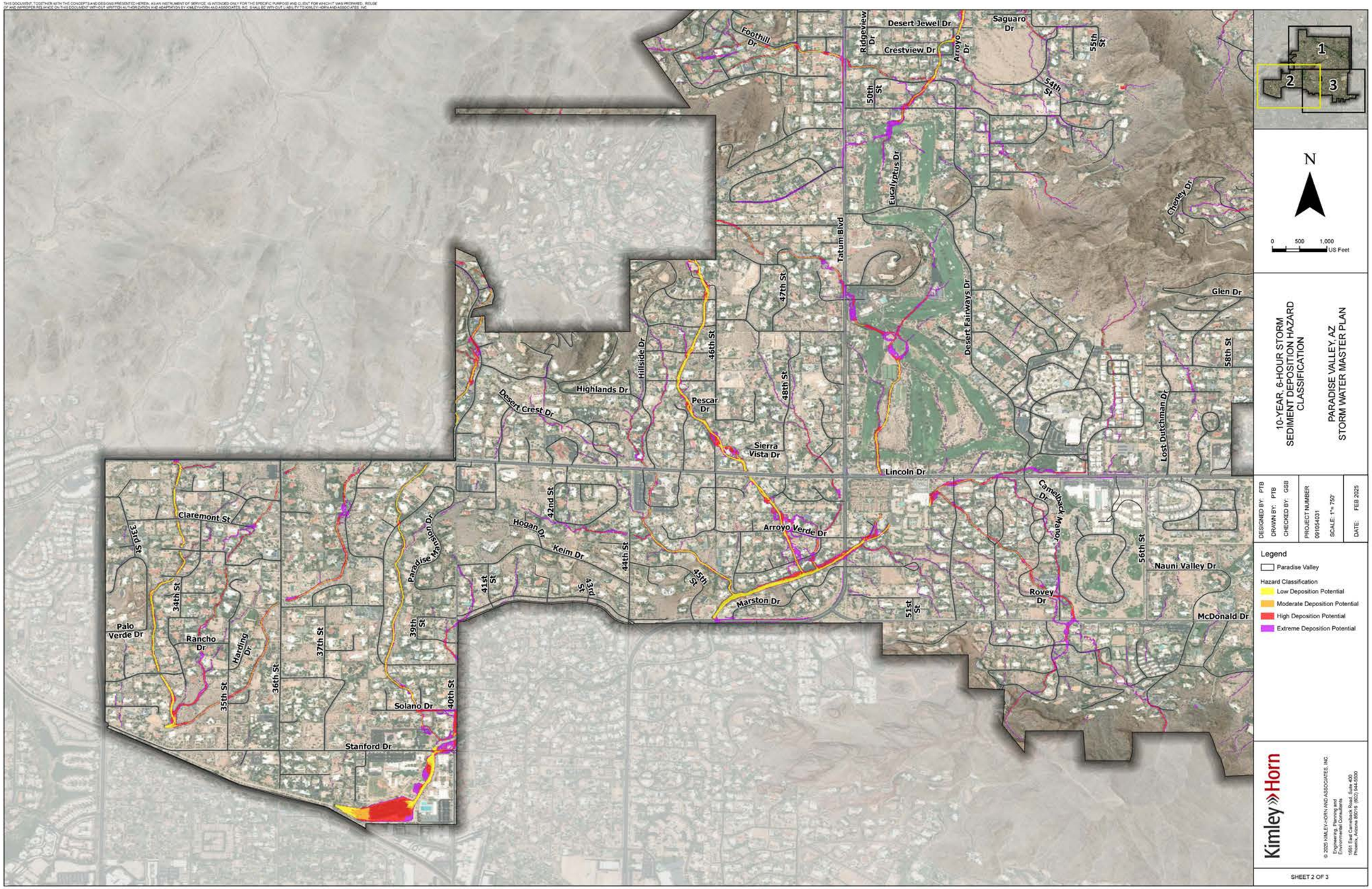

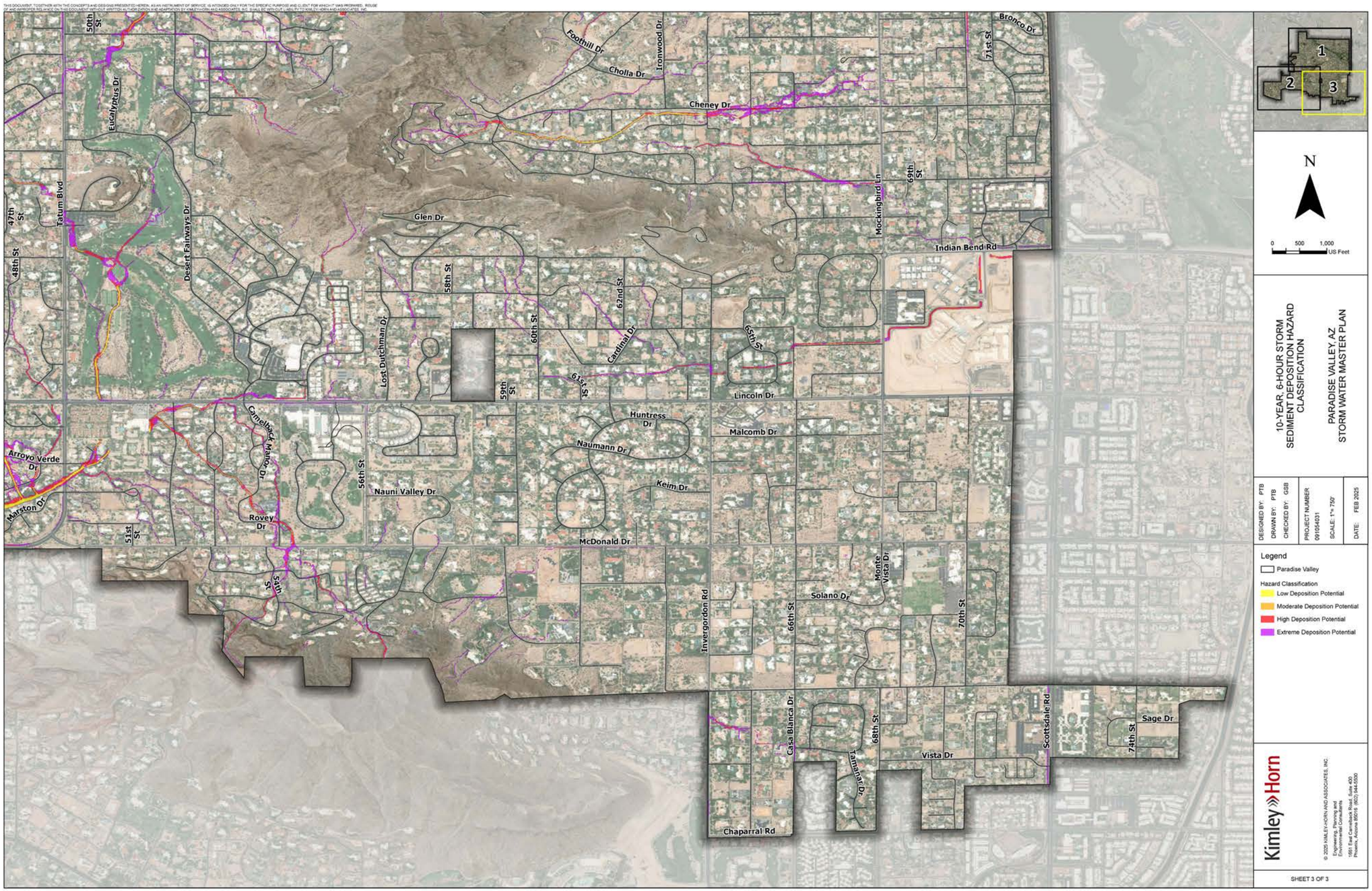
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Foothill Dr
Cholla Dr
Ironwood Dr
Cheney Dr
Bronco Dr
71st St
47th St
Tatum Blvd
48th St
Desert Fairways Dr
Glen Dr
Mockingbird Ln
69th St
Indian Bend Rd
58th St
62nd St
Lost Dutchman Dr
60th St
Cardinal Dr
65th St
59th St
61st St
Lincoln Dr
Huntress Dr
Malcomb Dr
Naumann Dr
Keim Dr
Camelback Mano Dr
Arroyo Verde Dr
Marston Dr
56th St
Nauni Valley Dr
Rovey Dr
51st St
McDonald Dr
54th St
Monte Vista Dr
Invergordon Rd
66th St
Solano Dr
70th St
Casa Blanca Dr
68th St
Tamarral Dr
Vista Dr
Scottsdale Rd
74th St
Sage Dr
Chaparral Rd
1
2
3
N
0 500 1,000
US Feet
10-YEAR, 6-HOUR STORM
SEDIMENT DEPOSITION HAZARD
CLASSIFICATION
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
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PROJECT NUMBER
091054031
SCALE: 1" = 750'
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Legend
Paradise Valley
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Moderate Deposition Potential
High Deposition Potential
Extreme Deposition Potential
Kimley»Horn
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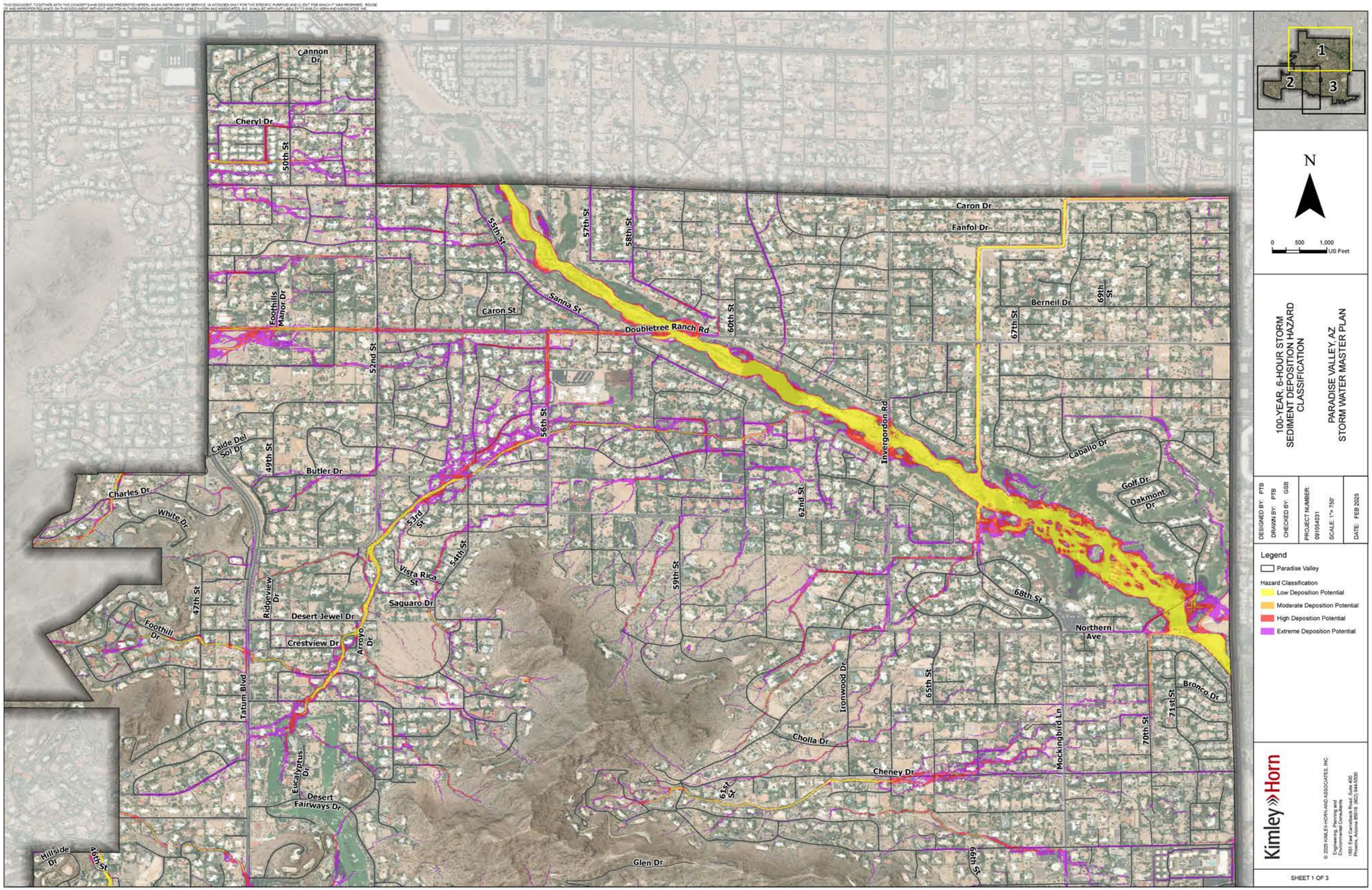
Phoenix, Arizona 85016 (602) 944-5500
SHEET 3 OF 3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100-YEAR, 6-HOUR STORM
SEDIMENT DEPOSITION HAZARD
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STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER: 091054031
SCALE: 1"= 750'
DATE: FEB 2025
Legend
Paradise Valley
Hazard Classification
Low Deposition Potential
Moderate Deposition Potential
High Deposition Potential
Extreme Deposition Potential
Kimley»Horn
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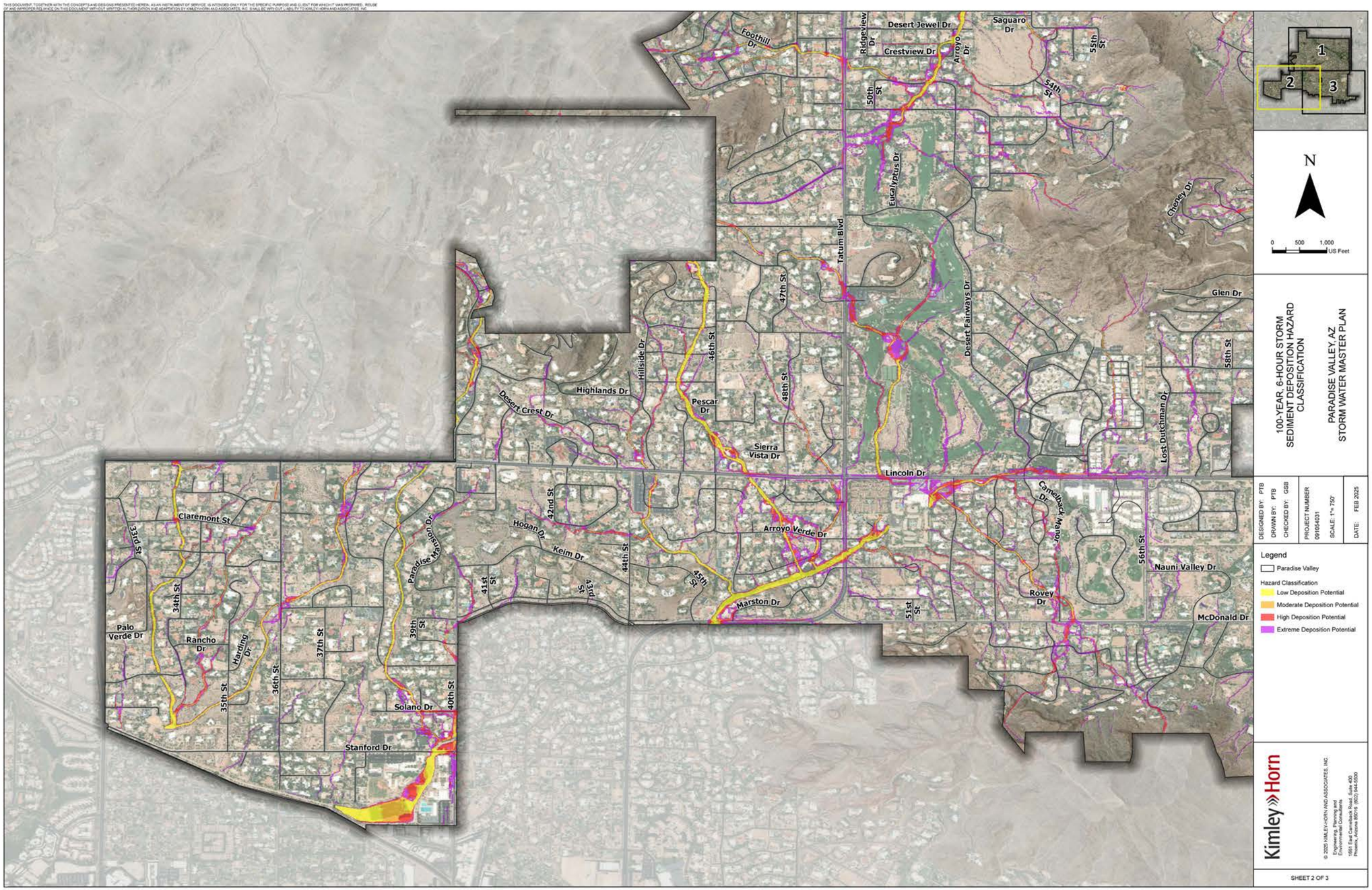
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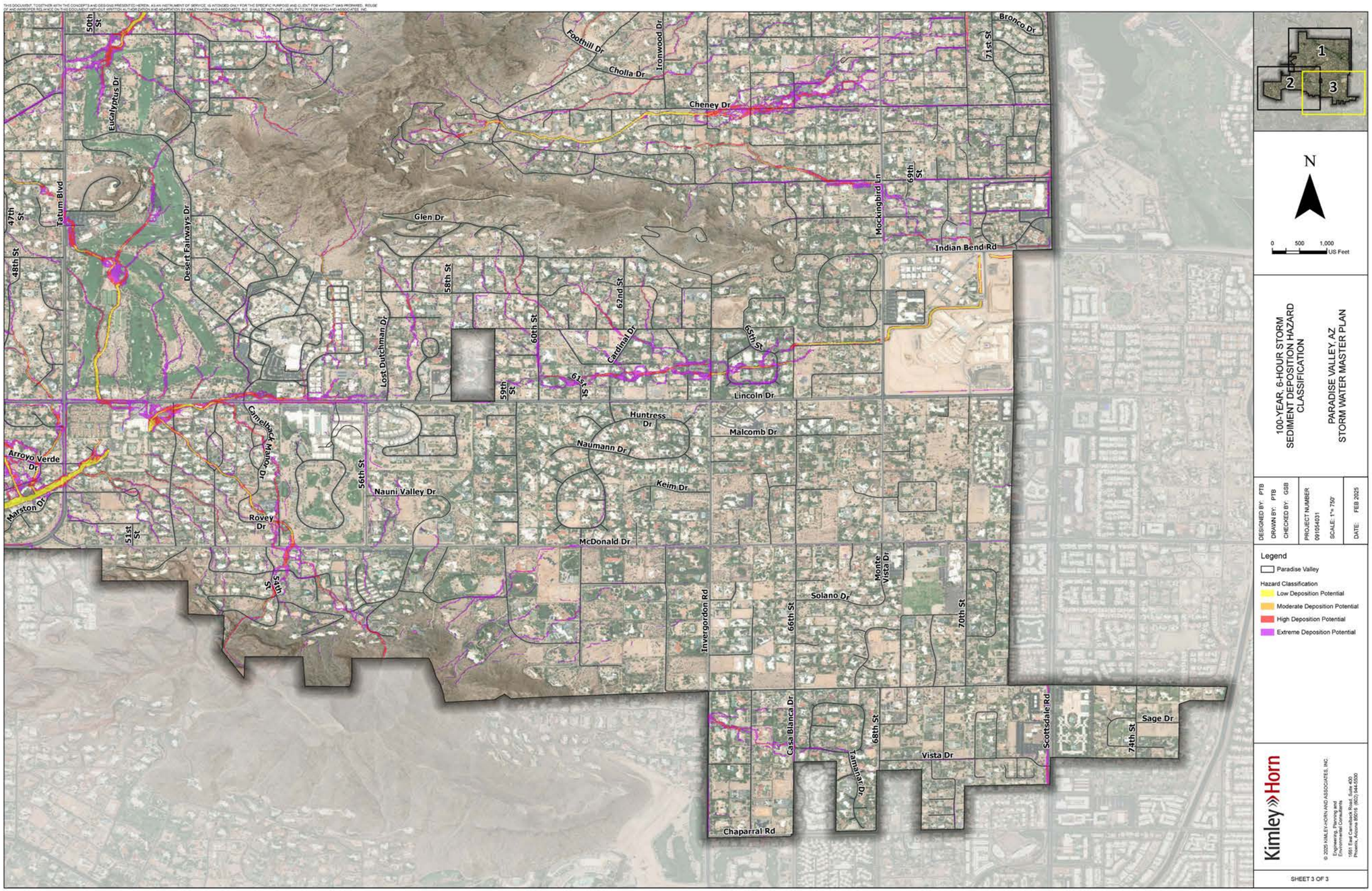
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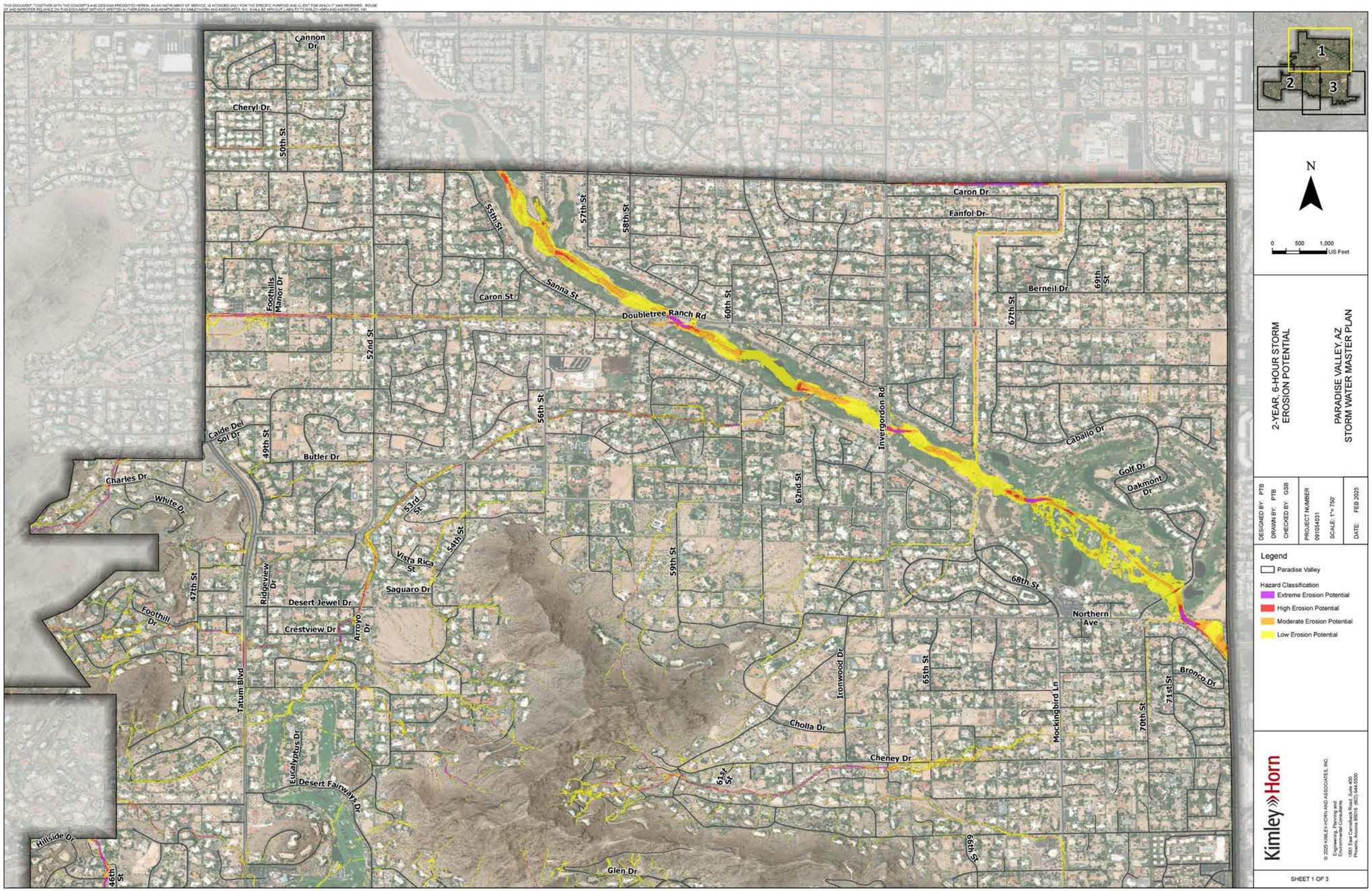
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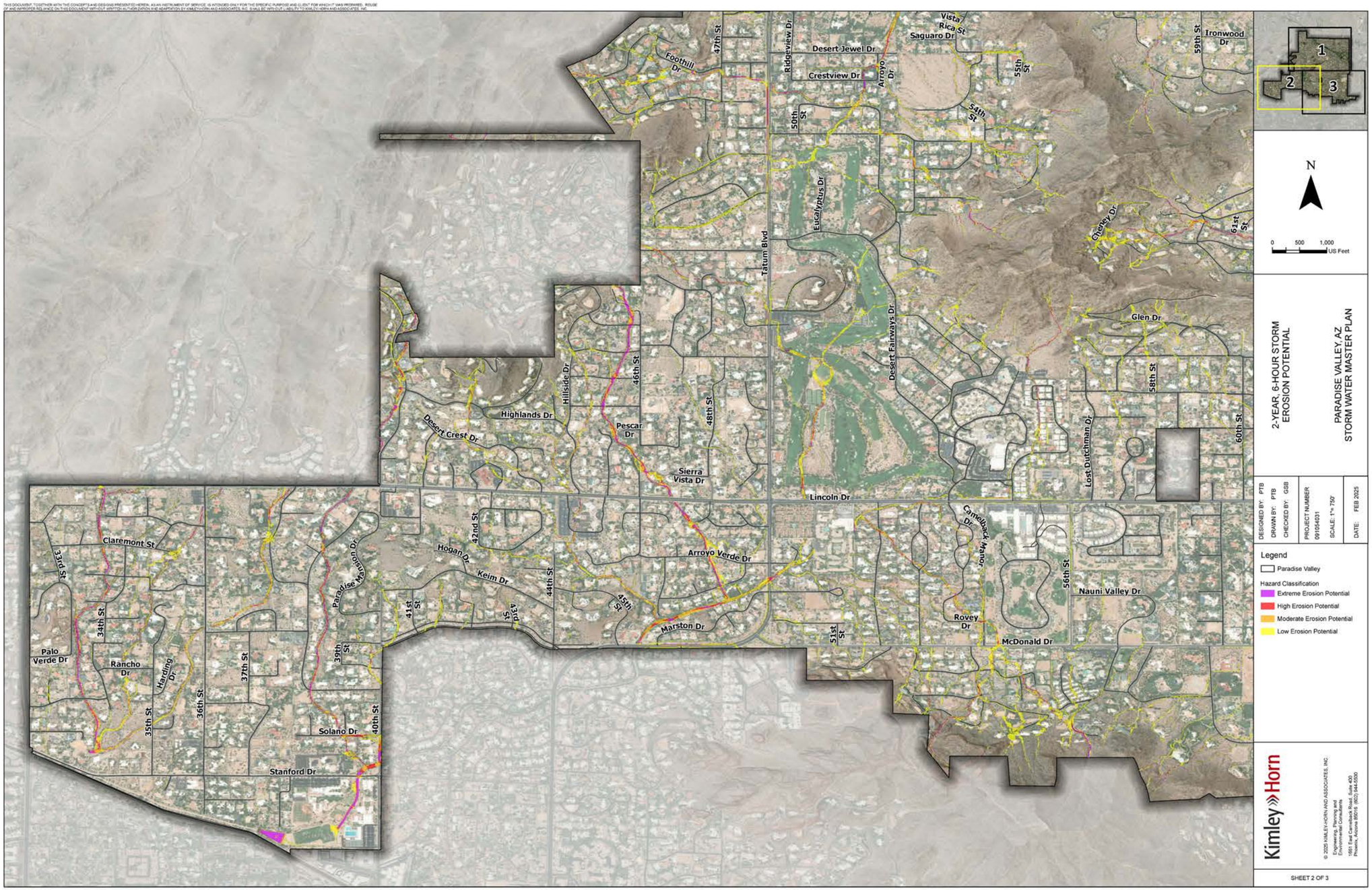
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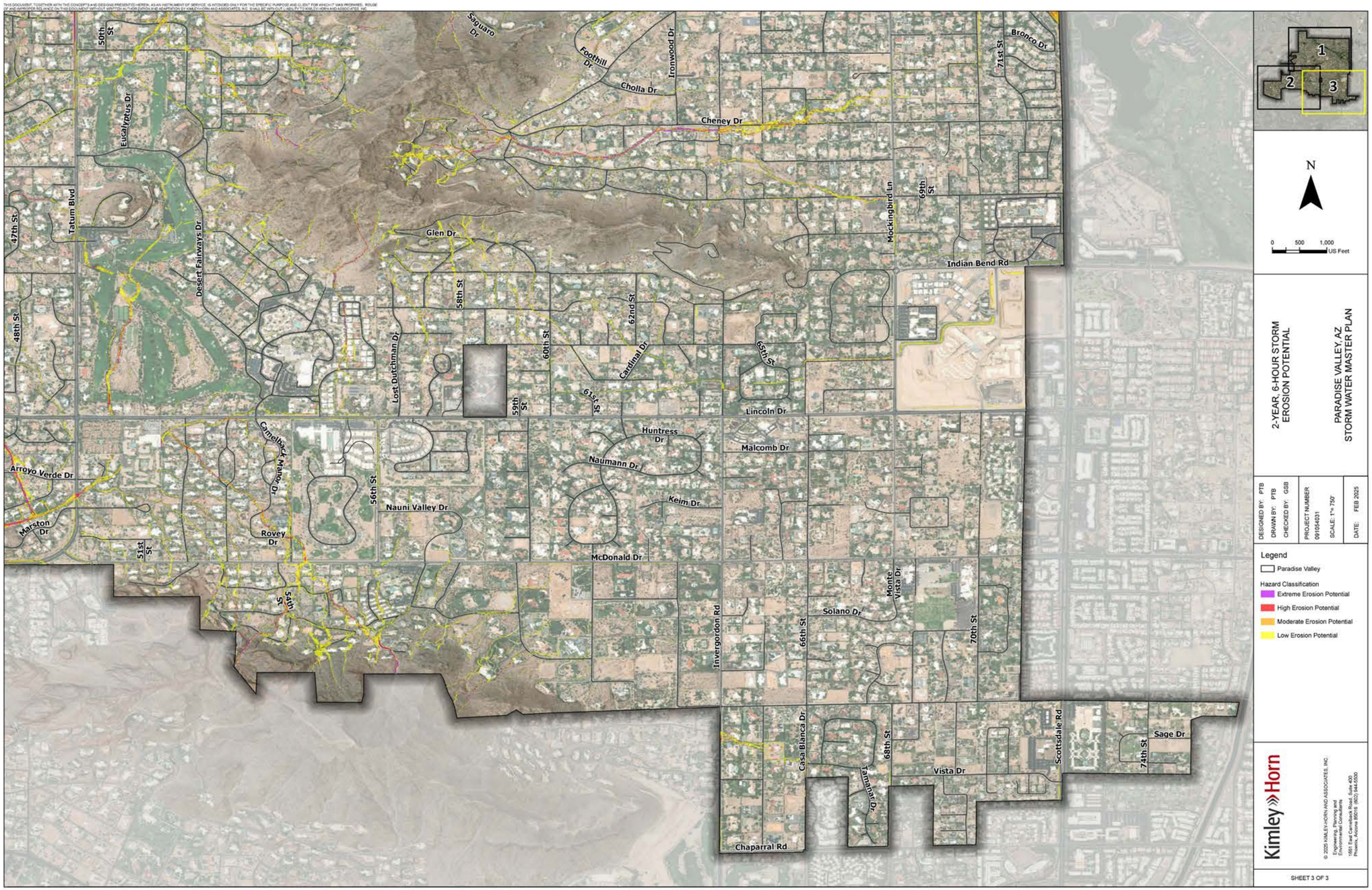
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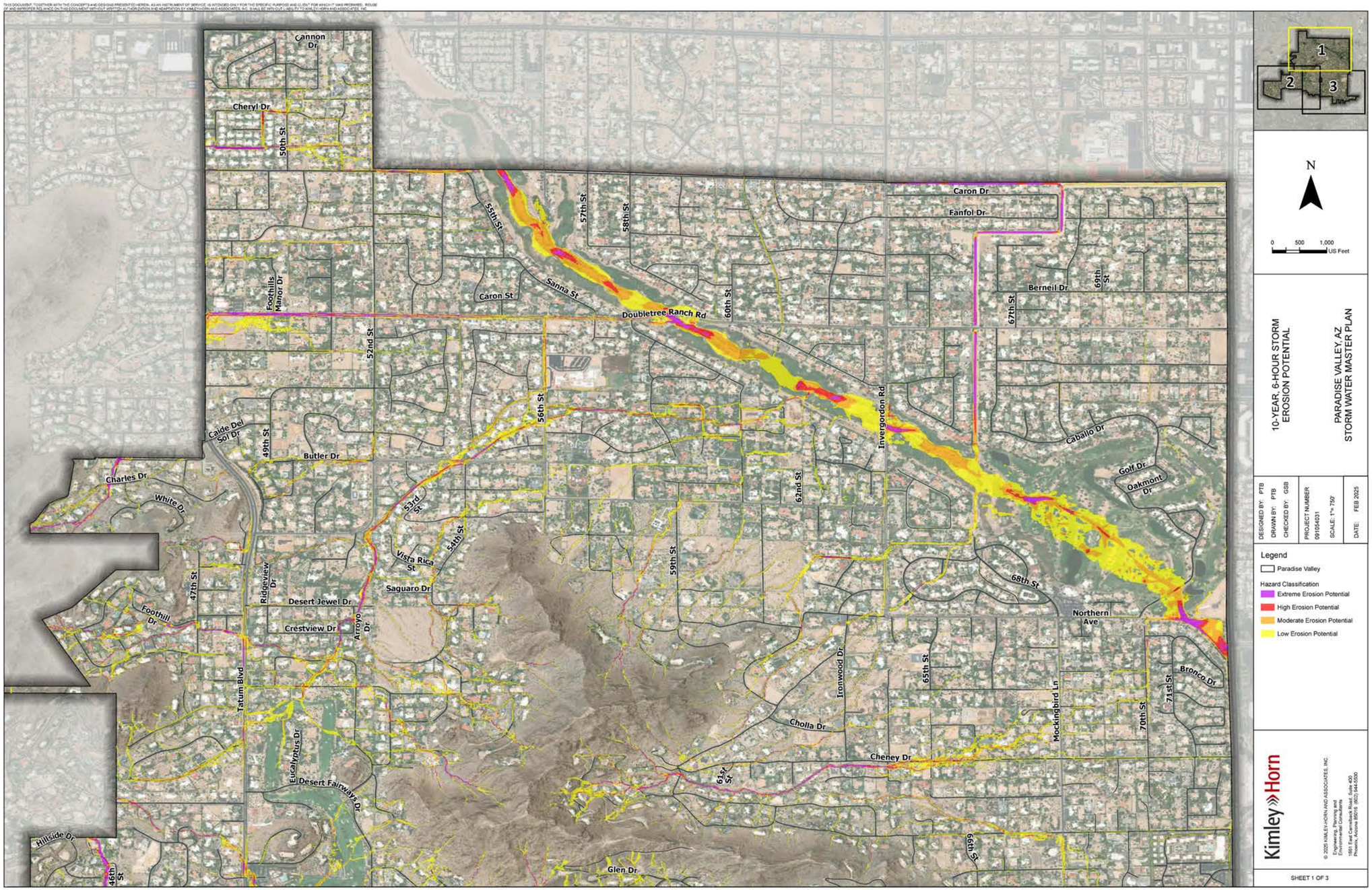
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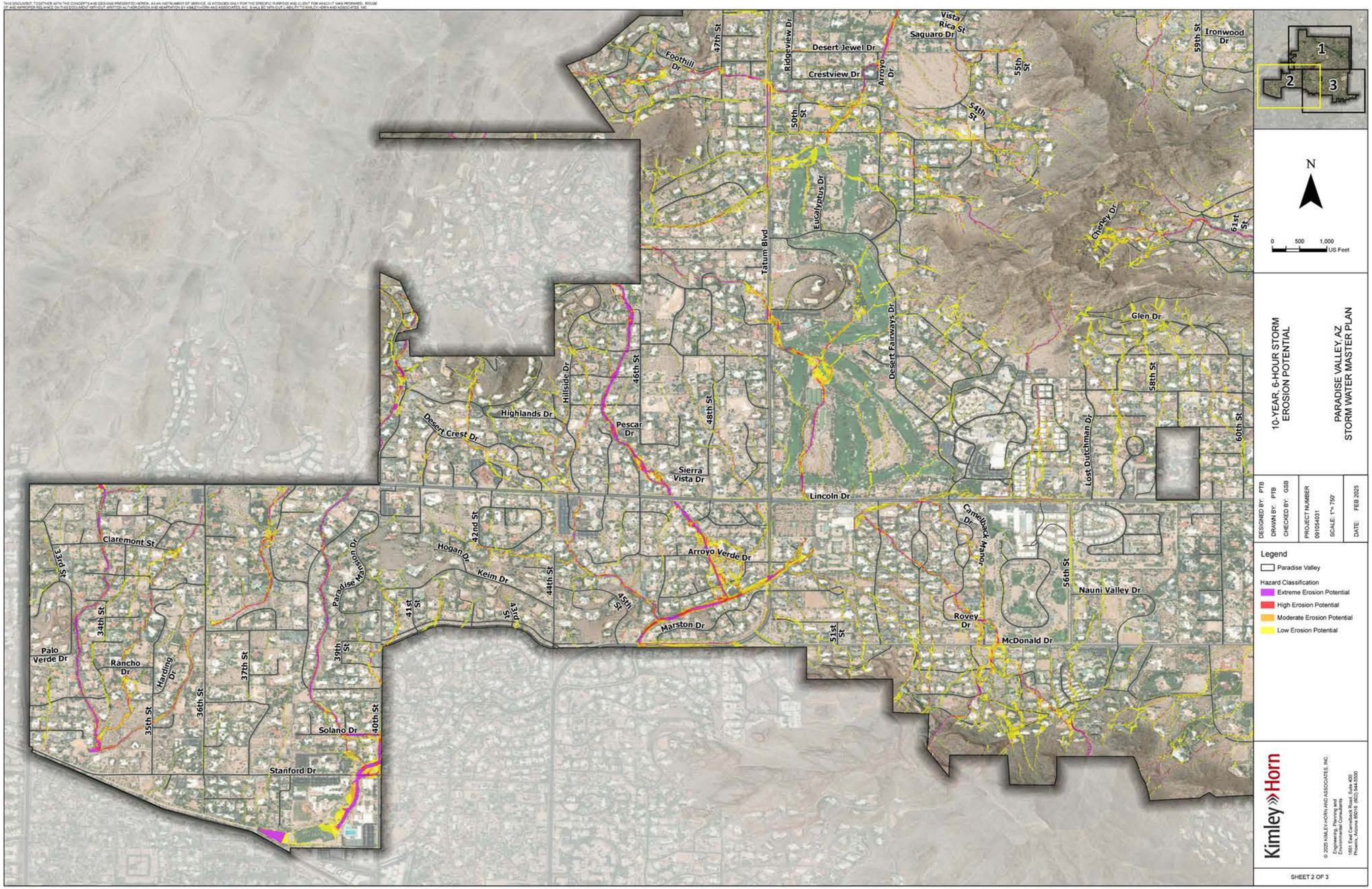

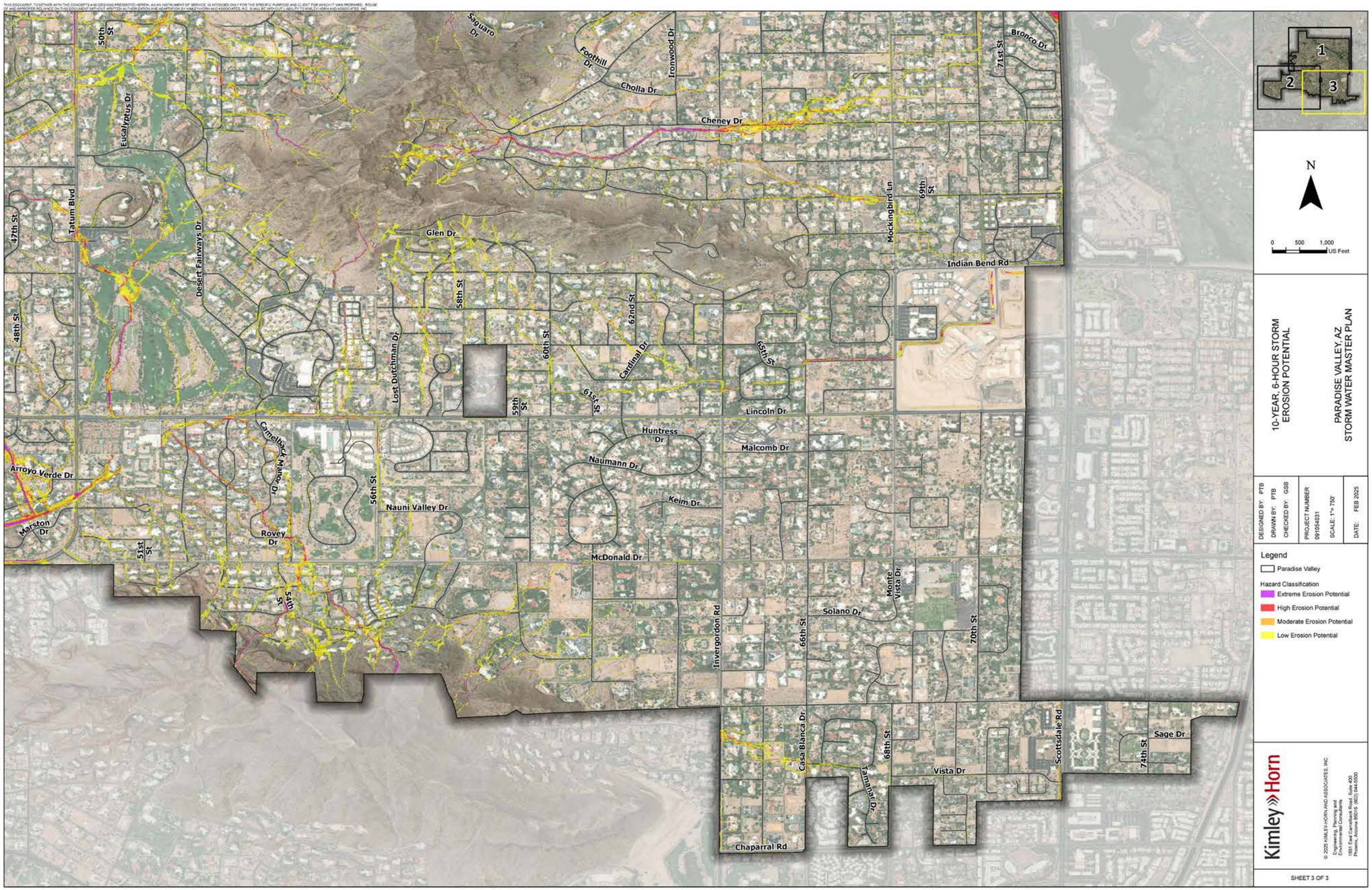
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10-YEAR, 6-HOUR STORM EROSION POTENTIAL
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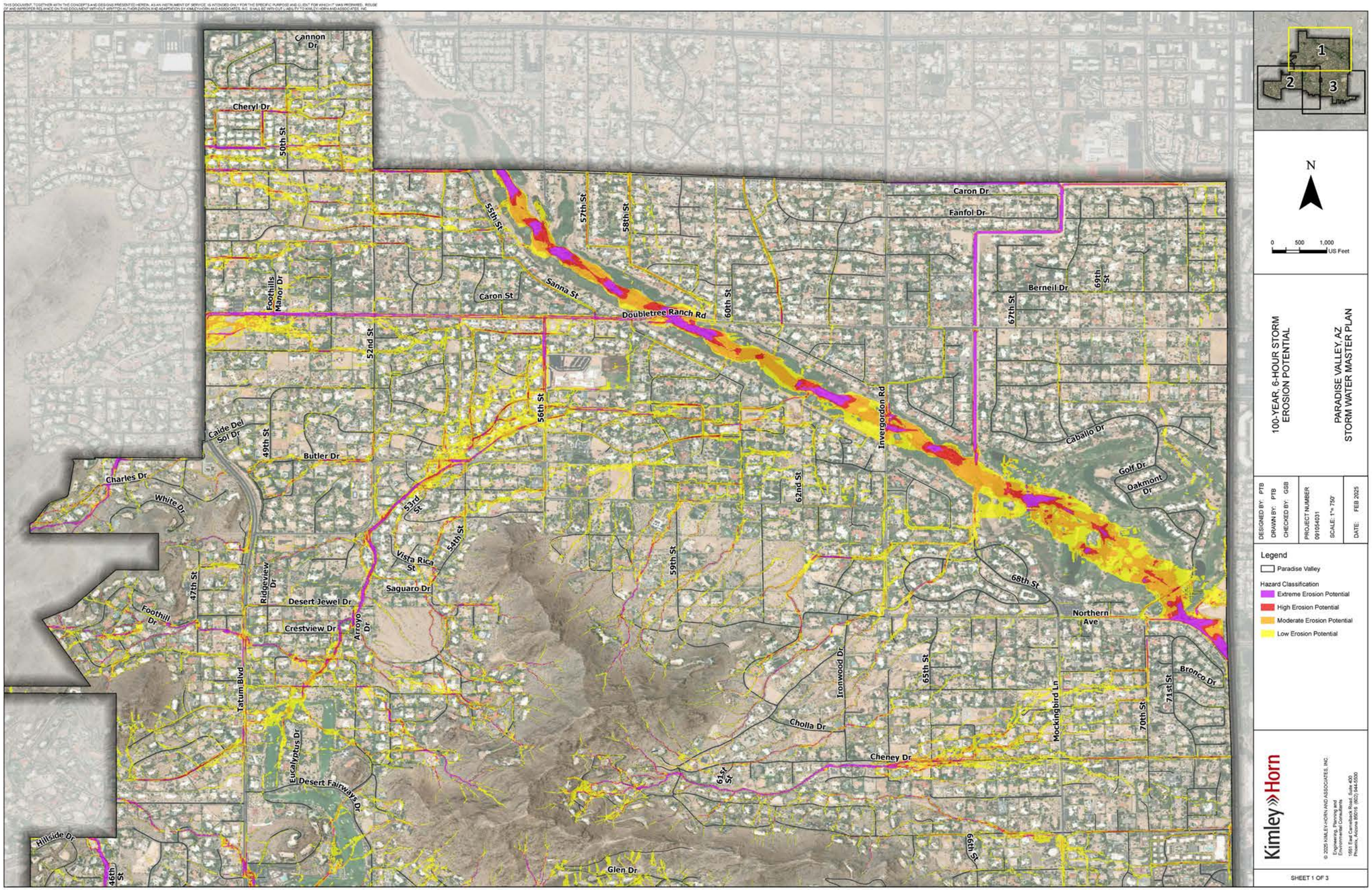
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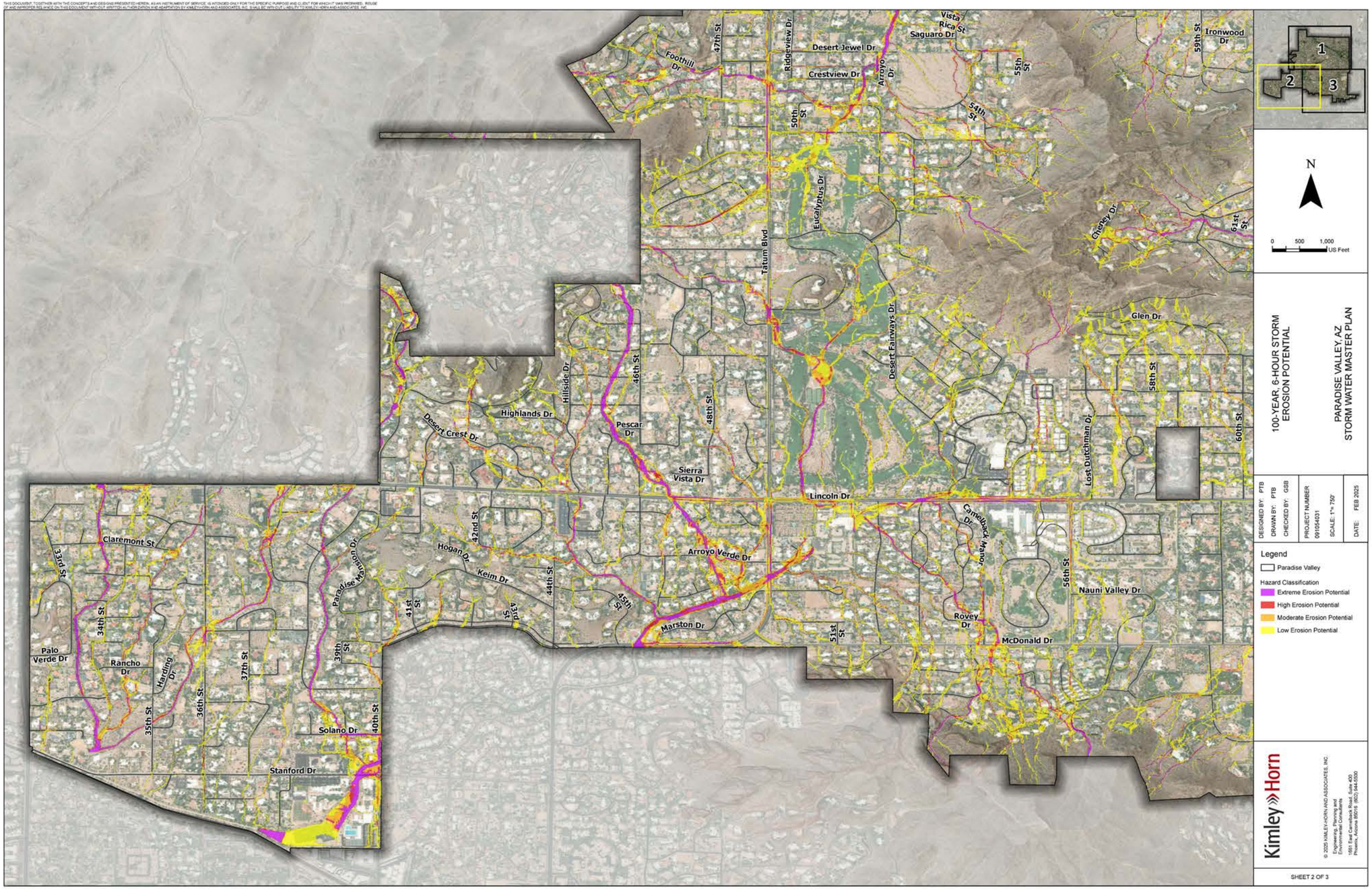

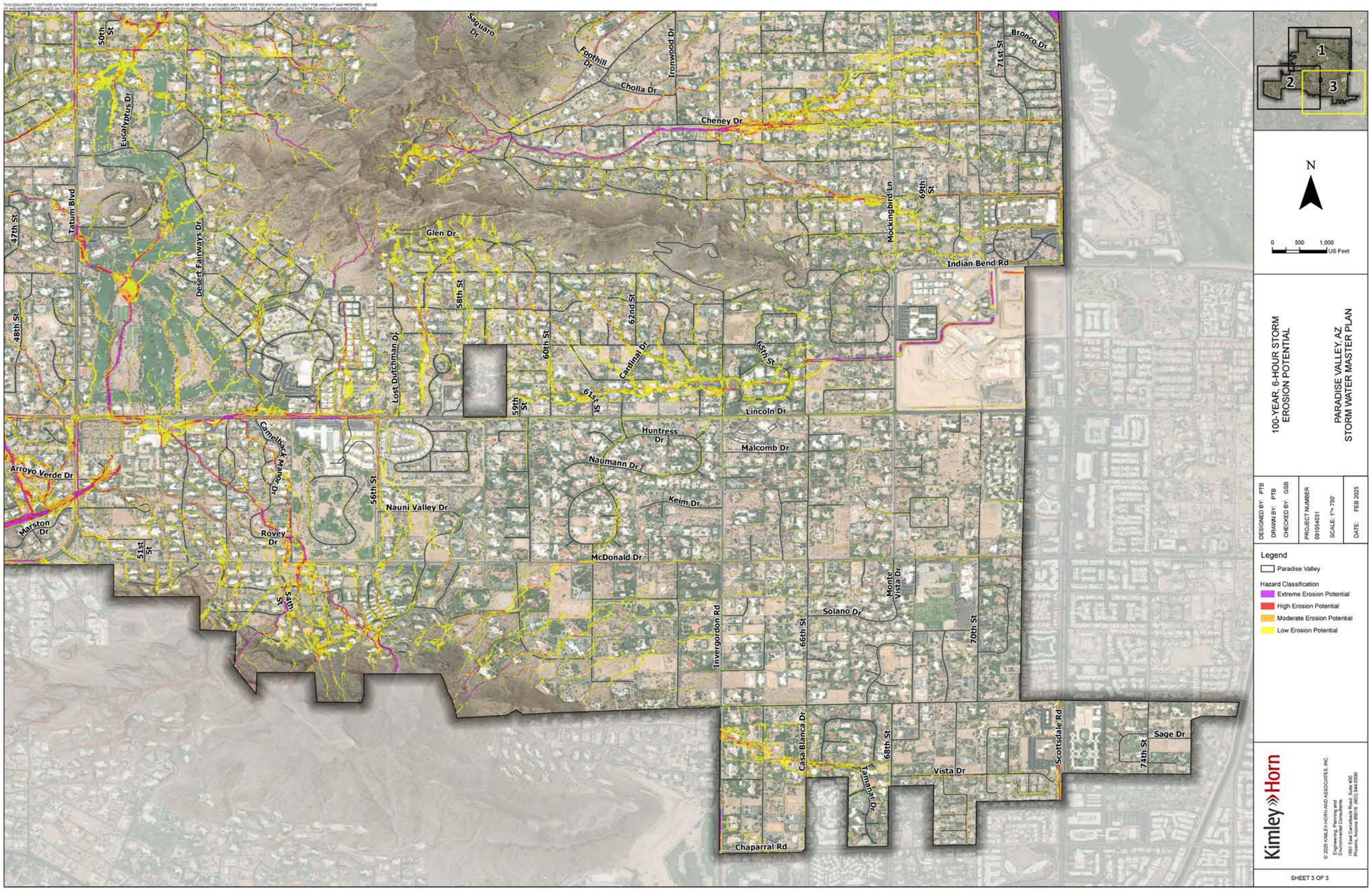
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XV. APPENDIX C – FLOOD HAZARD ANALYSIS

PASSENGER VEHICLE RISK

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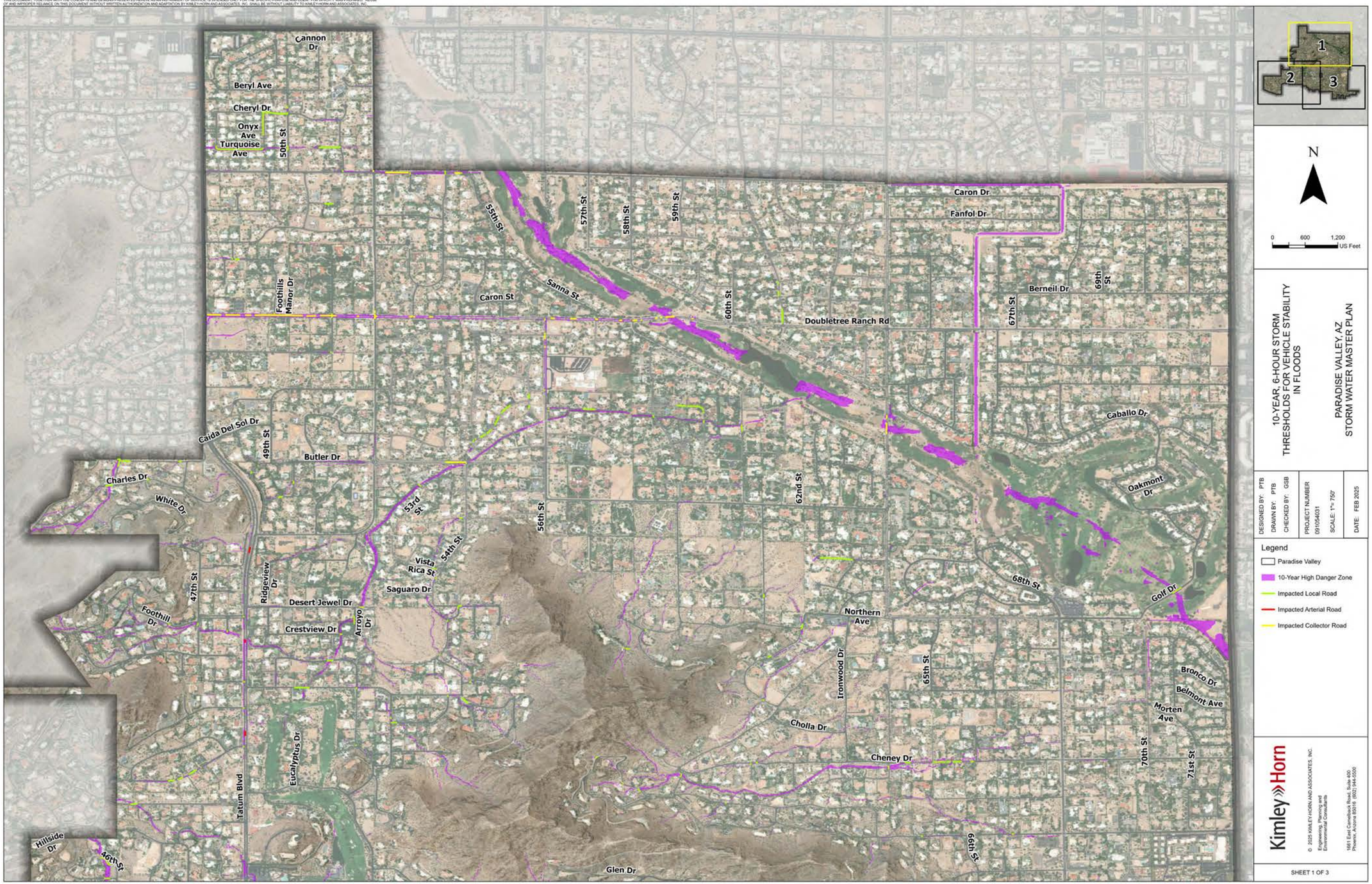

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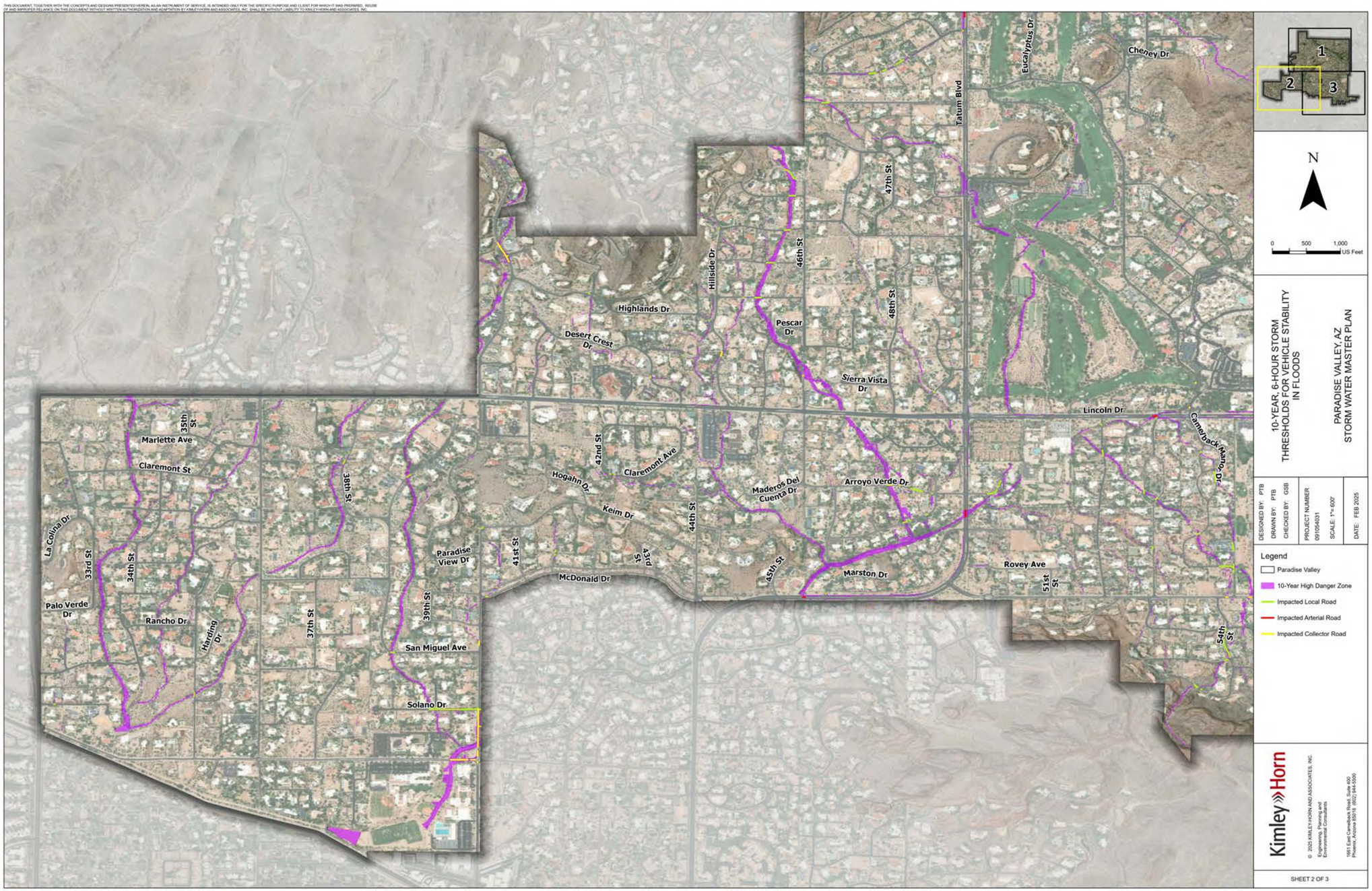

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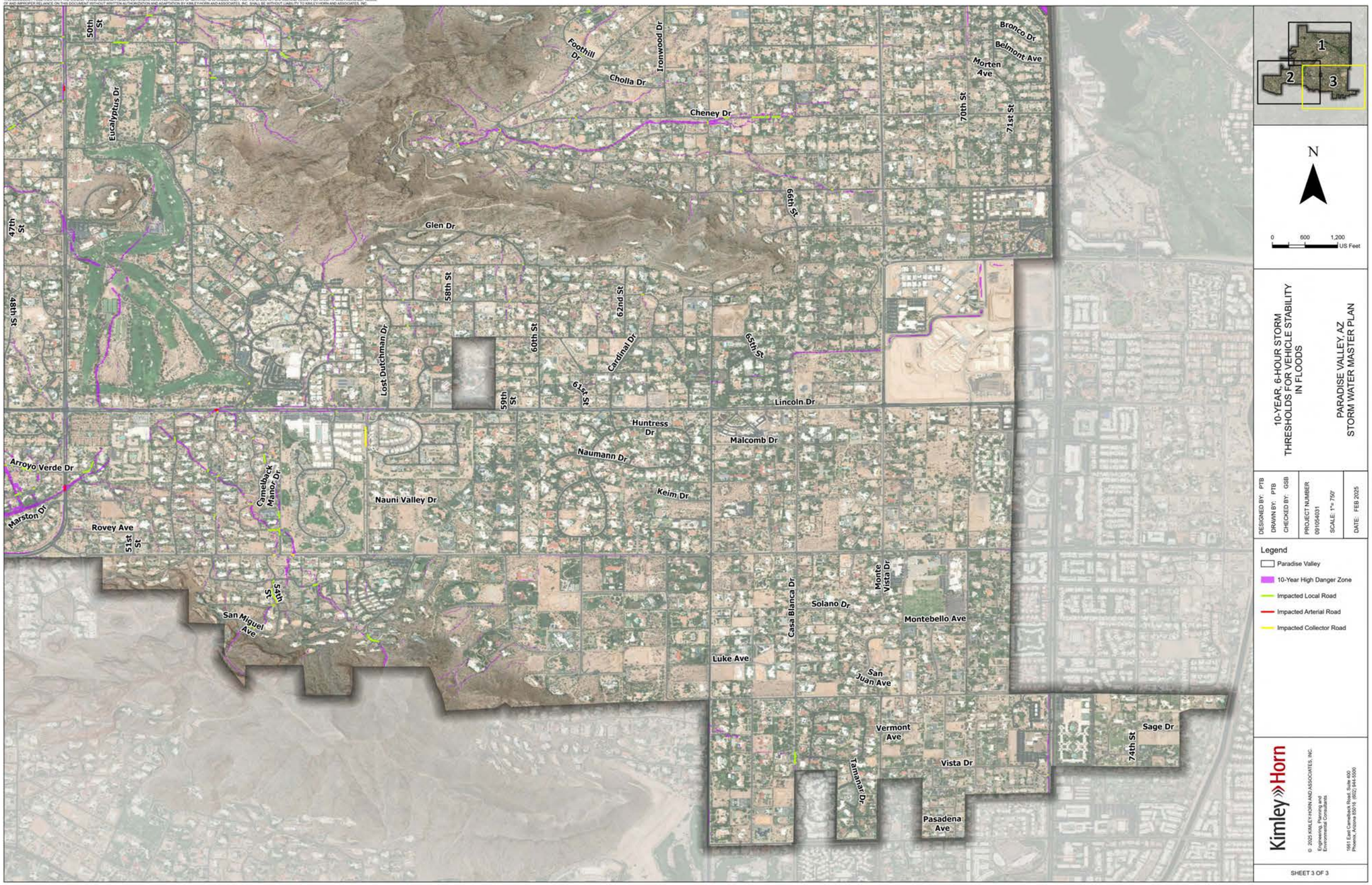

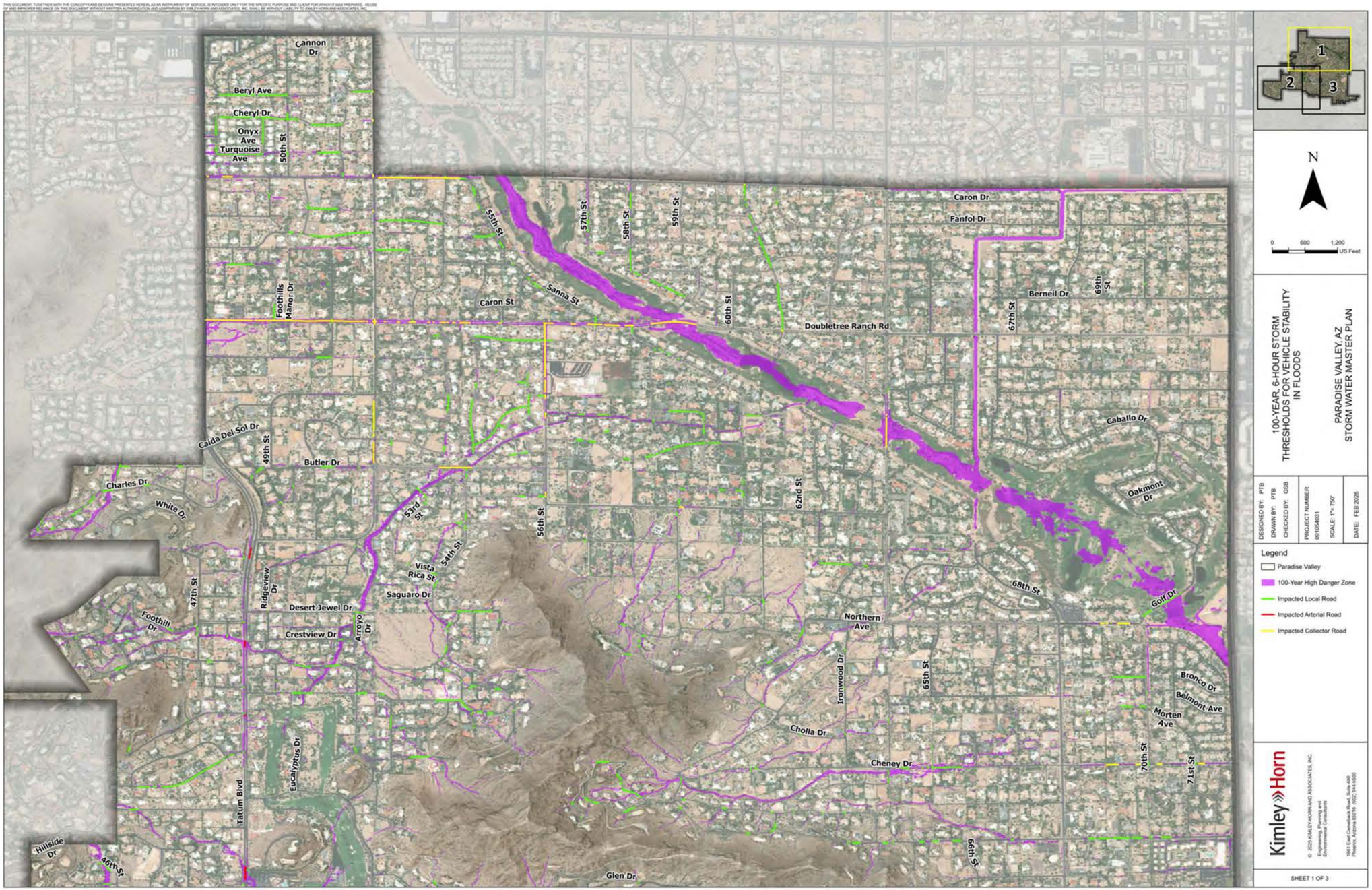
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Cheryl Dr
Onyx Ave
Turquoise Ave
50th St
55th St
57th St
58th St
59th St
Caron Dr
Fanfol Dr
Foothills Manor Dr
Caron St
Sanna St
60th St
Doubletree Ranch Rd
67th St
Berneil Dr
69th St
Caida Del Sol Dr
49th St
Butler Dr
Charles Dr
White Dr
53rd St
54th St
56th St
62nd St
Caballo Dr
Oakmont Dr
Vista Rica St
Saguaro Dr
47th St
Ridgeview Dr
Desert Jewel Dr
Foothill Dr
Crestview Dr
Arroyo Dr
68th St
Golf Dr
Northern Ave
Ironwood Dr
65th St
Bronco Dr
Belmont Ave
Morten Ave
Cholla Dr
Cheney Dr
70th St
71st St
Eucalyptus Dr
Tatum Blvd
Hillside Dr
46th St
Glen Dr
69th St
1
2
3
N
0
600
1,200
US Feet
100-YEAR, 6-HOUR STORM
THRESHOLDS FOR VEHICLE STABILITY
IN FLOODS
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER
091054031
SCALE: 1" = 750'
DATE: FEB 2025
Legend
Paradise Valley
100-Year High Danger Zone
Impacted Local Road
Impacted Arterial Road
Impacted Collector Road
Kimley»Horn
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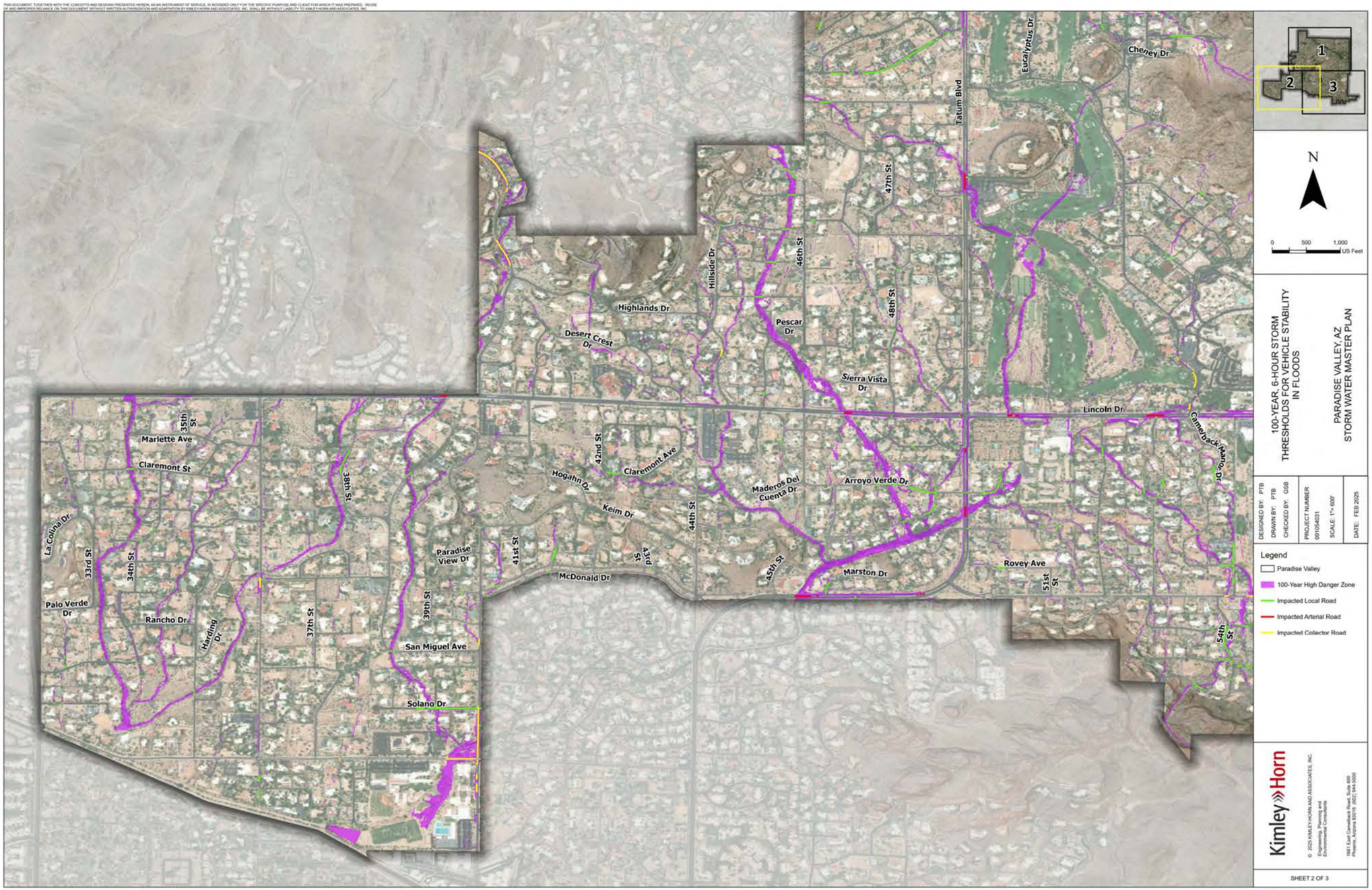
Engineering, Planning and
Environmental Consultants
1661 East Camelback Road, Suite 400
Phoenix, Arizona 85016 (602) 944-5500
SHEET 1 OF 3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Cheney Dr
47th St
46th St
48th St
Hillside Dr
Highlands Dr
Desert Crest Dr
Pescar Dr
Sierra Vista Dr
Lincoln Dr
Camelback Rd
Arroyo Verde Dr
Maderos Del Cuenta Dr
Rovey Ave
Marston Dr
McDonald Dr
Keim Dr
Hogahn Dr
Claremont Ave
42nd St
44th St
45th St
41st St
40th St
Paradise View Dr
San Miguel Ave
Solano Dr
39th St
38th St
37th St
35th St
Marlette Ave
Claremont St
La Colina Dr
33rd St
34th St
Palo Verde Dr
Rancho Dr
Harding Dr
51st St
54th St
1
2
3
N
0
500
1,000
US Feet
100-YEAR, 6-HOUR STORM
THRESHOLDS FOR VEHICLE STABILITY
IN FLOODS
PARADISE VALLEY, AZ
STORM WATER MASTER PLAN
DESIGNED BY: PTB
DRAWN BY: PTB
CHECKED BY: GSB
PROJECT NUMBER
091054031
SCALE: 1"= 800'
DATE: FEB 2025
Legend
Paradise Valley
100-Year High Danger Zone
Impacted Local Road
Impacted Arterial Road
Impacted Collector Road
Kimley»Horn
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Environmental Consultants
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Phoenix, Arizona 85016 (602) 944-5500
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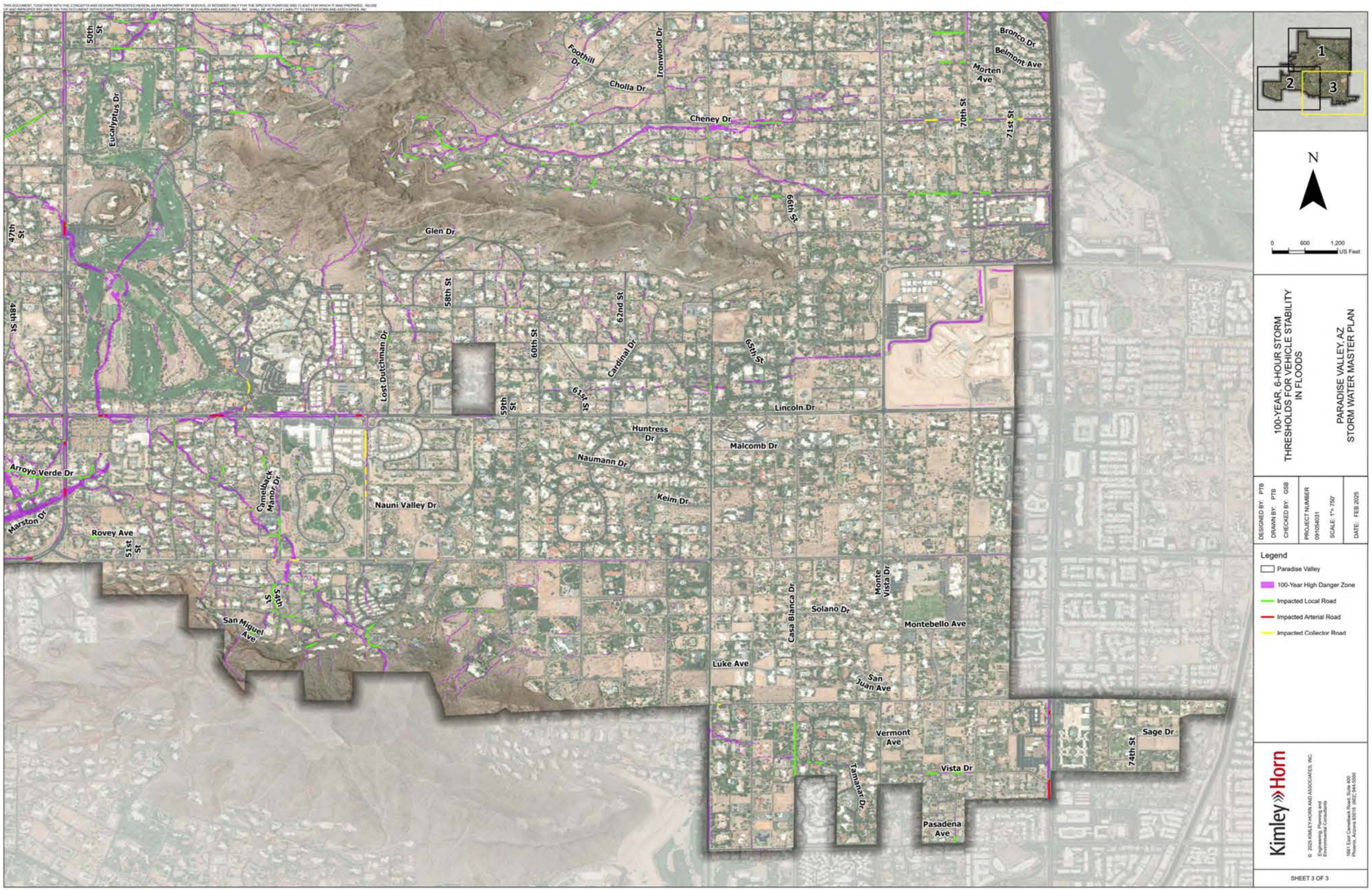
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Foothill Dr
Cholla Dr
Ironwood Dr
Cheney Dr
Bronco Dr
Belmont Ave
Morten Ave
70th St
71st St
66th St
Glen Dr
58th St
62nd St
60th St
Cardinal Dr
Lost Dutchman Dr
59th St
61st St
65th St
Lincoln Dr
Huntress Dr
Malcomb Dr
Naumann Dr
Keim Dr
Nauni Valley Dr
Arroyo Verde Dr
Camelback Manor Dr
Marston Dr
Rovey Ave
51st St
54th St
San Miguel Ave
Luke Ave
Casa Blanca Dr
Solano Dr
Monte Vista Dr
Montebello Ave
San Juan Ave
Vermont Ave
Tamanar Dr
Vista Dr
Pasadena Ave
74th St
Sage Dr
1
2
3
N
0
600
1,200
US Feet
100-YEAR, 6-HOUR STORM
THRESHOLDS FOR VEHICLE STABILITY
IN FLOODS
PARADISE VALLEY, AZ
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100-Year High Danger Zone
Impacted Local Road
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Impacted Collector Road
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SHEET 3 OF 3

XVI. APPENDIX D – FLOOD HAZARD AREAS

FLOOD HAZARD AREA PRIORITY MATRIX

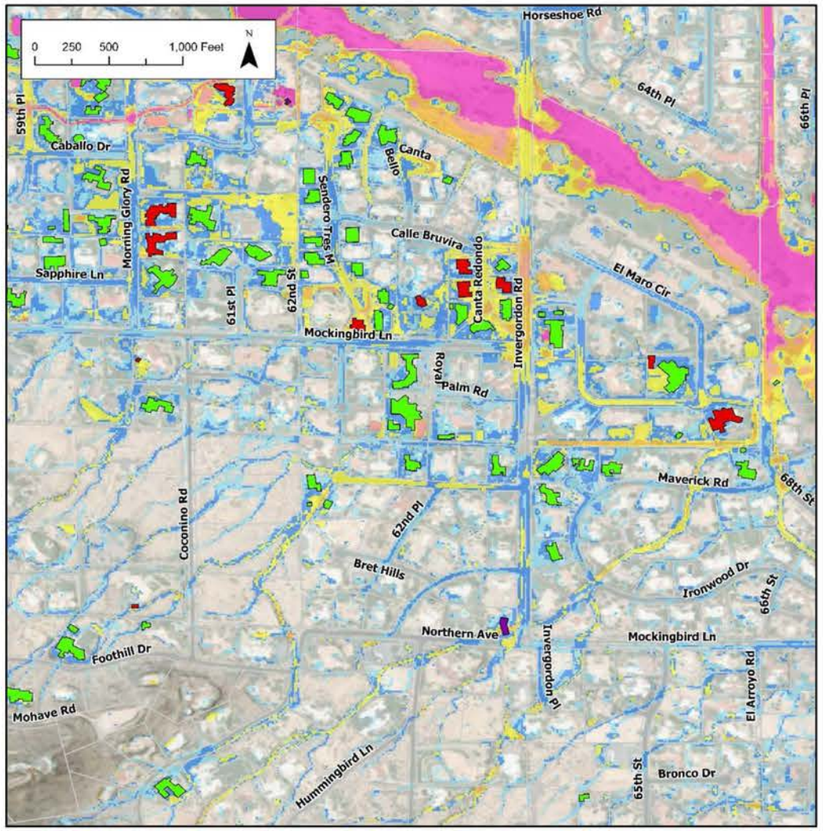
	Severity of Flooding	Potential Stuctures Protected	Potential Streets Protected	Emergency Access	Multi-use Oppurtunities	Total Raw Score	Total Weighted Score
Priority Weighting 1 - 5	5	5	4	3	1		
Area N	3	3	3	2	1	12	49
Area A	3	2	3	2	2	12	45
Area O	3	2	3	2	2	12	45
Area K	3	3	3	0	1	10	43
Area L	3	2	2	2	2	11	41
Area H	3	1	3	2	2	11	40
Area P	3	1	3	2	1	10	39
Area C	2	3	3	0	2	10	39
Area E	2	3	3	0	1	9	38
Area S	3	1	2	2	2	10	36
Area R	3	1	2	2	2	10	36
Area D	2	2	3	0	1	8	33
Area G	3	1	1	2	2	9	32
Area M	2	1	2	0	2	7	25
Area B	2	1	2	0	2	7	25
Area J	2	1	1	0	2	6	21

XVI. APPENDIX D – FLOOD HAZARD AREAS

FLOOD HAZARD AREA DATA SHEETS

PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: A

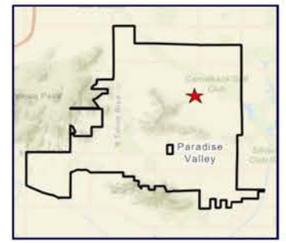


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

100yr, 6hr Max Flow Depths (ft)
- 0.0 - 0.25
- 0.26 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.01 - 27

LOCATION DESCRIPTION

LOCATION: *Invergordon Road and Mockingbird Lane*



PROBLEM DESCRIPTION:

- *Identified as a problem in the 2017 Cheney Watershed Study and remains a significant flood hazard*
- *Flow breakout with depths over 3 ft at Invergordon Road and Calle Bruvira*

FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding, potential impact to emergency services*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *Invergordon Road and Mockingbird Lane storm drains/dry utilities*

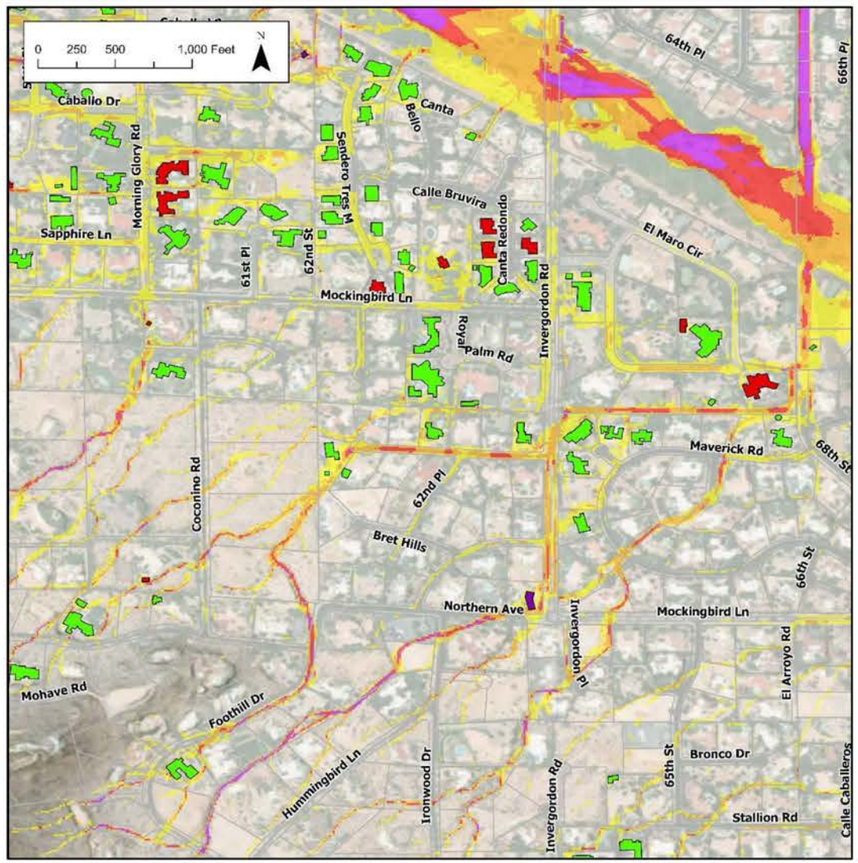
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Sedimentation Basins*
- *Roadside Ditch*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Impacted Structures	43
Number of Hydraulic Structures Identified as Undersized	0
Maximum Depth on Road	3.67 ft
Streets Overtopped by > 0.5 ft	6 Local; 2 Collector
Potential Impact to Emergency Service Access	Yes
Flood Hazard Designation	Severe Flooding

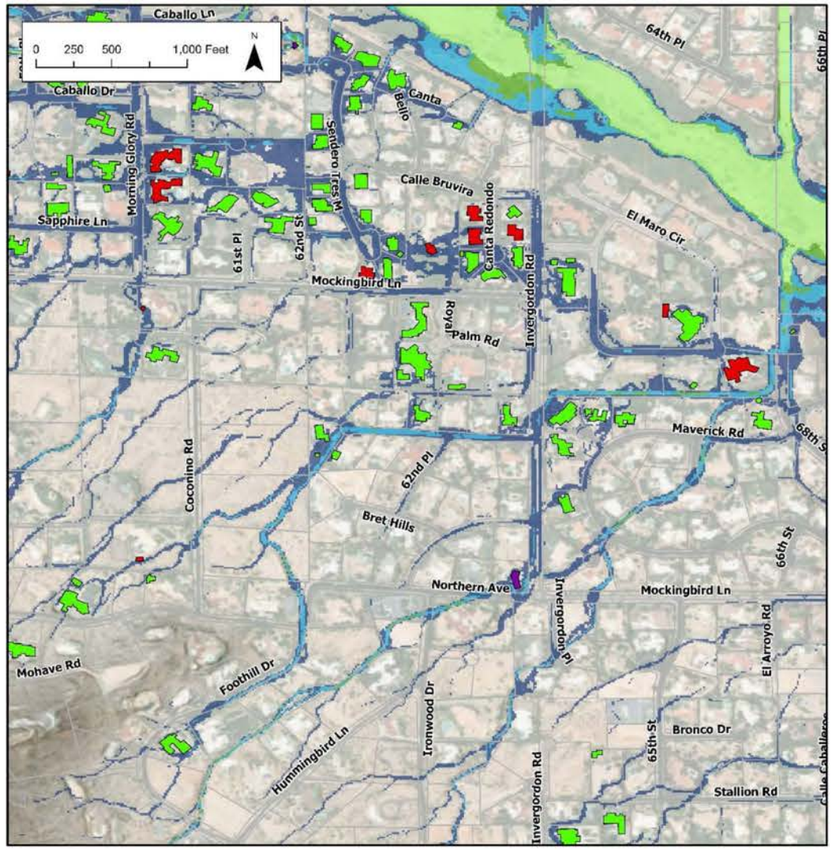
AREA A EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA A SEDIMENT DEPOSTION POTENTIAL MAP

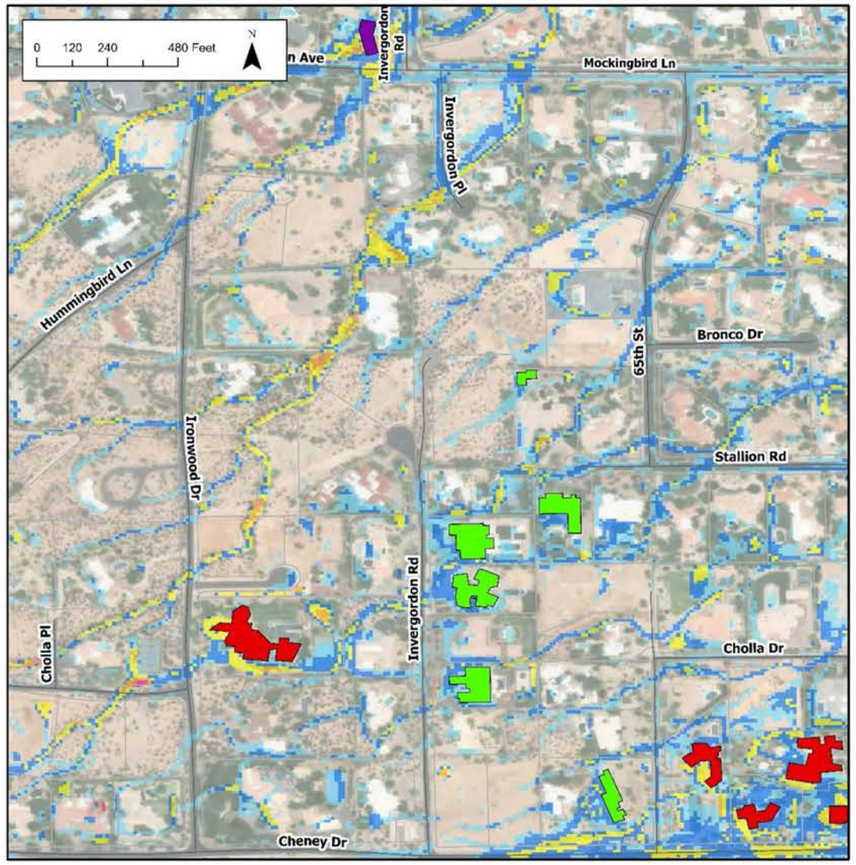


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: B

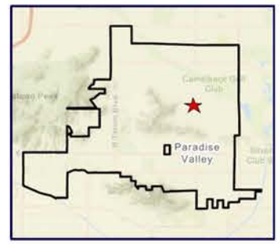


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

100yr, 6hr Max Flow Depths (ft)
- 0.0 - 0.25
- 0.26 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.01 - 27

LOCATION DESCRIPTION

LOCATION: *Ironwood Drive and Cholla Place*



PROBLEM DESCRIPTION:

- *Identified as a problem in the 2017 Cheney Watershed Study and flooding remains a nuisance to residents*
- *Flows from Mummy Mountain overtop multiple streets and deposit sediment*

FLOOD HAZARD IMPACT: *Road overtopping and post-storm clean up, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *Mockingbird Lane storm drains, dry utilities*

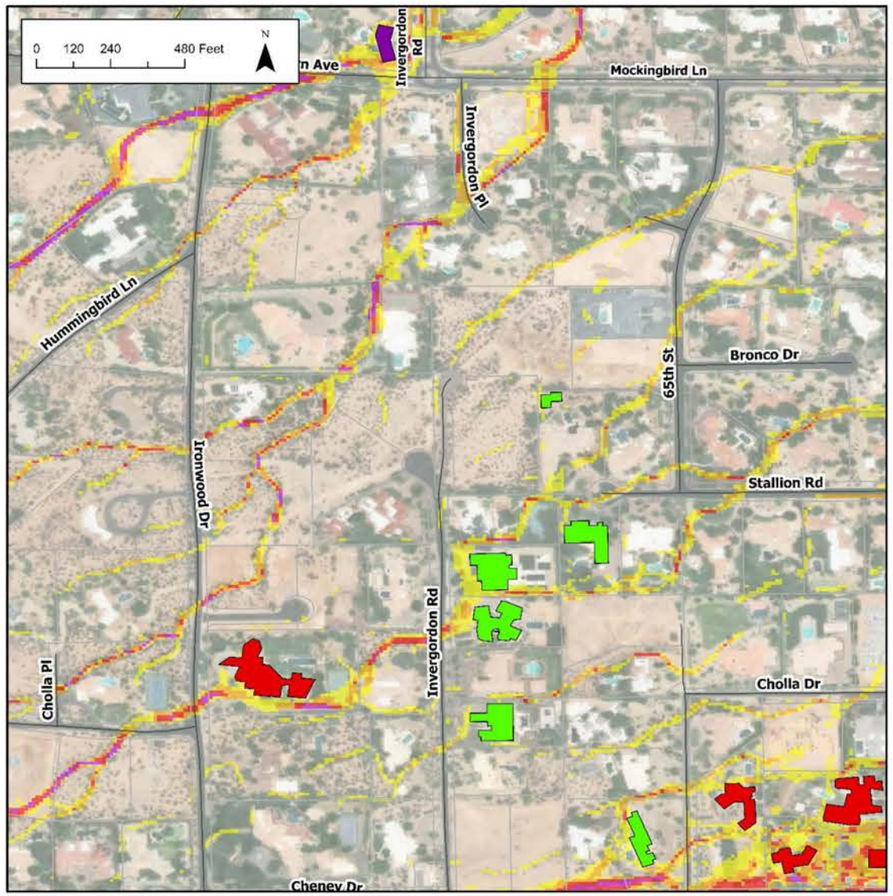
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Sediment Basins*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Potentially Impacted Structures	4
Number of Hydraulic Structures Identified as Undersized	0
Maximum Depth on Roads	0.71 ft
Streets Overtopped by > 0.5 ft	2 Local; 1 Collector
Potential to Impact Emergency Service Access	No
Flood Hazard Designation	Moderate Flooding

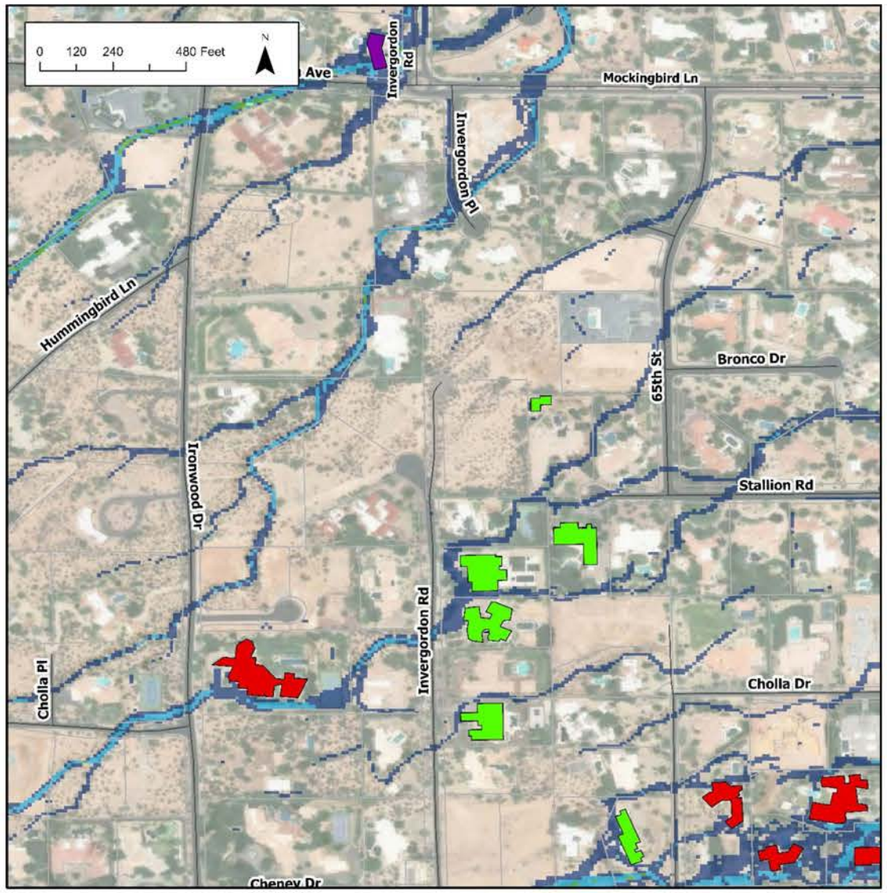
AREA B EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA B SEDIMENT DEPOSTION POTENTIAL MAP

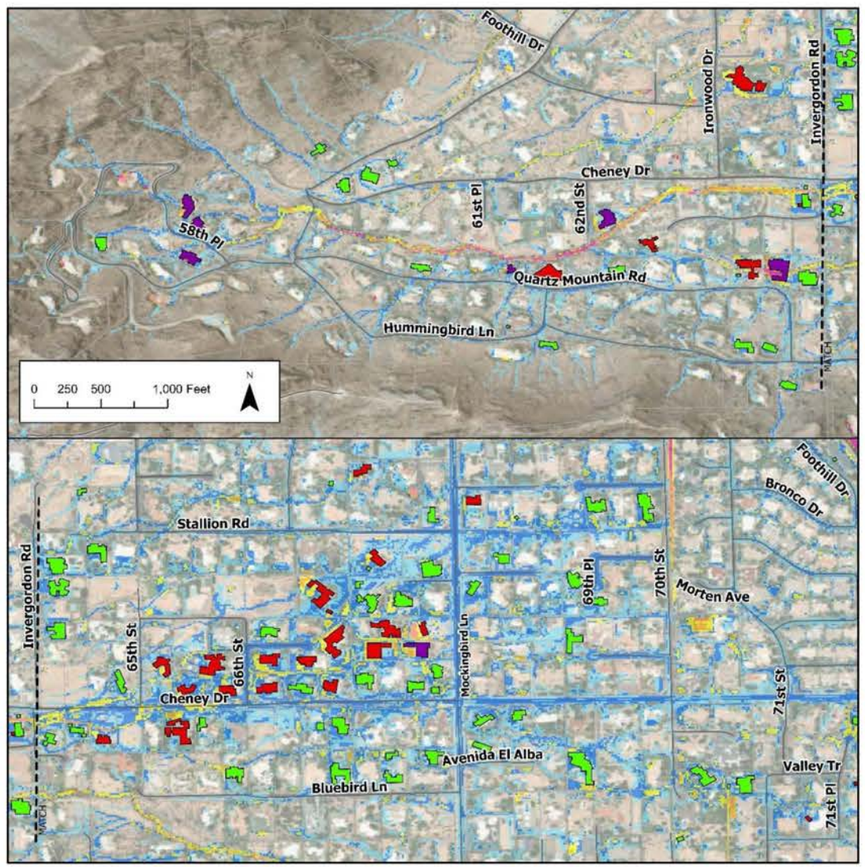


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

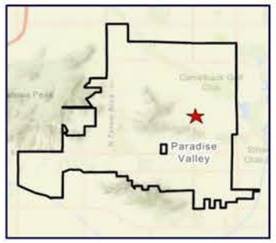
PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: C



LOCATION DESCRIPTION

LOCATION: *Along Cheney Dr from 58th Place to 71st Place*



PROBLEM DESCRIPTION:

- *Identified as a problem in the 2017 Cheney Watershed Study and in the 2017 LIBW ADMP, it and remains a significant flood hazard*
- *Flows from Cheney Wash break out at Invergordon Road and fan out into the surrounding neighborhood*

FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *Cheney Drive and Mockingbird Lane dry utilities*

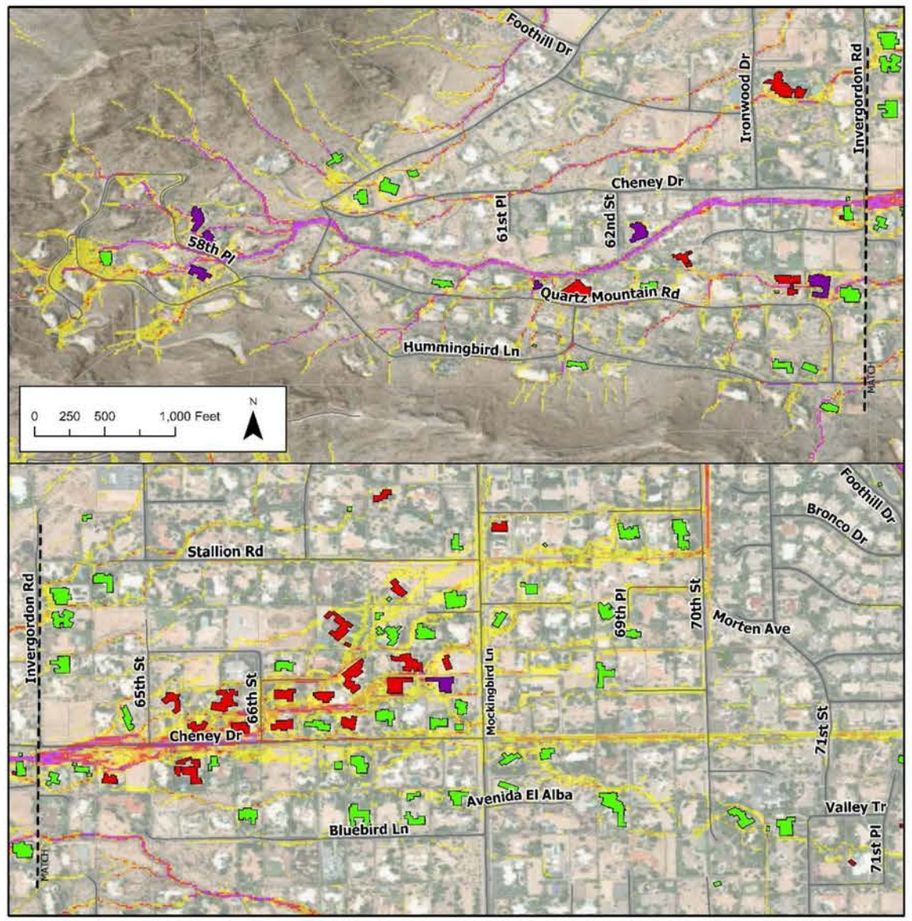
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Channel Embankments*
- *Sediment Basins*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Potentially Impacted Structures	70
Number of Hydraulic Structures Identified as Undersized	0
Maximum Depth on Roads	1.37 ft
Streets Overtopped by > 0.5 ft	2 Local; 1 Collector
Potential to Impact Emergency Service Access	No
Flood Hazard Designation	Moderate Flooding

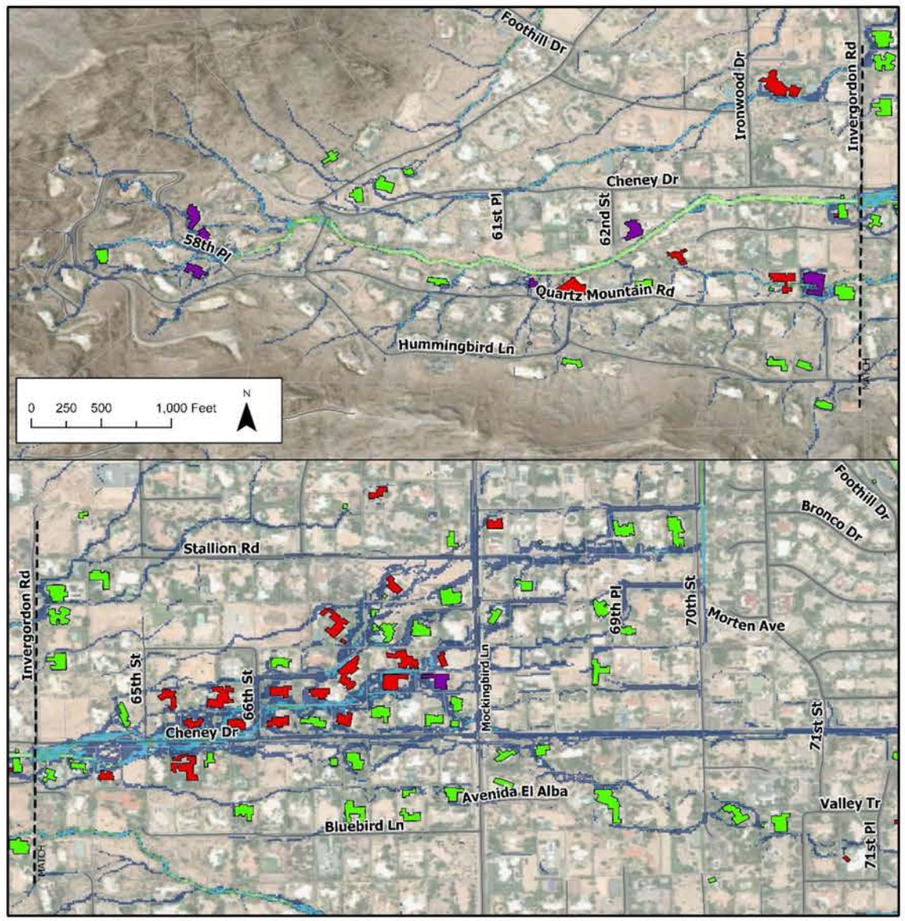
AREA C EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA C SEDIMENT DEPOSTION POTENTIAL MAP

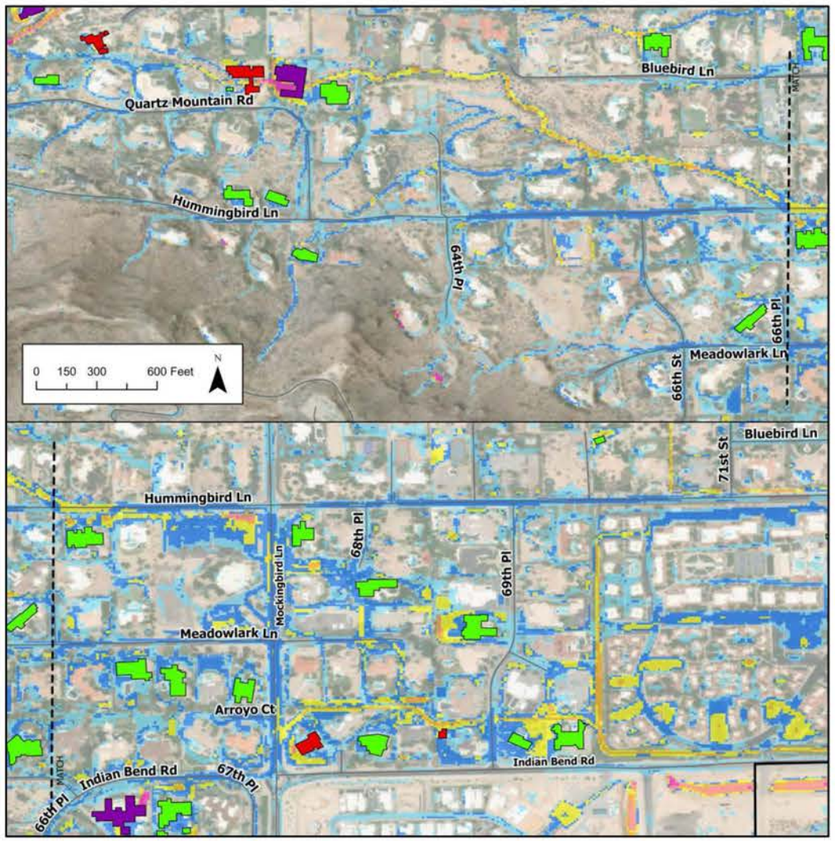


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: D

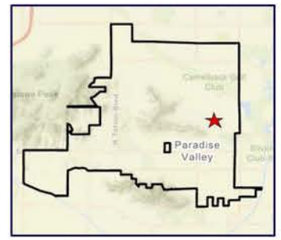


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

100yr, 6hr Max Flow Depths (ft)
- 0.0 - 0.25
- 0.26 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.01 - 27

LOCATION DESCRIPTION

LOCATION: *Hummingbird Ln and Mockingbird Lane*



PROBLEM DESCRIPTION:

- *Identified as a problem in the 2017 LIBW ADMP and the 2017 Cheney Watershed Study, remains a flood hazard*
- *Flows from Mummy Mountain breakout with depths of 1 ft at Hummingbird Ln and fans out into the surrounding neighborhood*

FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *Mockingbird storm drains, dry utilities*

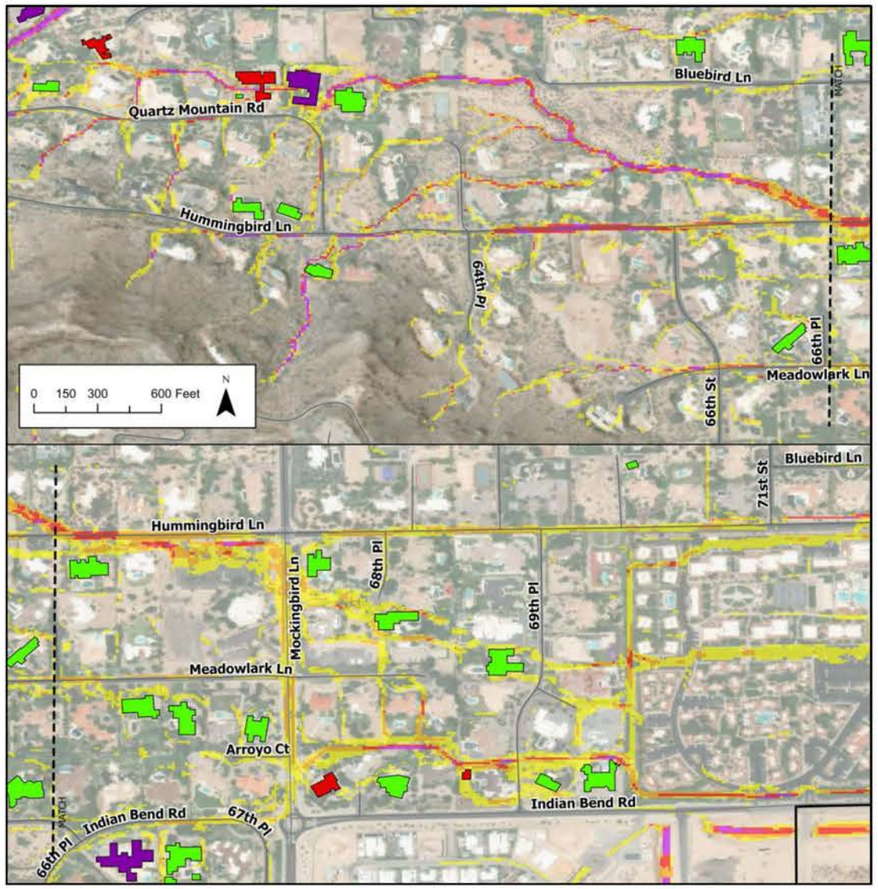
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Sedimentation Basin*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Impacted Structures	*20*
Number of Hydraulic Structures Identified as Undersized	0
Maximum Depth on Roads	1.16 ft
Streets Overtopped by > 0.5 ft	1 Local; 2 Collector
Potential to Impact Emergency Service Access	No
Flood Hazard Designation	Moderate Flooding

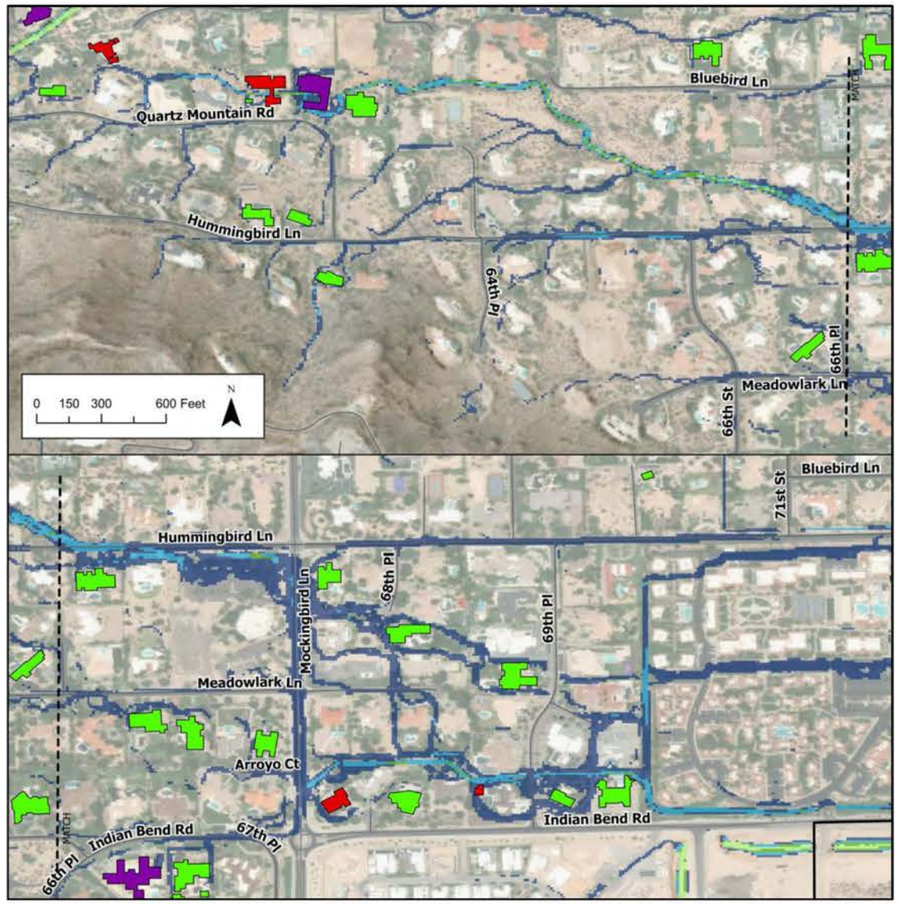
AREA D EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA D SEDIMENT DEPOSTION POTENTIAL MAP

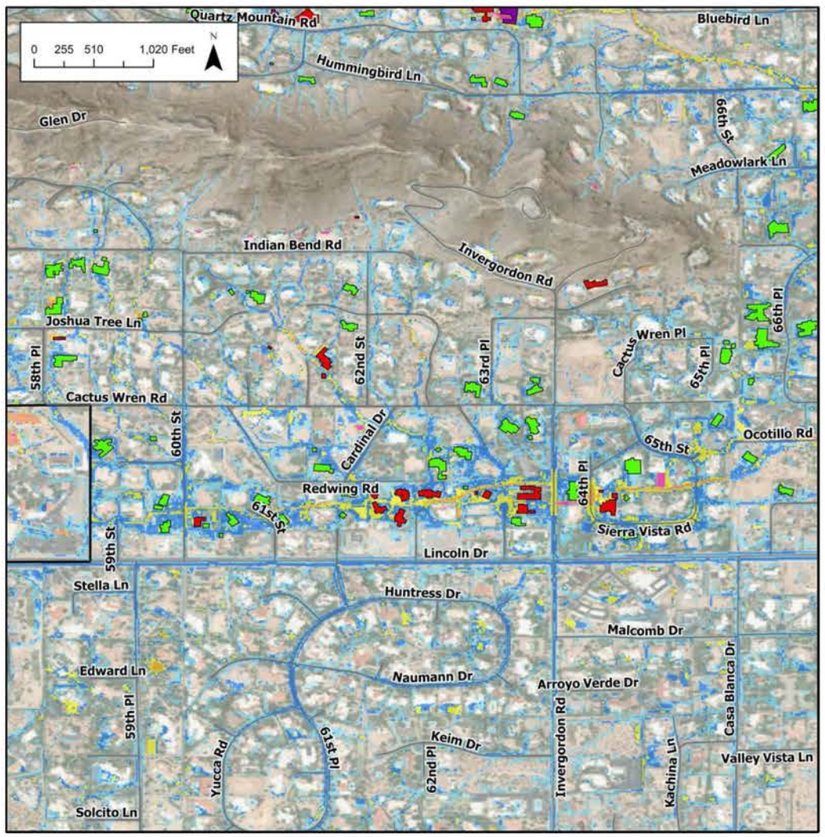


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: E

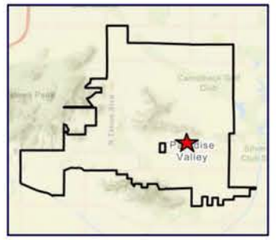


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

100yr, 6hr Max Flow Depths (ft)
- 0.0 - 0.25
- 0.26 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.01 - 27

LOCATION DESCRIPTION

LOCATION: *Lincoln Drive from 58th Place to 66th Place*



PROBLEM DESCRIPTION:

- *Identified as a problem in the 2017 LIBW ADMP and remains a flood hazard*
- *Flows from Mummy Mountain collect and travel east through the neighborhood just north of Lincoln Dr. and overtops Invergordon Rd and 60th St by over 1 ft*

FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *Invergordon Rd storm drain/dry utilities, 60th St dry utilities*

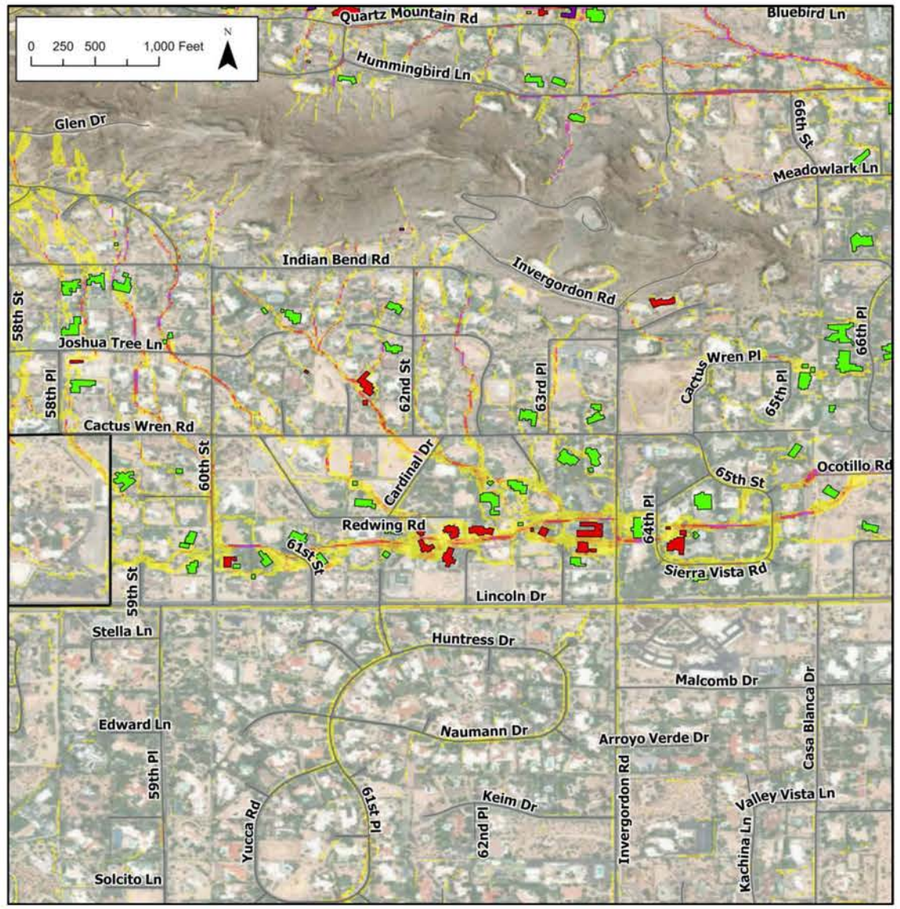
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Permeable Pavement*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Impacted Structures	*52*
Number of Hydraulic Structures Identified as Undersized	0
Maximum Depth on Roads	1.19 ft
Streets Overtopped by > 0.5 ft	5 Local; 2 Collector
Potential to Impact Emergency Service Access	No
Flood Hazard Designation	Moderate Flooding

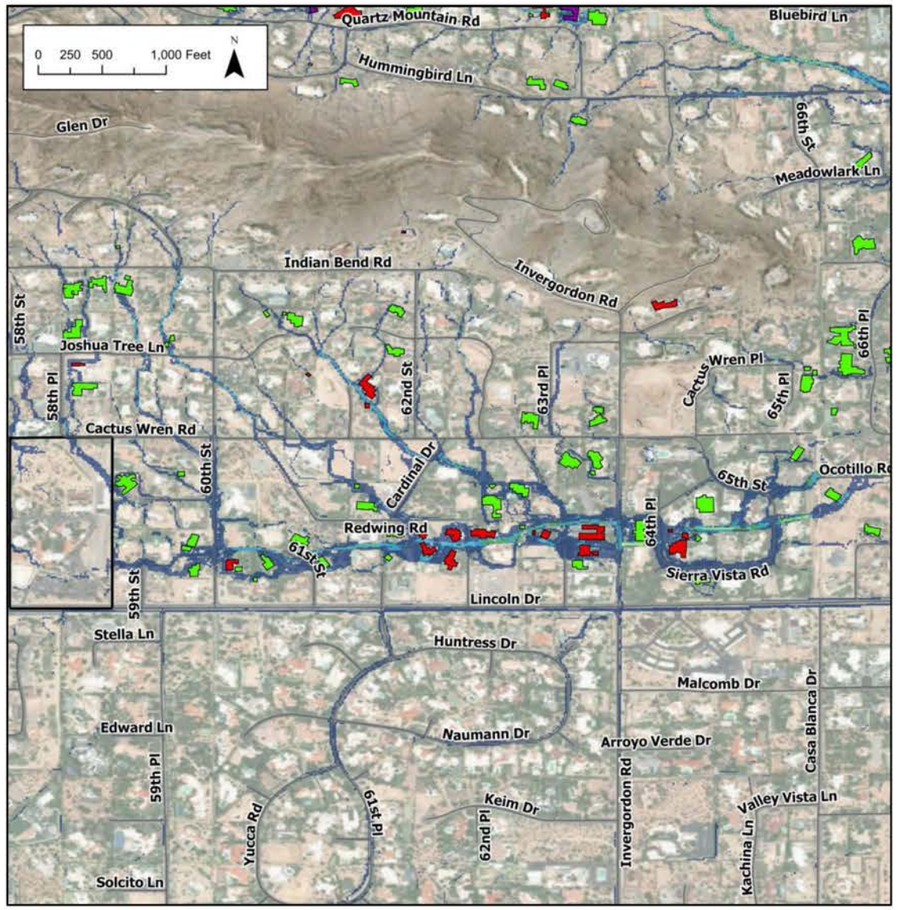
AREA E EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA E SEDIMENT DEPOSTION POTENTIAL MAP

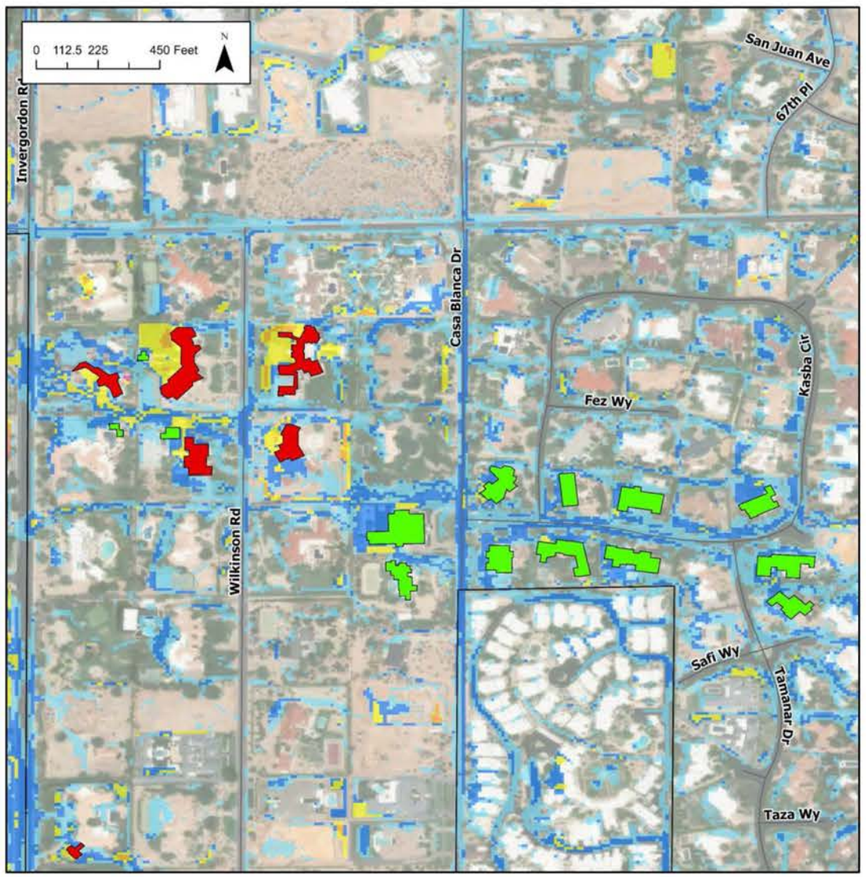


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: F

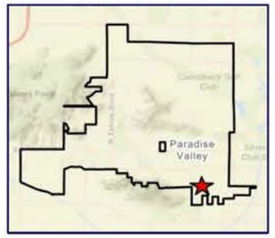


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

100yr, 6hr Max Flow Depths (ft)
- 0.0 - 0.25
- 0.26 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.01 - 27

LOCATION DESCRIPTION

LOCATION: *Jackrabbit Road from Invergordon Road to 67th Place*



PROBLEM DESCRIPTION:

- *Identified as a problem in the 2017 LIBW ADMP and remains a flooding nuisance*
- *Flows from Camelback Mountain collect and travel east through the neighborhood just South of Jackrabbit Rd.*

FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *Casa Blanca Dr dry utilities*

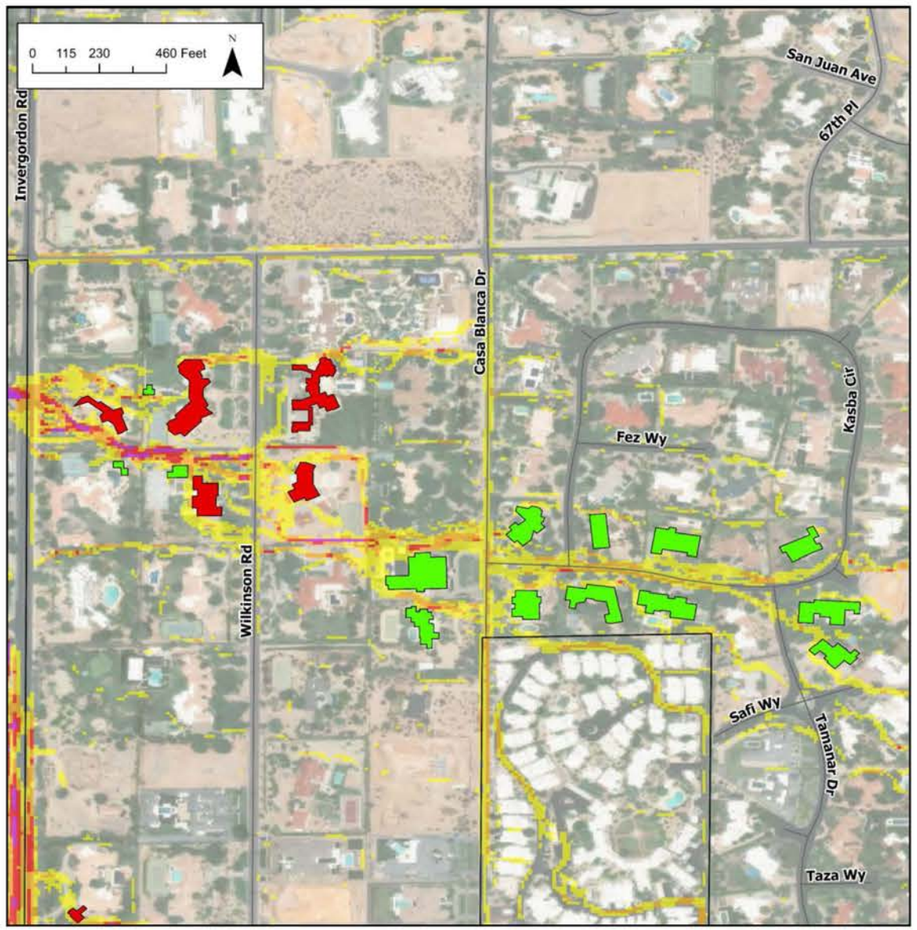
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Impacted Structures	*15*
Number of Hydraulic Structures Identified as Undersized	0
Maximum Depth on Roads	0.8 ft
Streets Overtopped by > 0.5 ft	5 Local; 0 Collector
Potential to Impact Emergency Service Access	No
Flood Hazard Designation	Nuisance Flooding

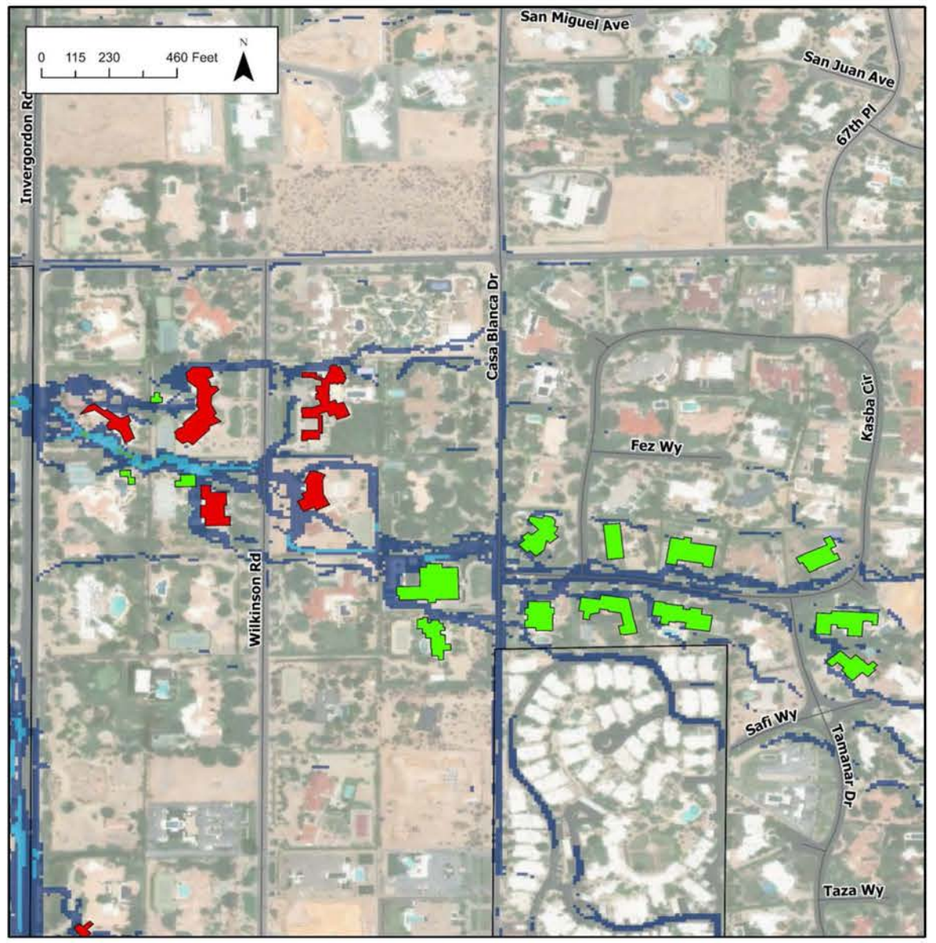
AREA F EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA F SEDIMENT DEPOSTION POTENTIAL MAP

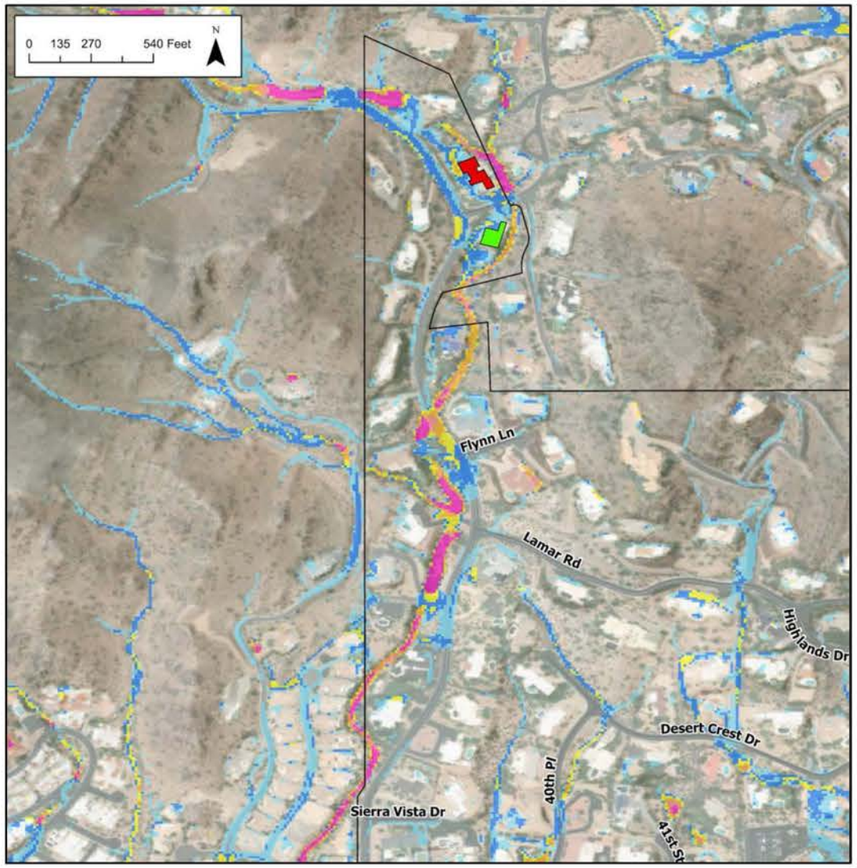


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: G



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

100yr, 6hr Max Flow Depths (ft)
- 0.0 - 0.25
- 0.26 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.01 - 27

LOCATION DESCRIPTION

LOCATION: *40th Street and Flynn Lane*

PROBLEM DESCRIPTION:

- *Identified as a problem in the 2020 Cudia City Wash ADMS and remains a flooding hazard*
- *Flows from Piestewa Mountain overtop 40th St by over 2 ft*

FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *40th St dry utilities*

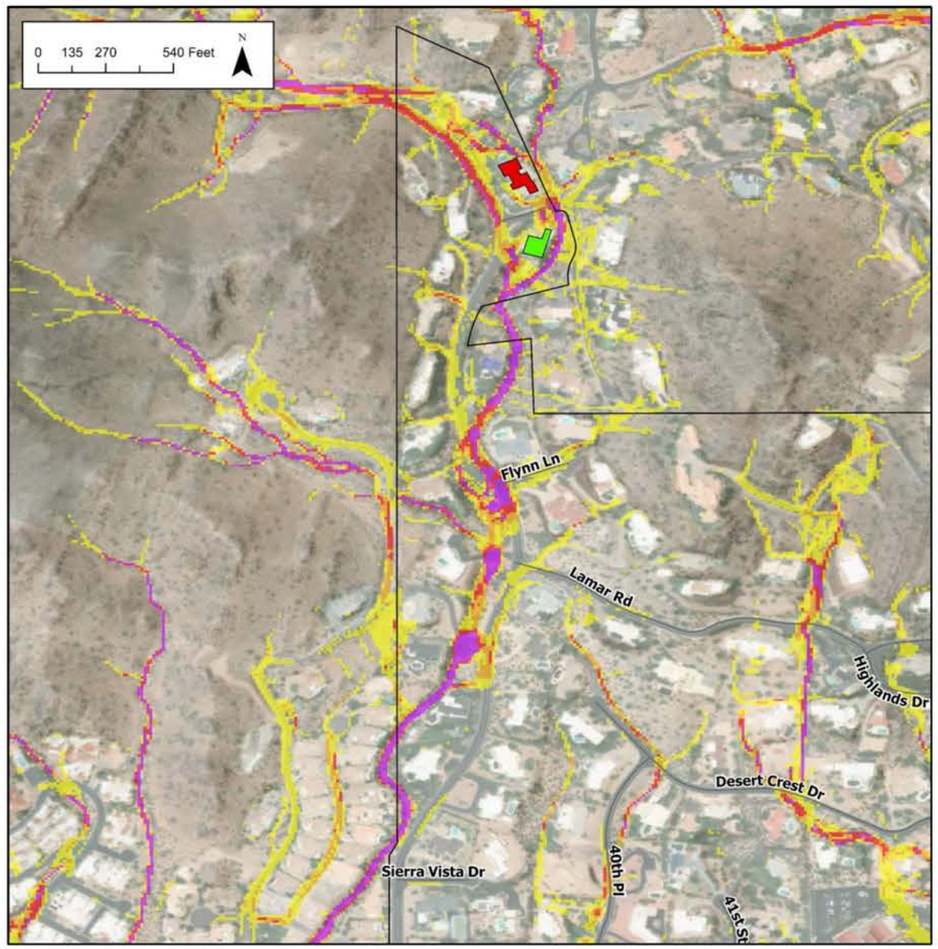
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Culverts*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Impacted Structures	*2*
Number of Hydraulic Structures Identified as Undersized	3
Maximum Depth on Roads	2.21 ft
Streets Overtopped by > 0.5 ft	2 Local; 0 Collector
Potential to Impact Emergency Service Access	No
Flood Hazard Designation	Moderate Flooding

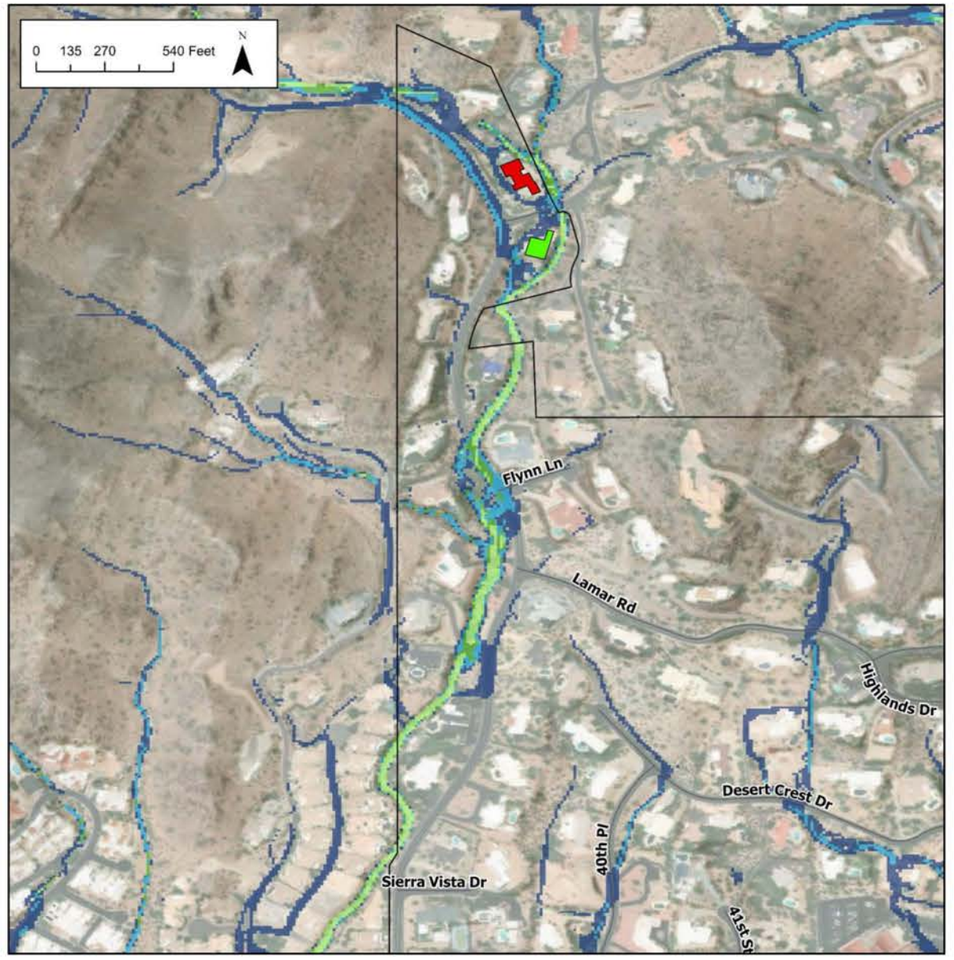
AREA G EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA G SEDIMENT DEPOSTION POTENTIAL MAP

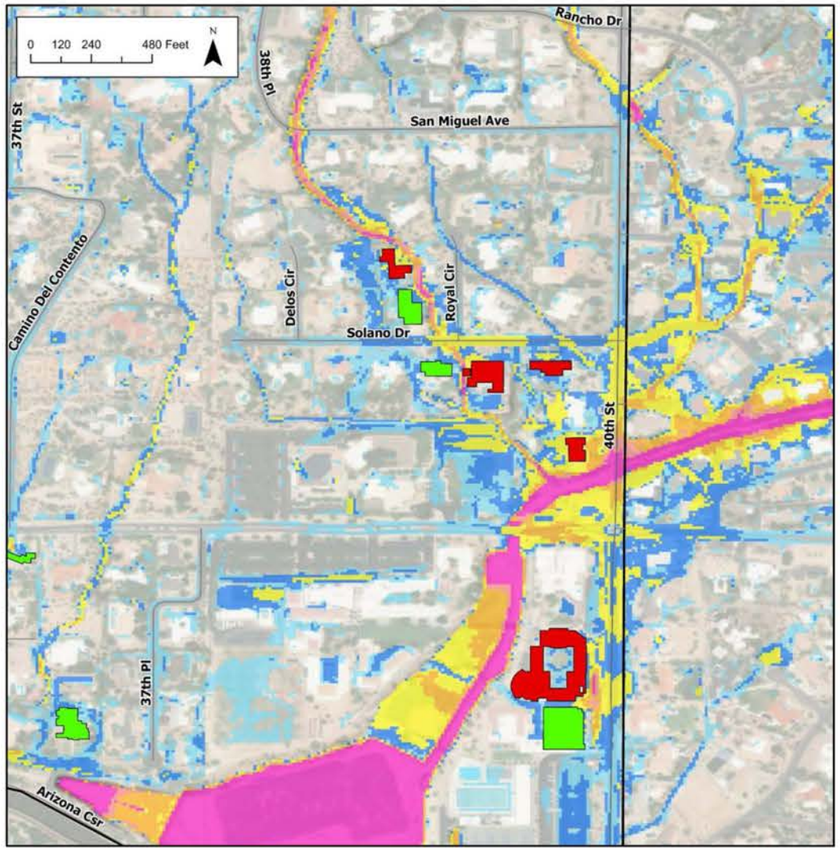


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: H



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

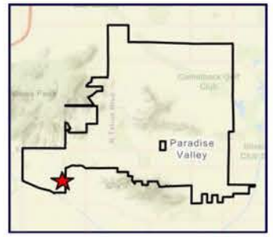
100yr, 6hr Max Flow Depths (ft)
- 0.0 - 0.25
- 0.26 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.01 - 27

LOCATION DESCRIPTION

LOCATION: *40th Street and Stanford Drive*

PROBLEM DESCRIPTION:

- *Identified as a problem in the 2020 Cudia City Wash ADMS and remains a significant flooding hazard. Vehicles have been stuck in the low water crossing during flooding*
- *Cudia City Wash overtop 40th St by greater than 4 ft*
- *Road closures during major flood events*



FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *40th St and Stanford Dr dry utilities*

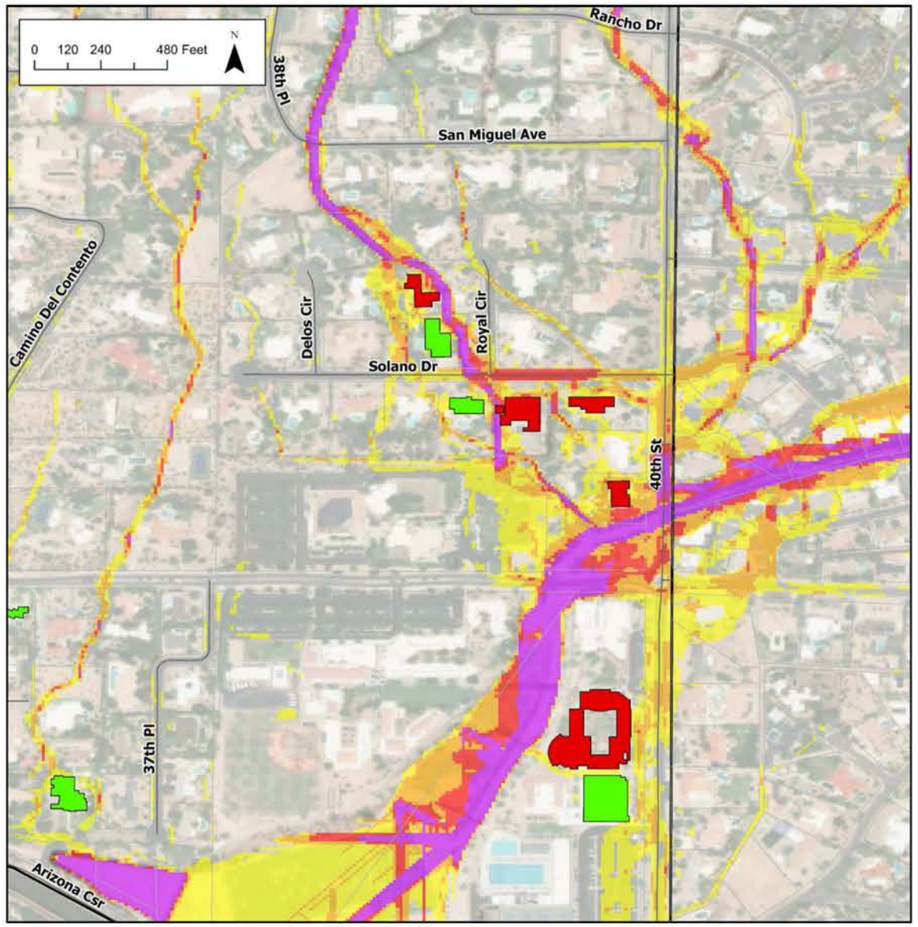
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Culverts*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Impacted Structures	*9*
Number of Hydraulic Structures Identified as Undersized	1
Maximum Depth on Roads	5.23 ft
Streets Overtopped by > 0.5 ft	2 Local; 2 Collector
Potential to Impact Emergency Service Access	Yes
Flood Hazard Designation	Severe Flooding

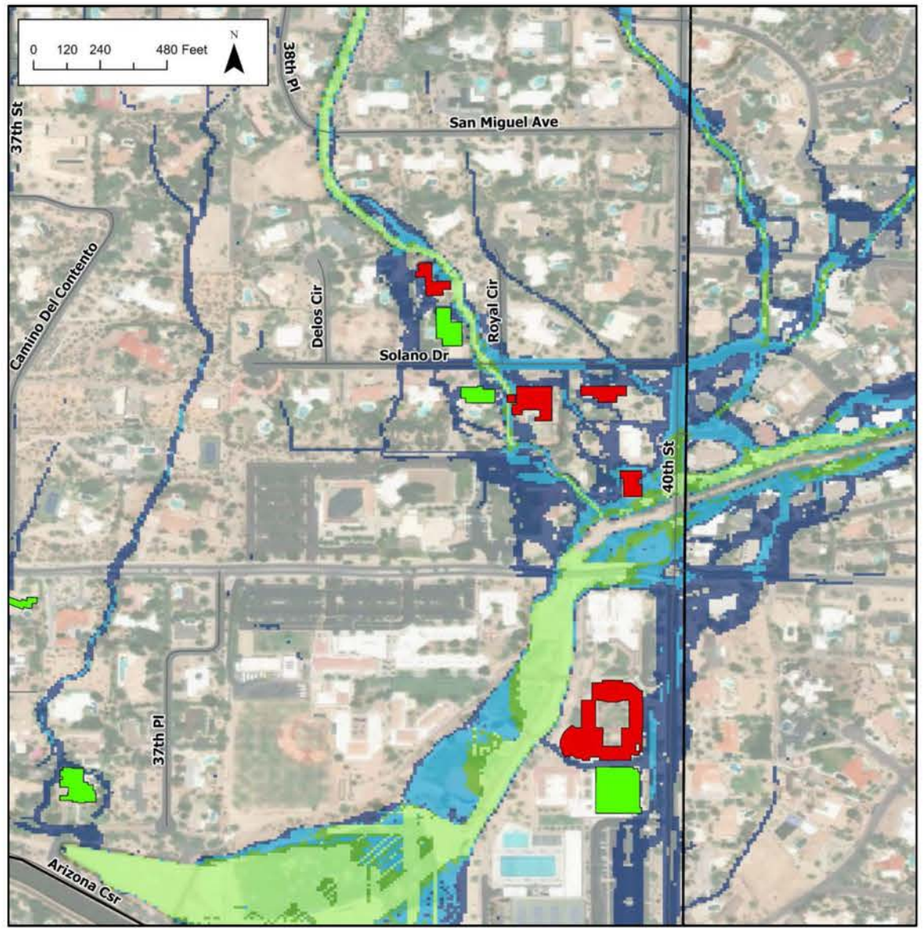
AREA H EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA H SEDIMENT DEPOSTION POTENTIAL MAP

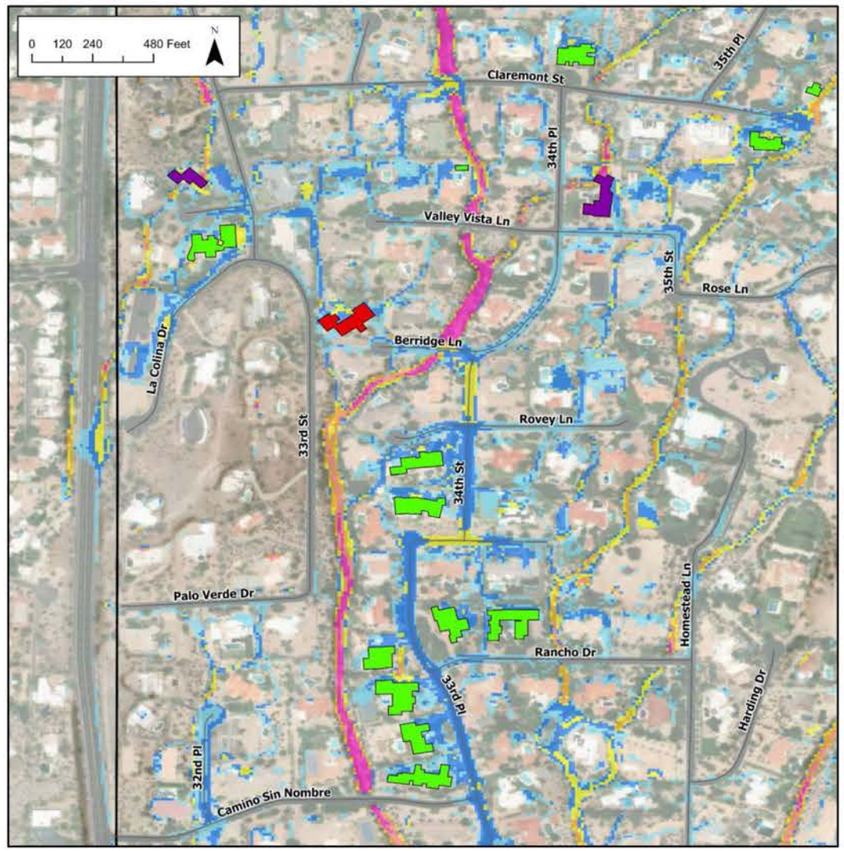


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: I

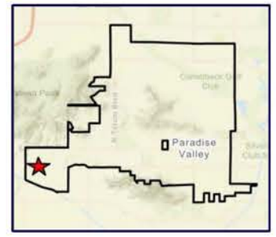


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

100yr, 6hr Max Flow Depths (ft)
- 0.0 - 0.25
- 0.26 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.01 - 27

LOCATION DESCRIPTION

LOCATION: *Claremont Street and 34th Place*



PROBLEM DESCRIPTION:

- *Identified as a problem in the 2020 Cudia City Wash ADMS and remains a nuisance flooding hazard.*
- *Undersized existing infrastructure*

FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *Claremont Street dry utilities*

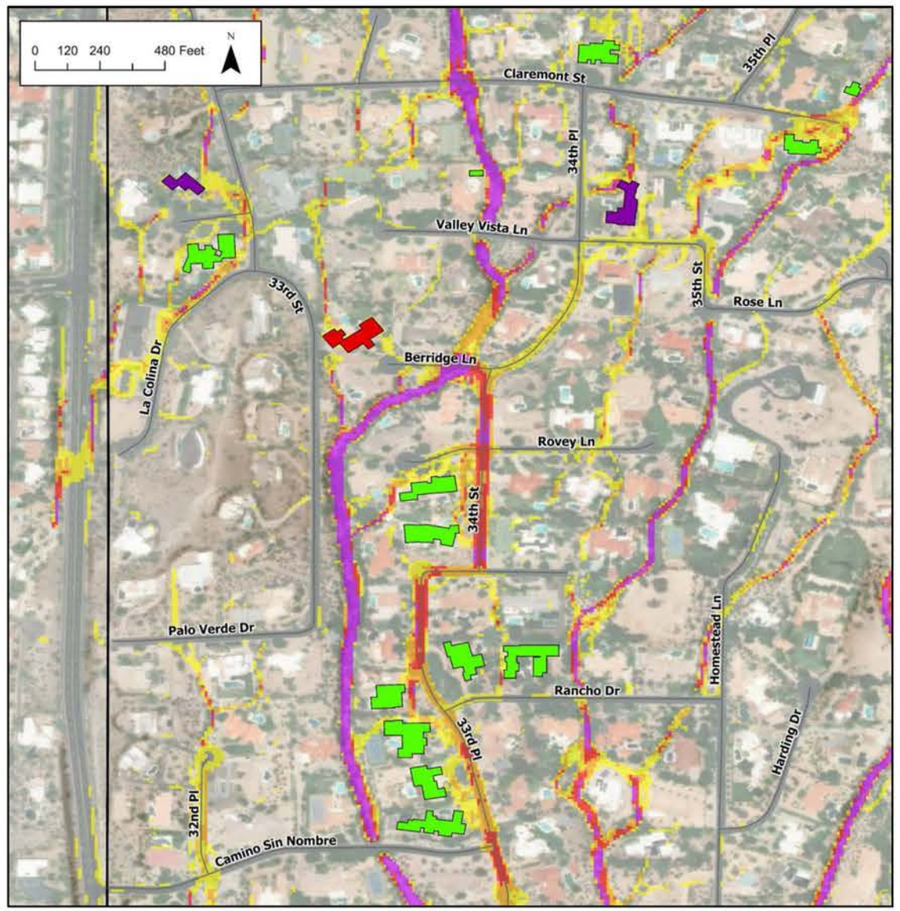
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Culverts*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Impacted Structures	*10*
Number of Hydraulic Structures Identified as Undersized	3
Maximum Depth on Roads	0.8 ft
Streets Overtopped by > 0.5 ft	4 Local; 0 Collector
Potential to Impact Emergency Service Access	No
Flood Hazard Designation	Nuisance Flooding

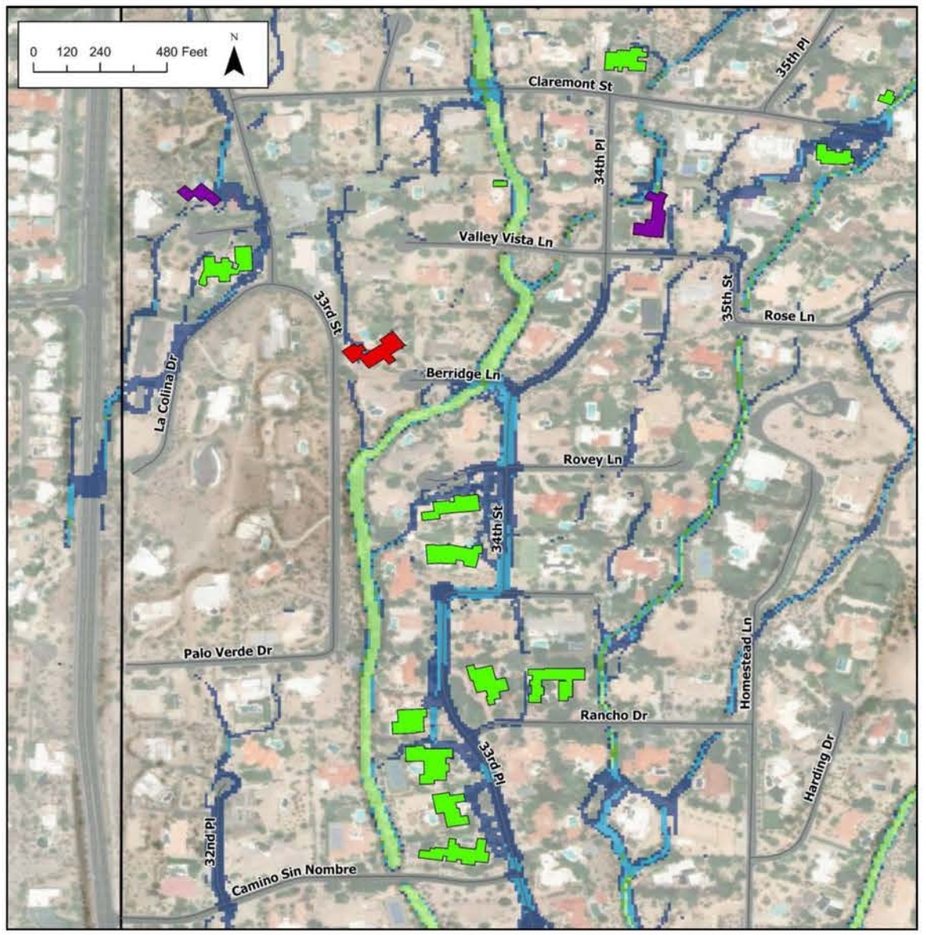
AREA I EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA I SEDIMENT DEPOSTION POTENTIAL MAP

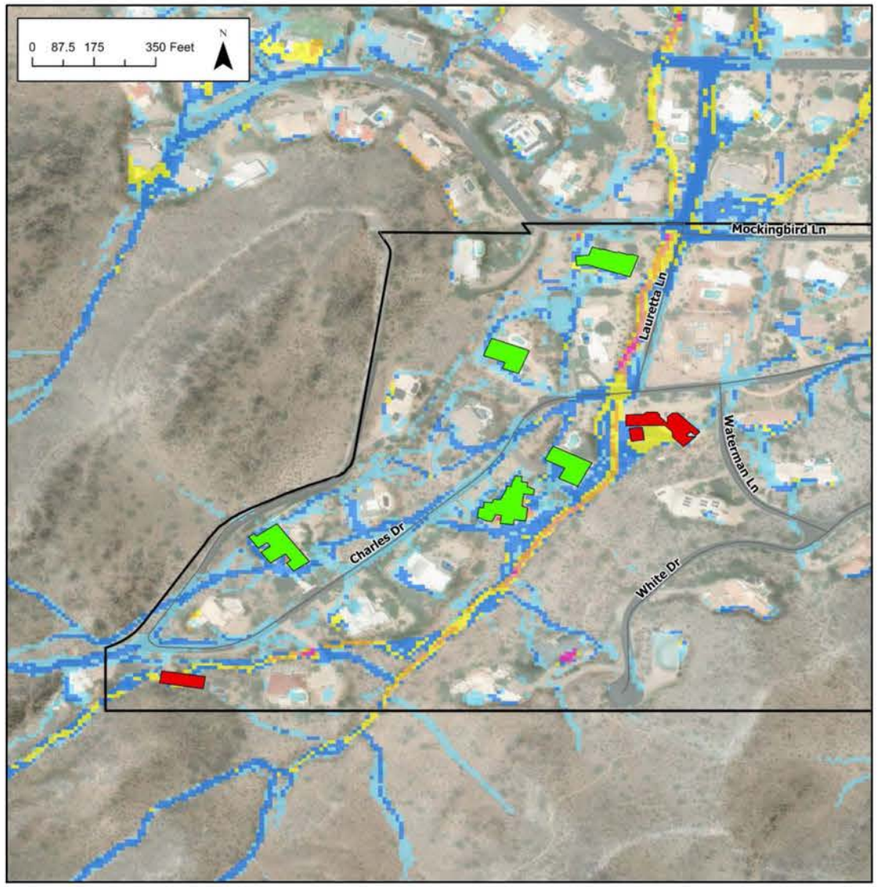


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: J



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

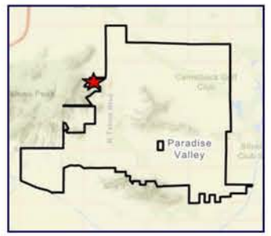
100yr, 6hr Max Flow Depths (ft)
- 0.0 - 0.25
- 0.26 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.01 - 27

LOCATION DESCRIPTION

LOCATION: *40th Street and Charles Drive and Lauretta Lane*

PROBLEM DESCRIPTION:

- *Identified as a problem in the 2019 Drainage Improvement Areas Technical Memorandum*
- *The existing low water crossing conveys runoff from the Phoenix Mountain Preserve. The crossing has led to erosion and sediment deposition that required routine roadway maintenance.*



FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *Charles Drive dry utilities*

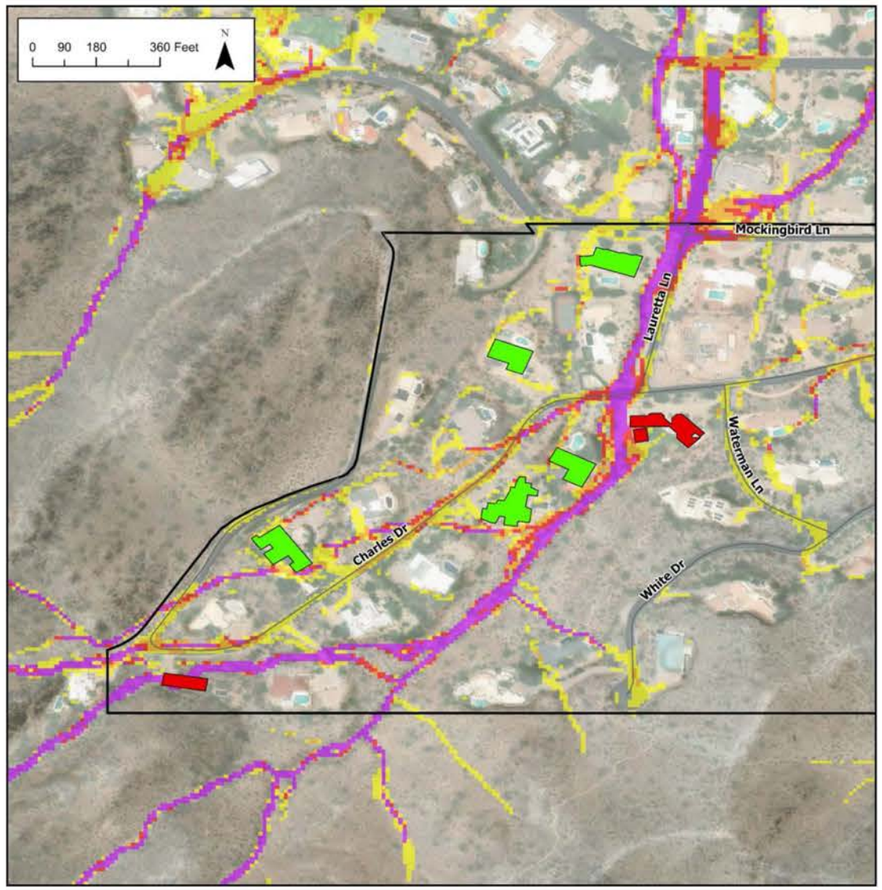
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Culverts*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Impacted Structures	*8*
Number of Hydraulic Structures Identified as Undersized	0
Maximum Depth on Roads	1.16 ft
Streets Overtopped by > 0.5 ft	3 Local; 0 Collector
Potential to Impact Emergency Service Access	No
Flood Hazard Designation	Moderate Flooding

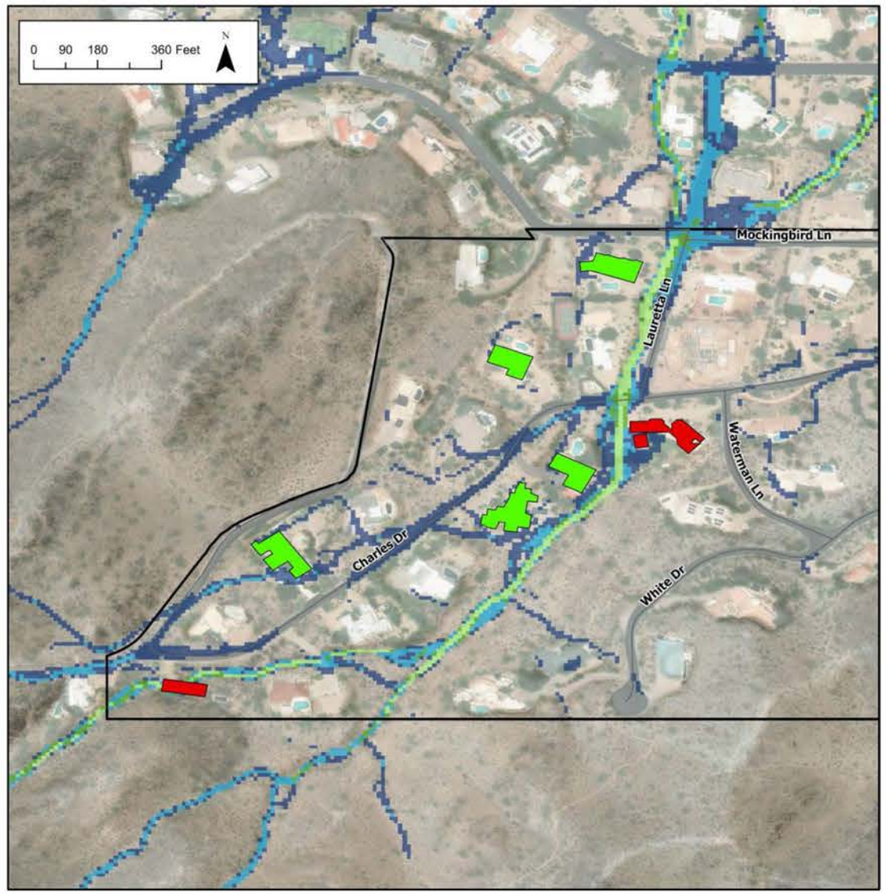
AREA J EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA J SEDIMENT DEPOSTION POTENTIAL MAP

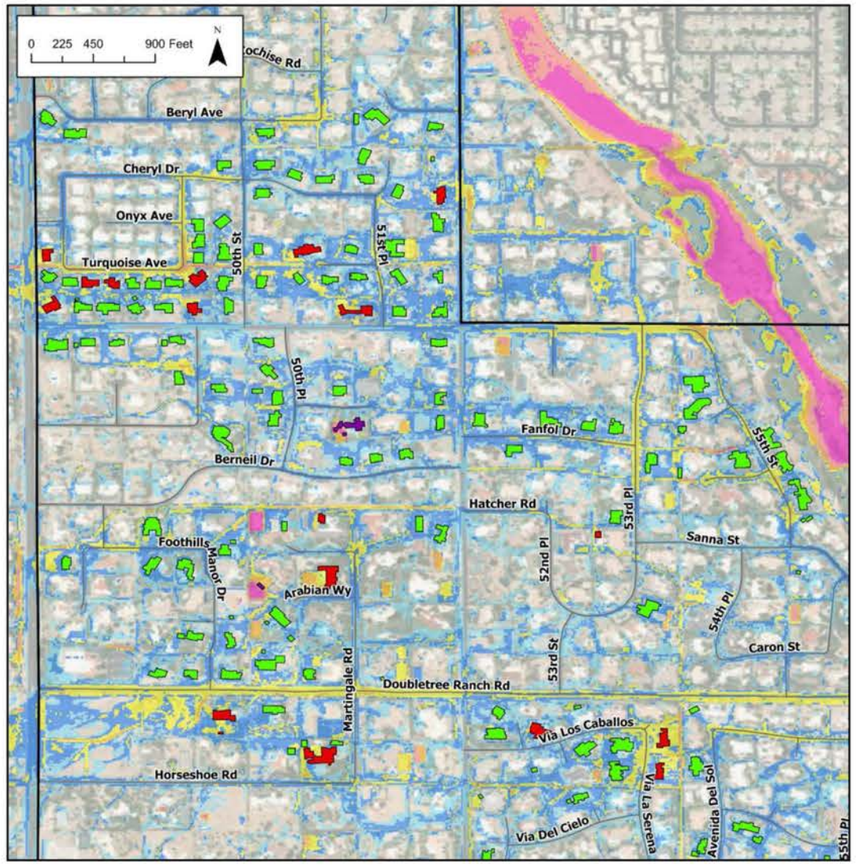


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

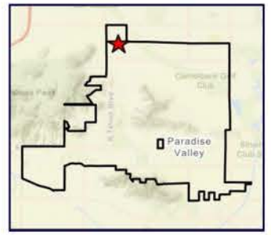
PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: K



LOCATION DESCRIPTION

LOCATION: *52nd St and Doubletree Ranch Rd*



PROBLEM DESCRIPTION:

- *Significant flows coming from Piestewa Mountain flow through the neighborhood in Northern Paradise Valley, especially along Turquoise Ave. Little existing infrastructure is currently present to relieve the flooding in this area*
- *In the southern section of Area K, Existing storm drain was identified as under sized*

FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *Doubletree Ranch Rd storm drains, 52nd St dry utilities*

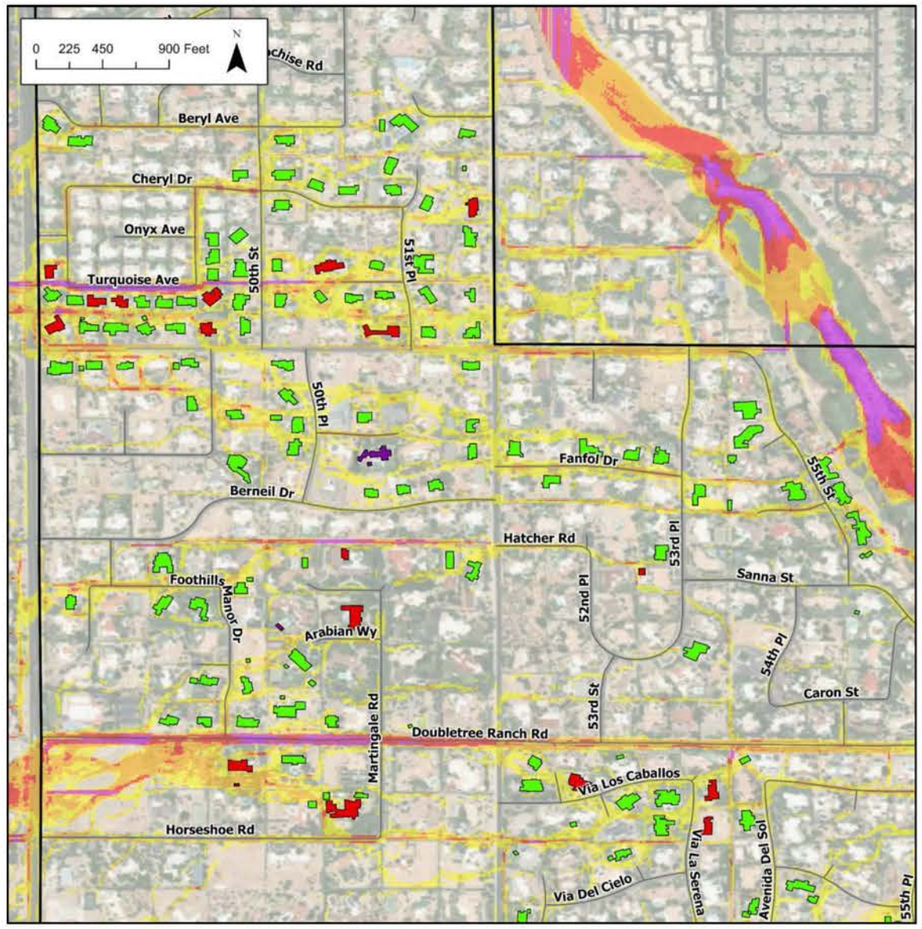
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Culverts*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Impacted Structures	*141*
Number of Hydraulic Structures Identified as Undersized	1
Maximum Depth on Roads	2.37 ft
Streets Overtopped by > 0.5 ft	13 Local; 2 Collector
Potential to Impact Emergency Service Access	No
Flood Hazard Designation	Severe Flooding

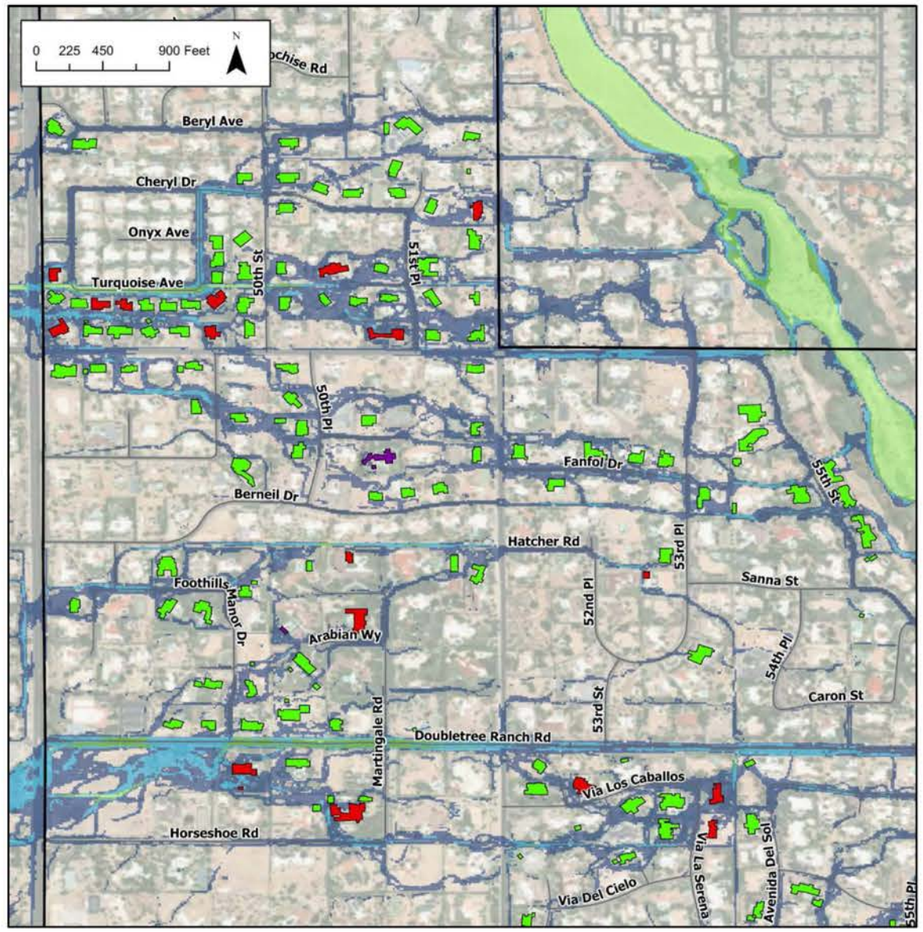
AREA K EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA K SEDIMENT DEPOSTION POTENTIAL MAP

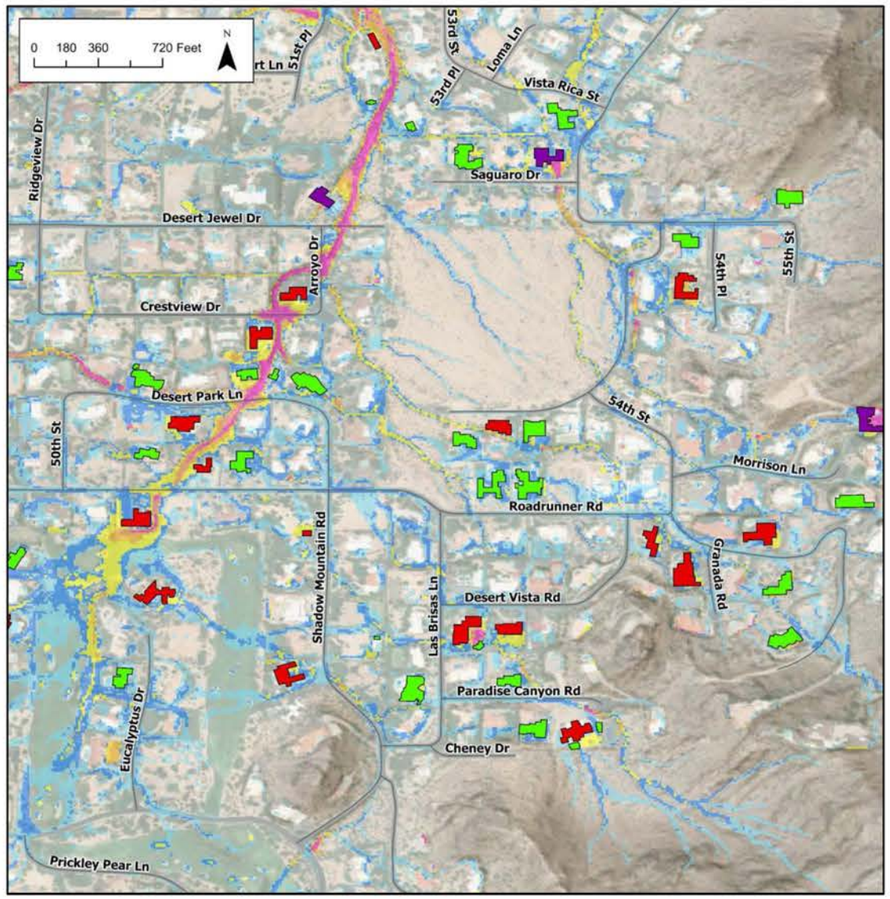


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: L



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

100yr, 6hr Max Flow Depths (ft)
- 0.0 - 0.25
- 0.26 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.01 - 27

LOCATION DESCRIPTION

LOCATION: *40th Desert Jewel Dr and Arroyo Dr*

PROBLEM DESCRIPTION:

- *Identified as a problem in the 2019 Drainage Improvement Area Technical Memorandum*
- *Existing low water crossings are undersized to carry the discharge from Cherokee Wash and lead to frequent road maintenance*

FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *Desert Jewel Dr, Arroyo Dr, and Crestview Dr dry utilities*

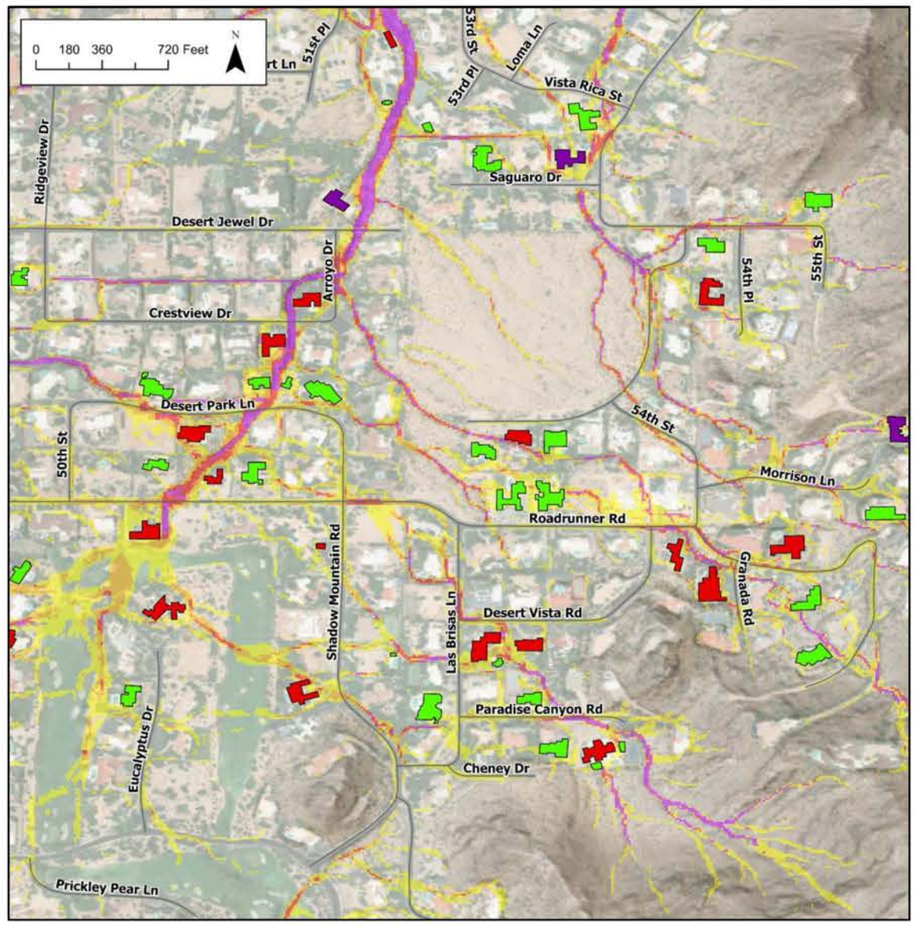
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Culverts*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Impacted Structures	*35*
Number of Hydraulic Structures Identified as Undersized	1
Maximum Depth on Roads	6.7 ft
Streets Overtopped by > 0.5 ft	5 Local; 0 Collector
Potential to Impact Emergency Service Access	Yes
Flood Hazard Designation	Severe Flooding

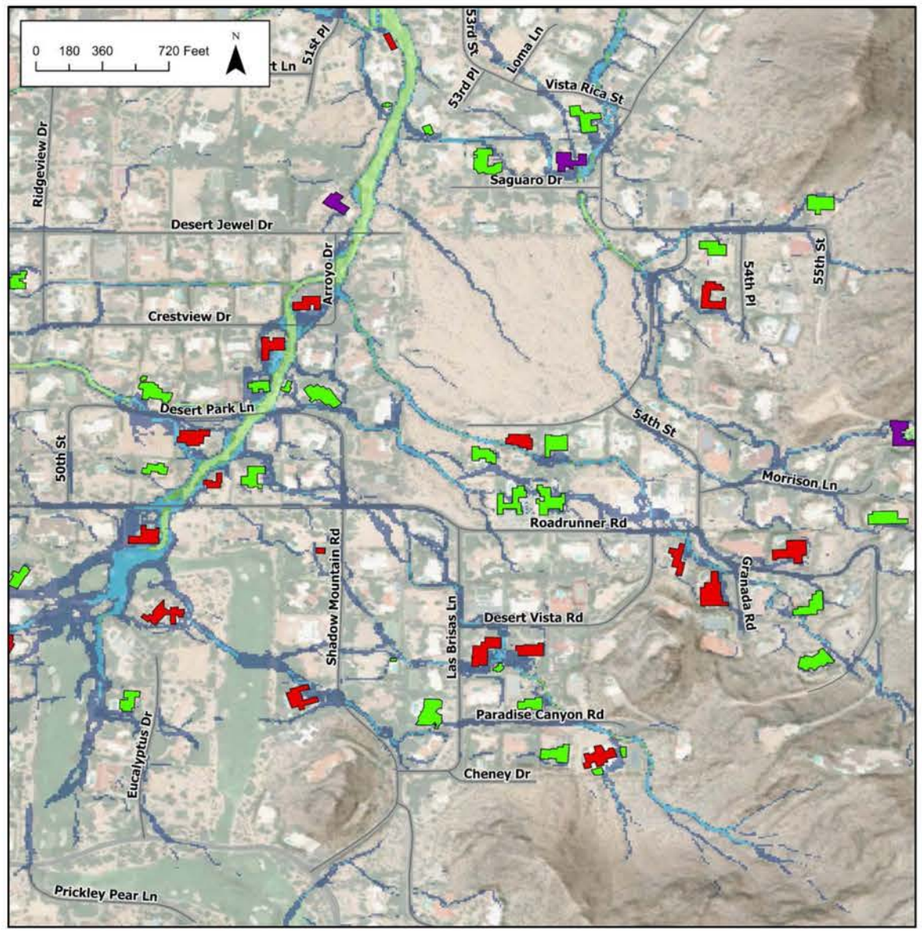
AREA L EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA L SEDIMENT DEPOSTION POTENTIAL MAP

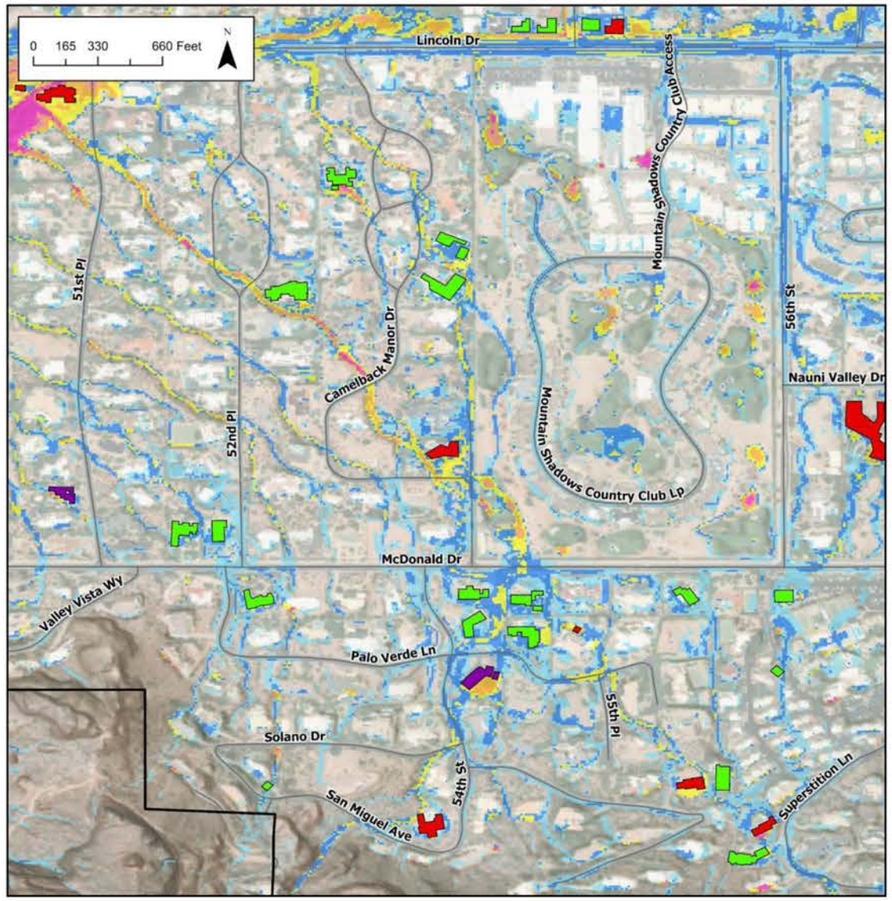


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: M

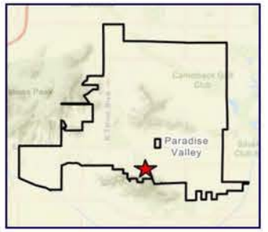


LOCATION DESCRIPTION

LOCATION: *McDonald Drive and 54th Street*

PROBLEM DESCRIPTION:

- *Identified as a problem in the 2020 Cudia City Wash ADMS and the 2019 Drainage Improvement Areas Technical Memorandum, remains a flooding nuisance*
- *Flows from Camelback Mountain overtop local roads, depositing sediment and debris*



FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *McDonald Dr dry utilities*

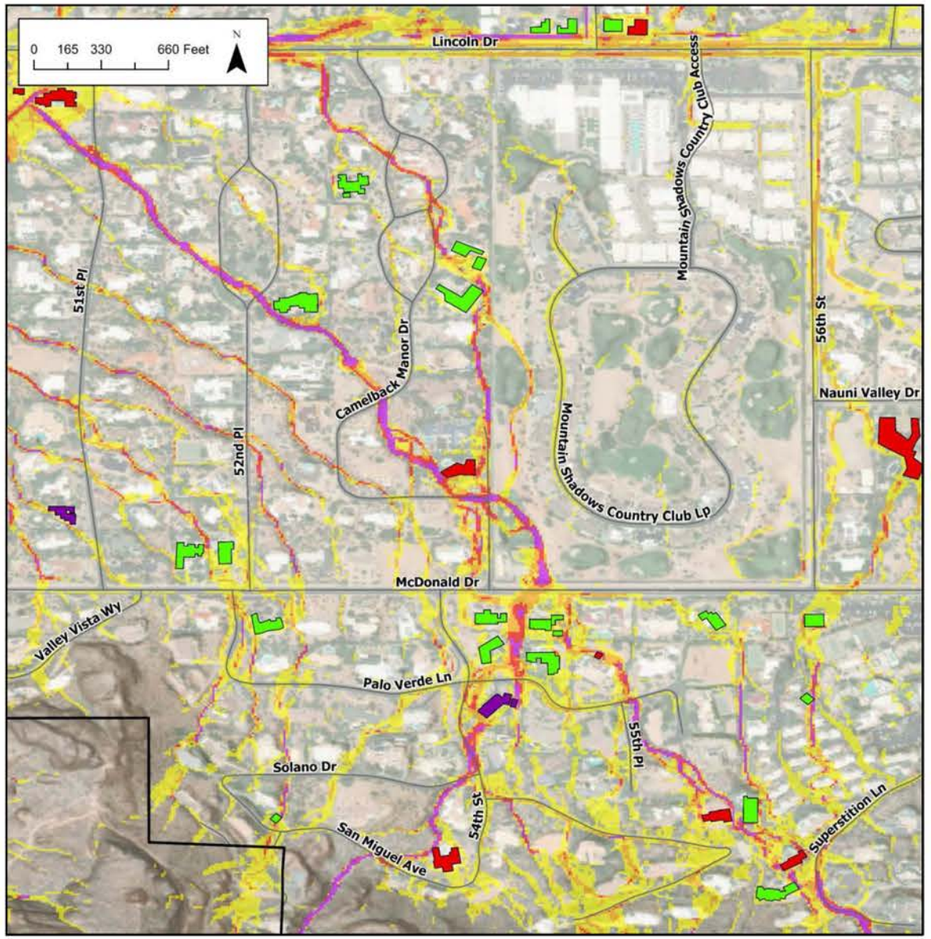
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Culverts*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Impacted Structures	*19*
Number of Hydraulic Structures Identified as Undersized	1
Maximum Depth on Roads	1.0 ft
Streets Overtopped by > 0.5 ft	6 Local; 1 Collector
Potential to Impact Emergency Service Access	No
Flood Hazard Designation	Moderate Flooding

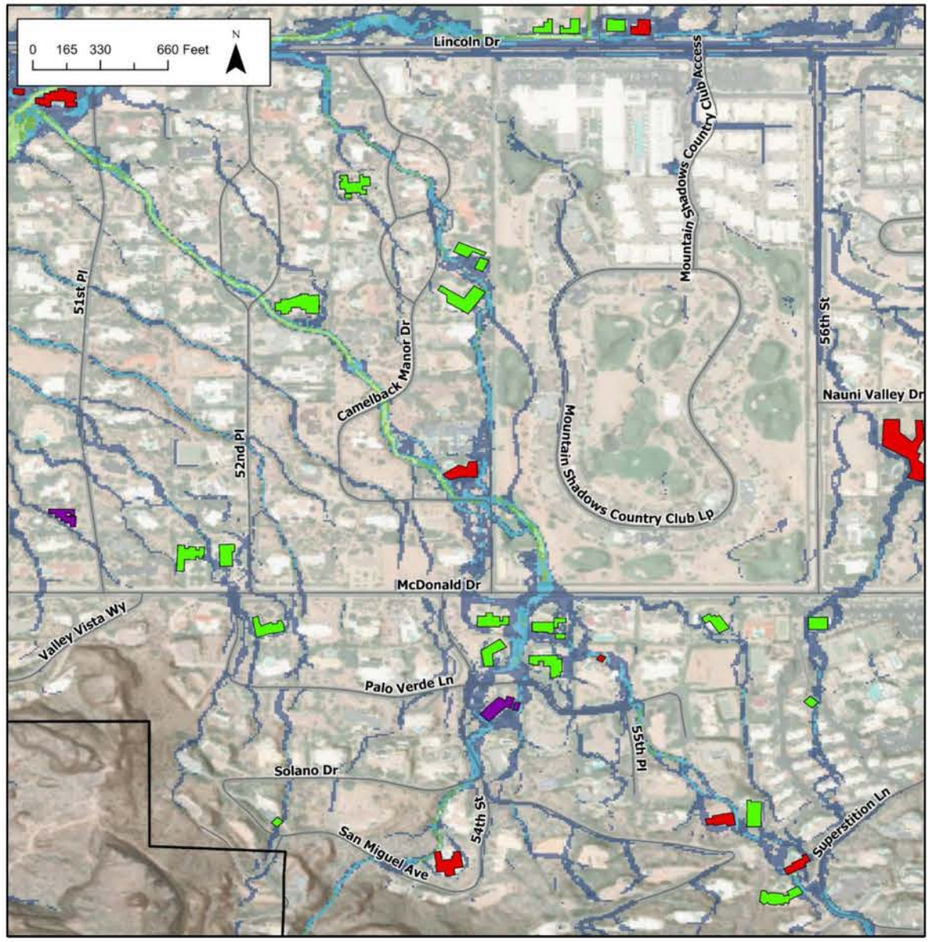
AREA M EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA M SEDIMENT DEPOSTION POTENTIAL MAP

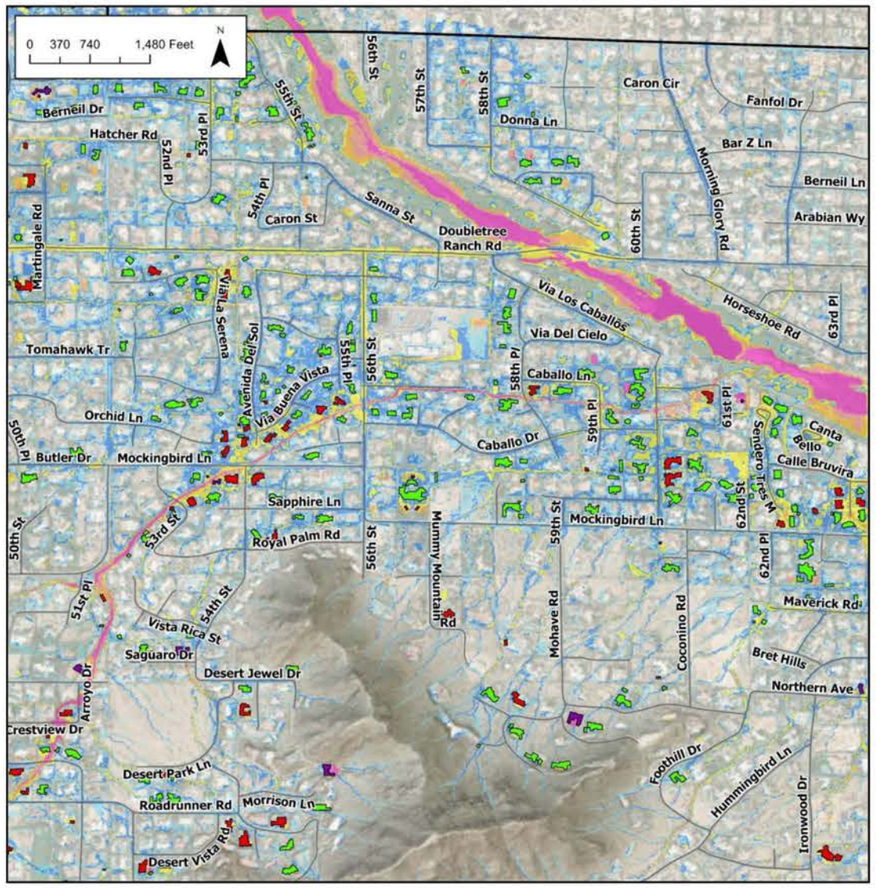


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: N



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

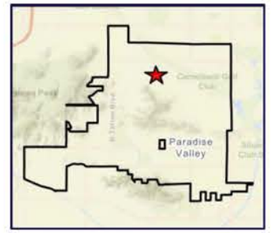
100yr, 6hr Max Flow Depths (ft)
- 0.0 - 0.25
- 0.26 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.01 - 27

LOCATION DESCRIPTION

LOCATION: *56th Street and Mockingbird Lane*

PROBLEM DESCRIPTION:

- *Identified as a problem by residents and town staff. Breakouts from Cherokee Wash flood homes and streets before out falling to Indian Bend Wash*
- *Existing Infrastructure identified as undersized*



FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *Mockingbird Lane and 56th Street storm drains, dry utilities*

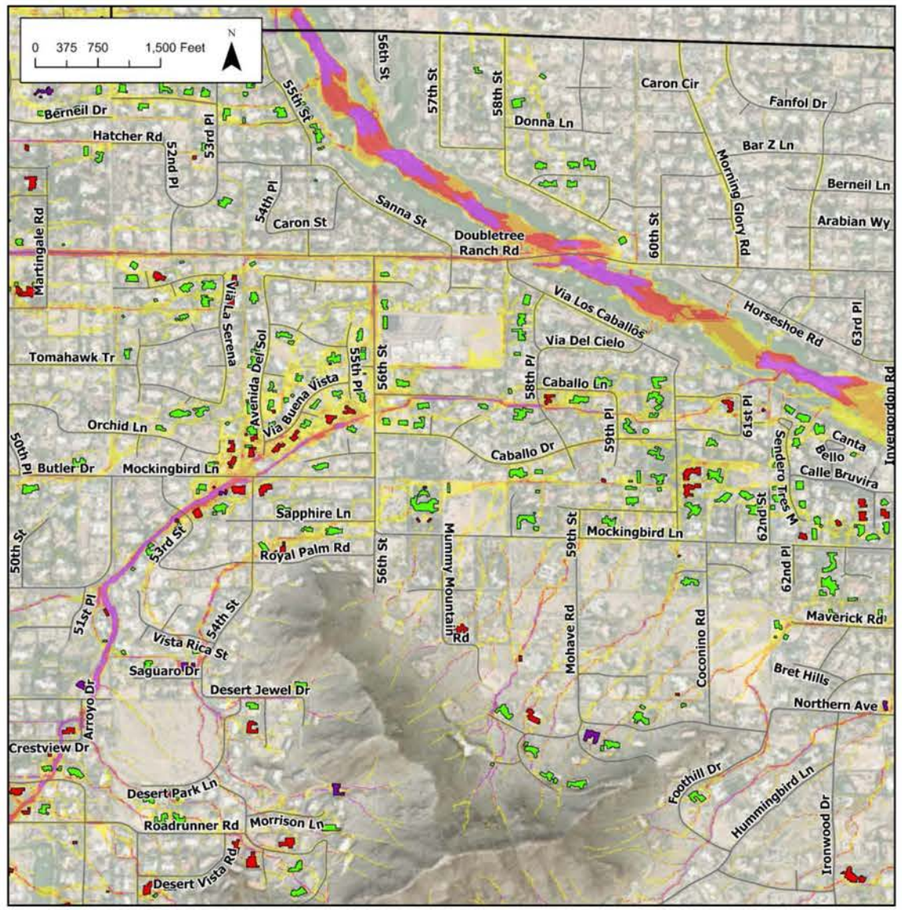
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Culverts*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Impacted Structures	*123*
Number of Hydraulic Structures Identified as Undersized	1
Maximum Depth on Roads	3.67 ft
Streets Overtopped by > 0.5 ft	8 Local; 2 Collector
Potential to Impact Emergency Service Access	Yes
Flood Hazard Designation	Severe Flooding

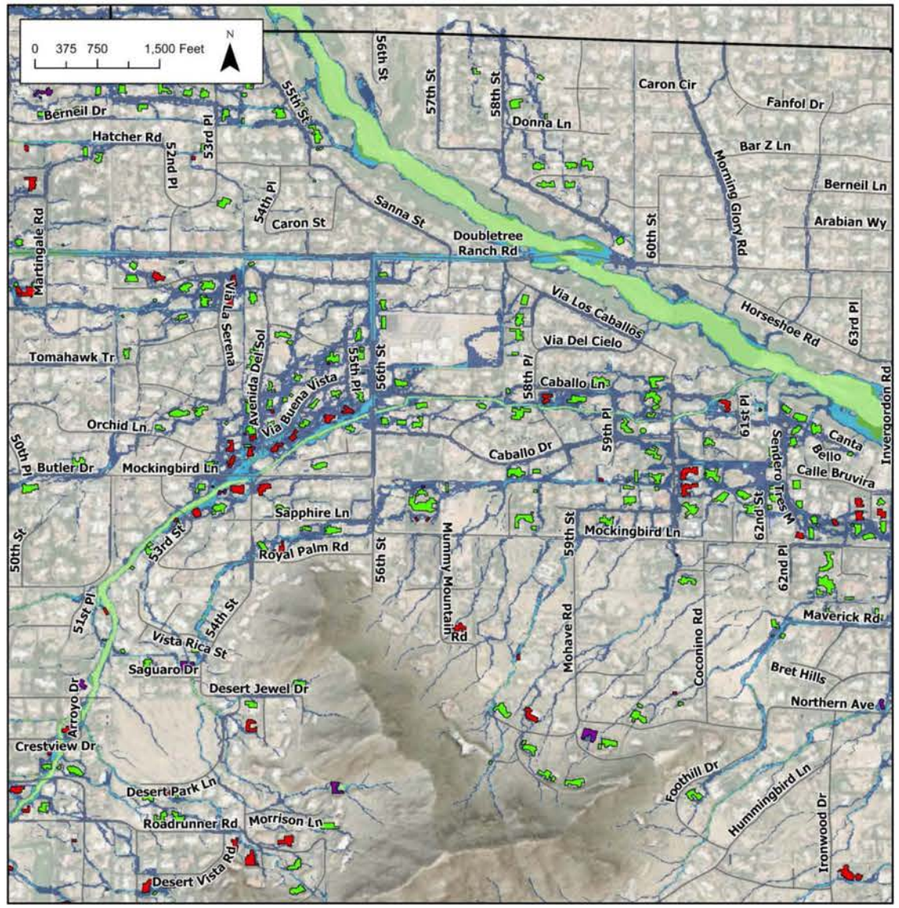
AREA N EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA N SEDIMENT DEPOSTION POTENTIAL MAP

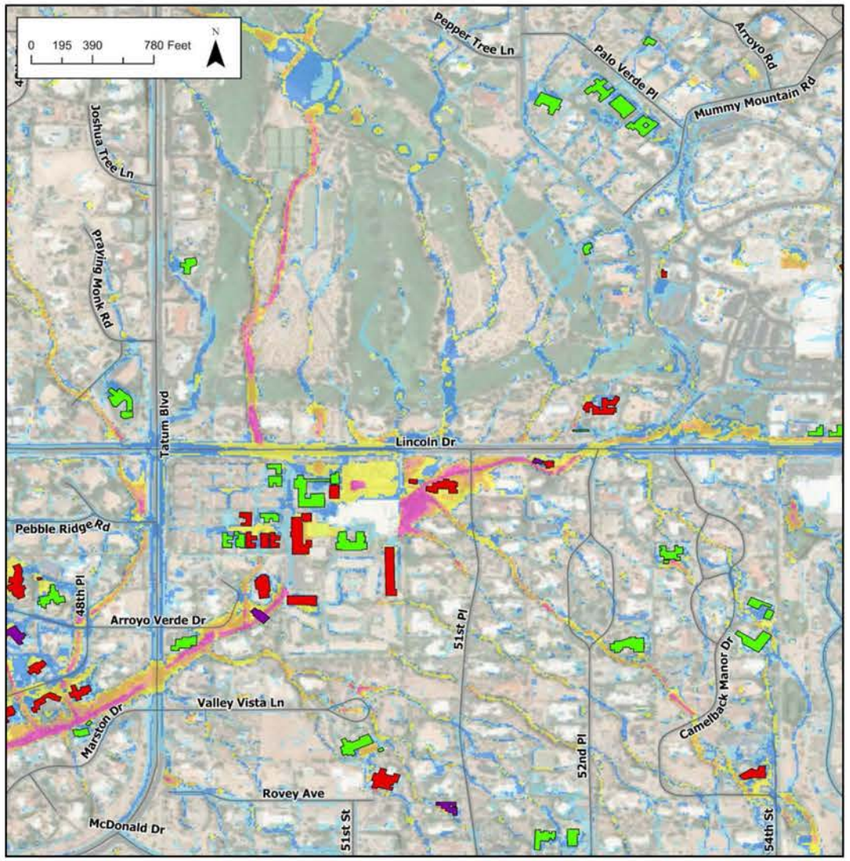


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: O

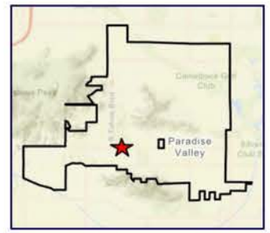


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

100yr, 6hr Max Flow Depths (ft)
- 0.0 - 0.25
- 0.26 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.01 - 27

LOCATION DESCRIPTION

LOCATION: *Lincoln Drive and 51st Place*



PROBLEM DESCRIPTION:

- *Identified as a problem in the 2020 Cudia City Wash ADMS and remains a significant flooding hazard. Sediment deposition makes maintenance and cleanup routine after storm events*
- *Cudia City Wash overtop 40th St by greater than 4 ft*

FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *Lincoln Dr and Tatum Blvd dry utilities*

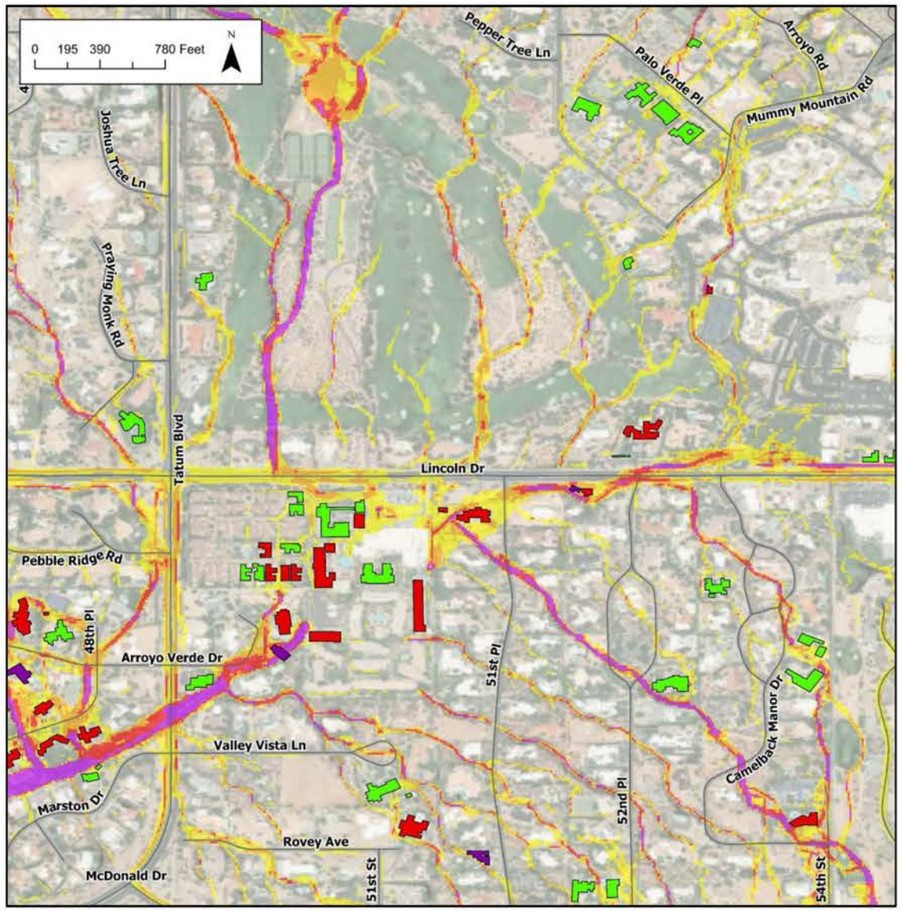
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Culverts*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Impacted Structures	*22*
Number of Hydraulic Structures Identified as Undersized	6
Maximum Depth on Roads	3.18 ft
Streets Overtopped by > 0.5 ft	4 Local; 2 Collector
Potential to Impact Emergency Service Access	No
Flood Hazard Designation	Severe Flooding

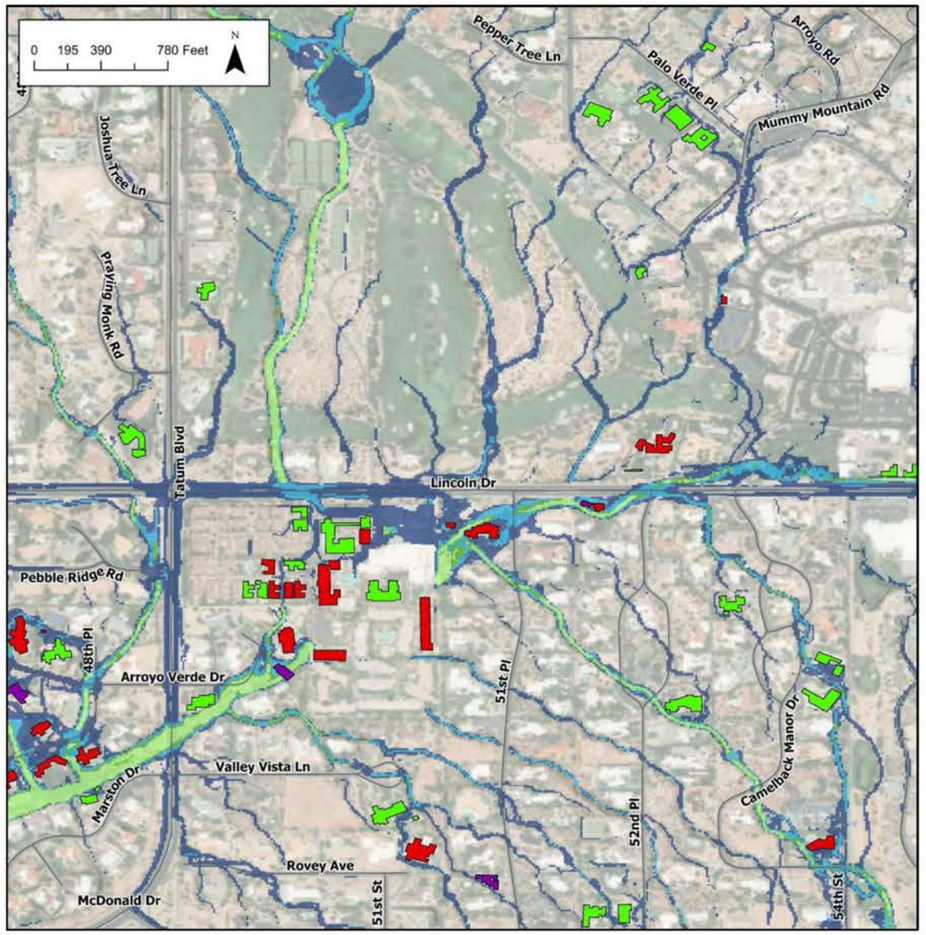
AREA O EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA O SEDIMENT DEPOSTION POTENTIAL MAP

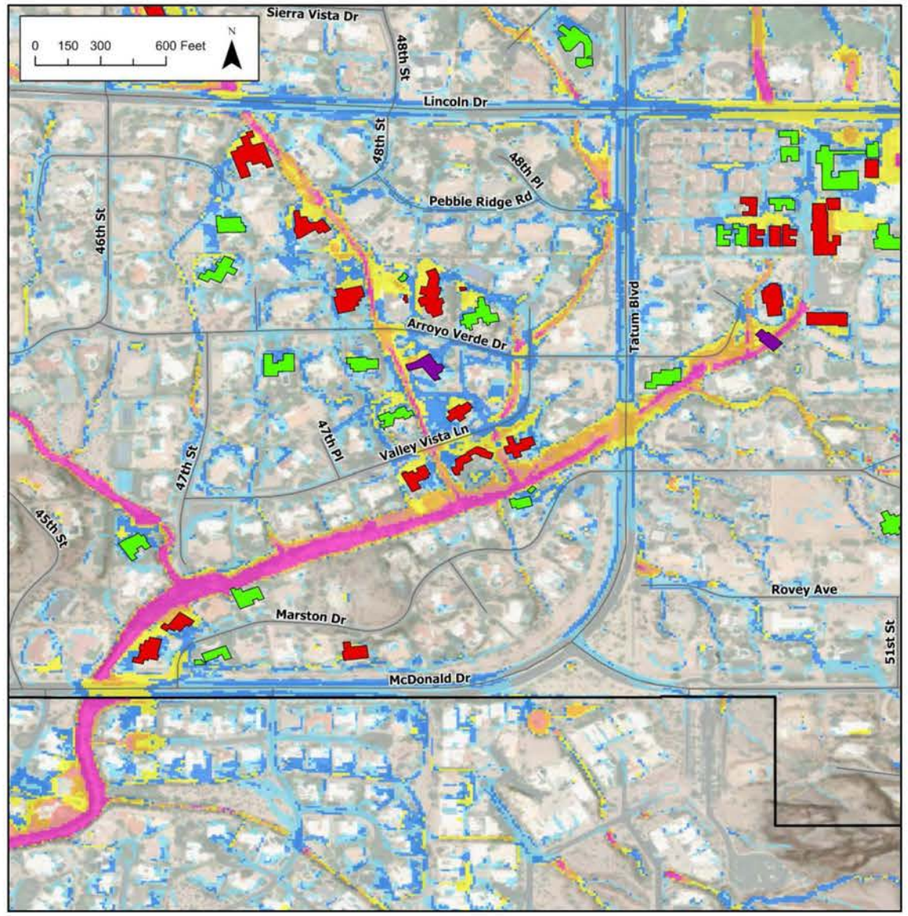


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: P



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

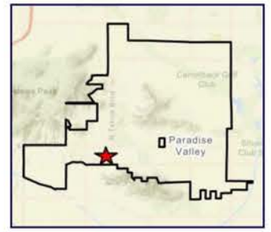
100yr, 6hr Max Flow Depths (ft)
- 0.0 - 0.25
- 0.26 - 0.5
- 0.51 - 1.0
- 1.01 - 2.0
- 2.01 - 3.0
- 3.01 - 4.0
- 4.01 - 27

LOCATION DESCRIPTION

LOCATION: *Tatum Blvd and McDonald Dr*

PROBLEM DESCRIPTION:

- *Identified as a problem in the 2020 Cudia City Wash ADMS and remains a significant flooding hazard.*
- *Existing low water crossing at Tatum Blvd becomes inundated with significant sediment deposition. The existing culvert at McDonald Rd identified as undersized*



FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *Tatum Blvd and McDonald Dr dry utilities*

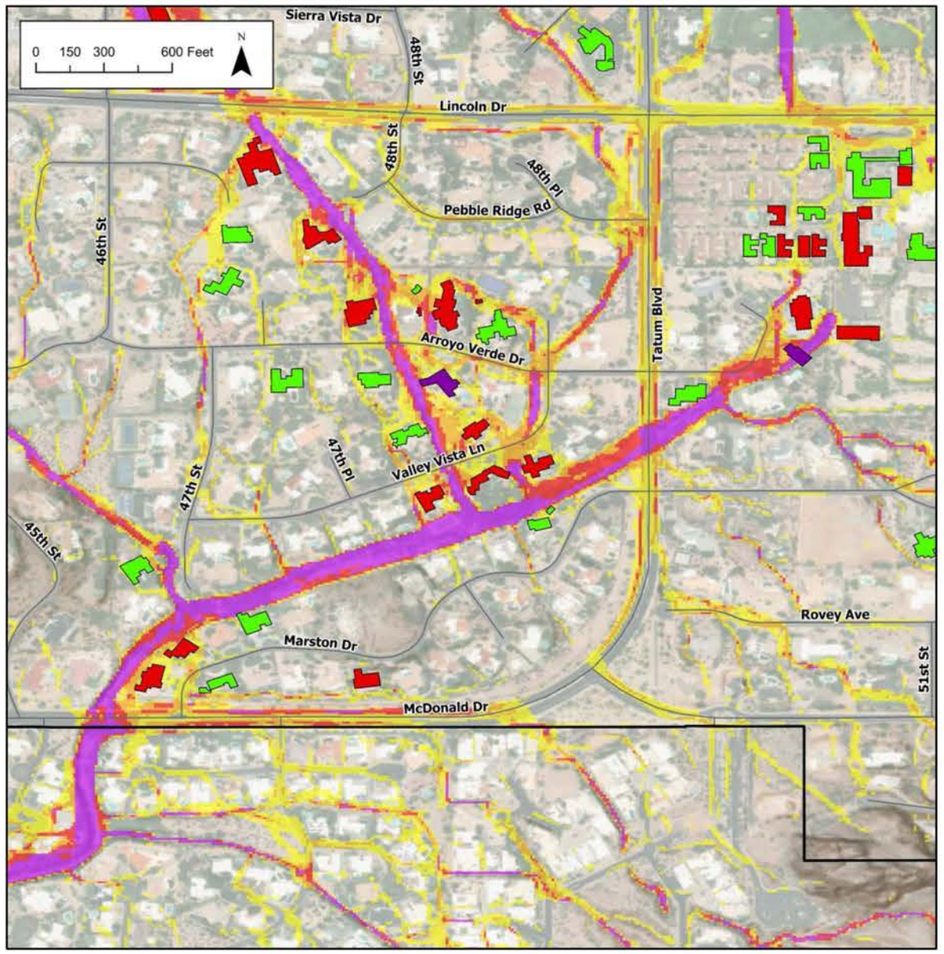
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Culverts*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Impacted Structures	*17*
Number of Hydraulic Structures Identified as Undersized	3
Maximum Depth on Roads	2.9 ft
Streets Overtopped by > 0.5 ft	2 Local; 1 Collector
Potential to Impact Emergency Service Access	No
Flood Hazard Designation	Severe Flooding

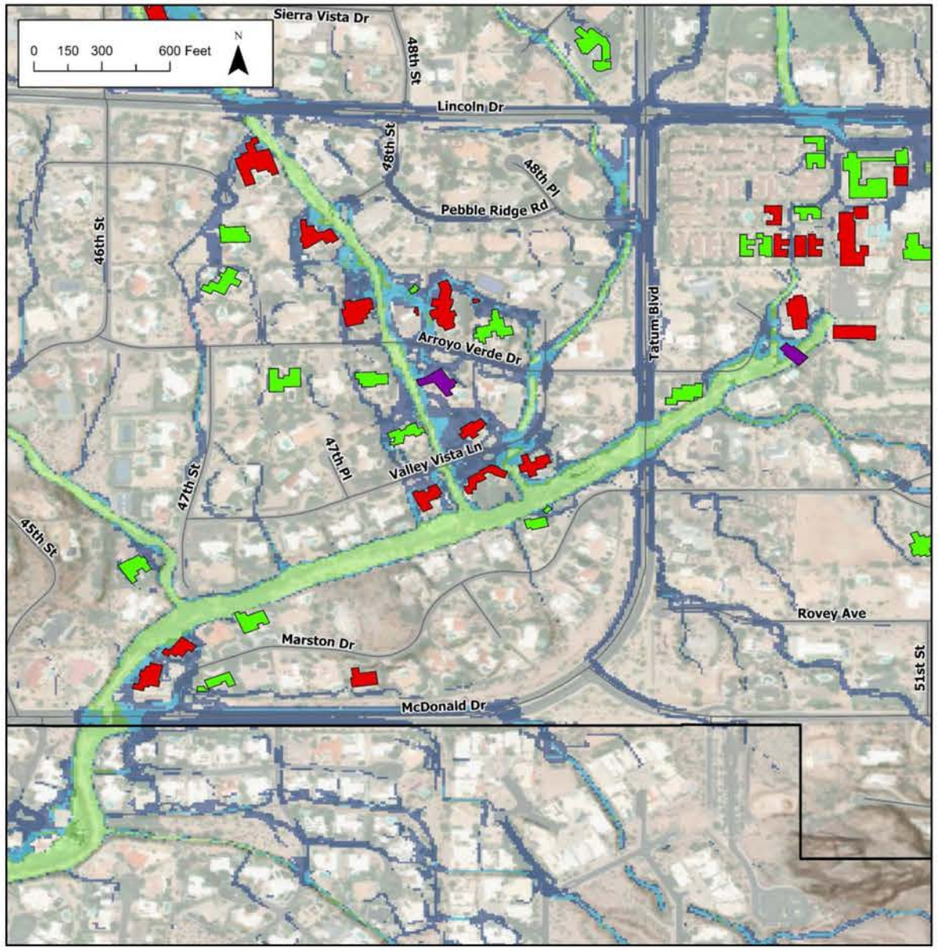
AREA P EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA P SEDIMENT DEPOSTION POTENTIAL MAP

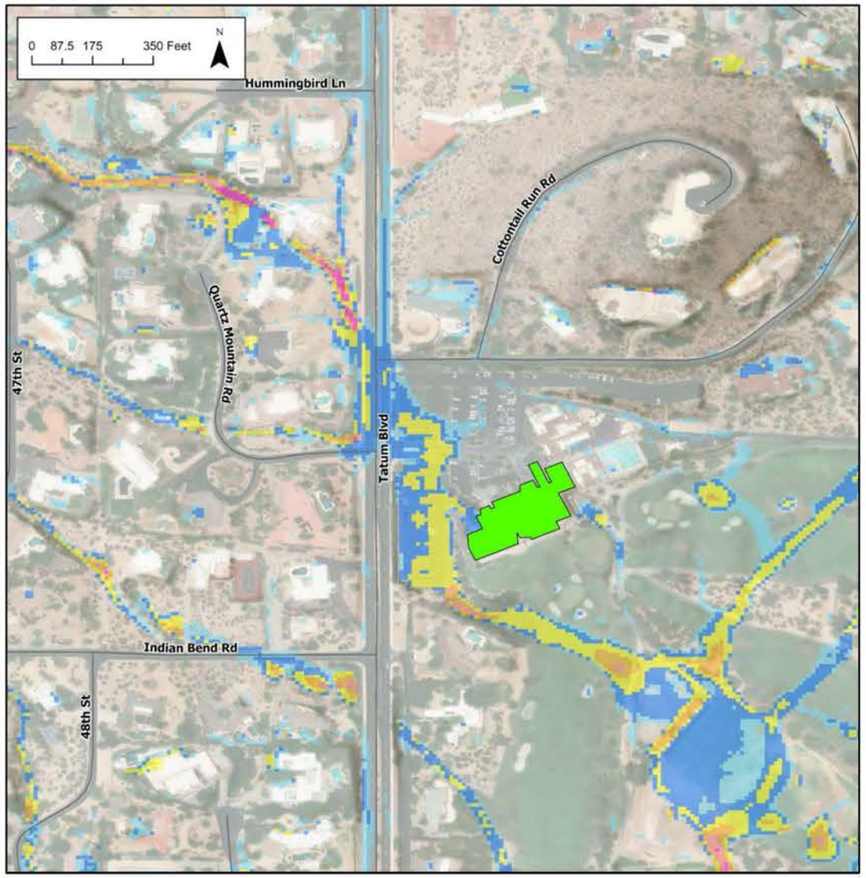


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

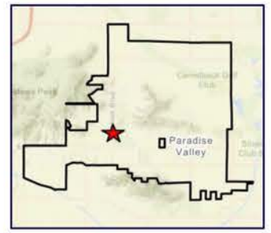
PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: Q



LOCATION DESCRIPTION

LOCATION: *Tatum Blvd and Cottontail Run Rd*



PROBLEM DESCRIPTION:

- *Identified as a problem in the 2020 Cudia City Wash ADMS and remains a significant flooding hazard. Vehicles have been stuck in the low water crossing during flooding*

FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *Tatum Blvd dry utilities*

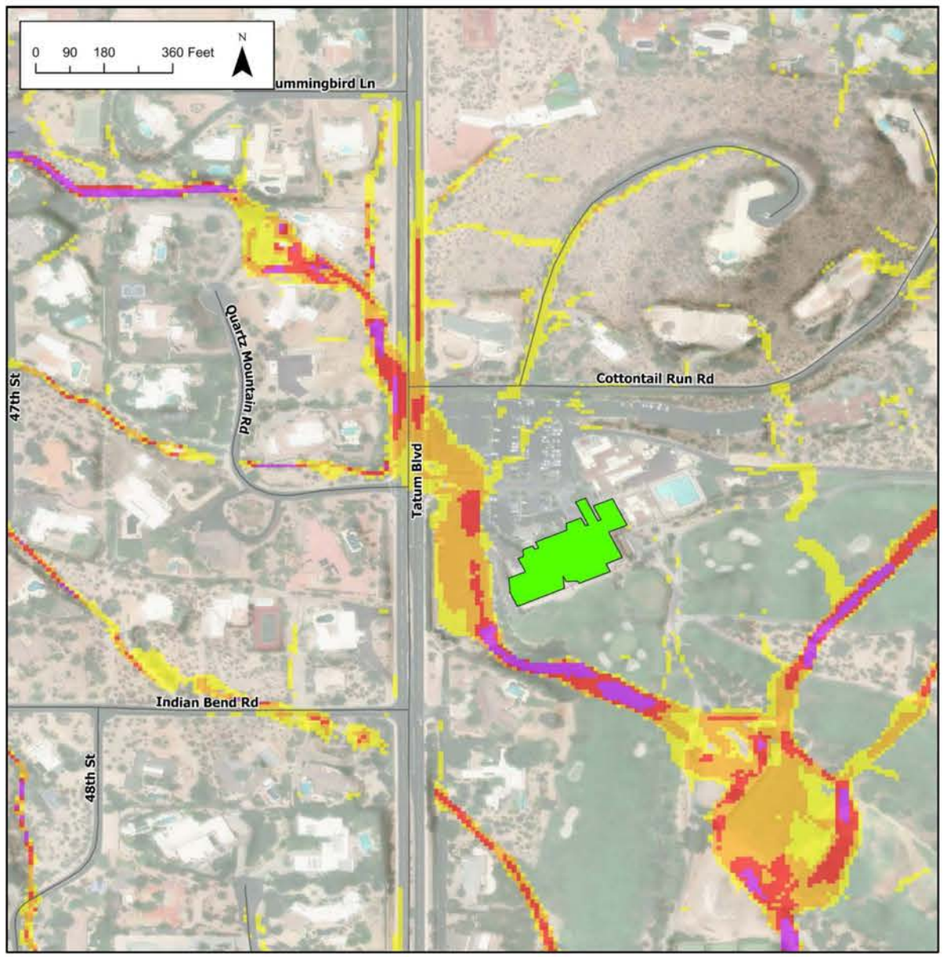
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Culverts*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Impacted Structures	*0*
Number of Hydraulic Structures Identified as Undersized	2
Maximum Depth on Roads	0.78 ft
Streets Overtopped by > 0.5 ft	0 Local; 1 Collector
Potential to Impact Emergency Service Access	No
Flood Hazard Designation	Nuisance Flooding

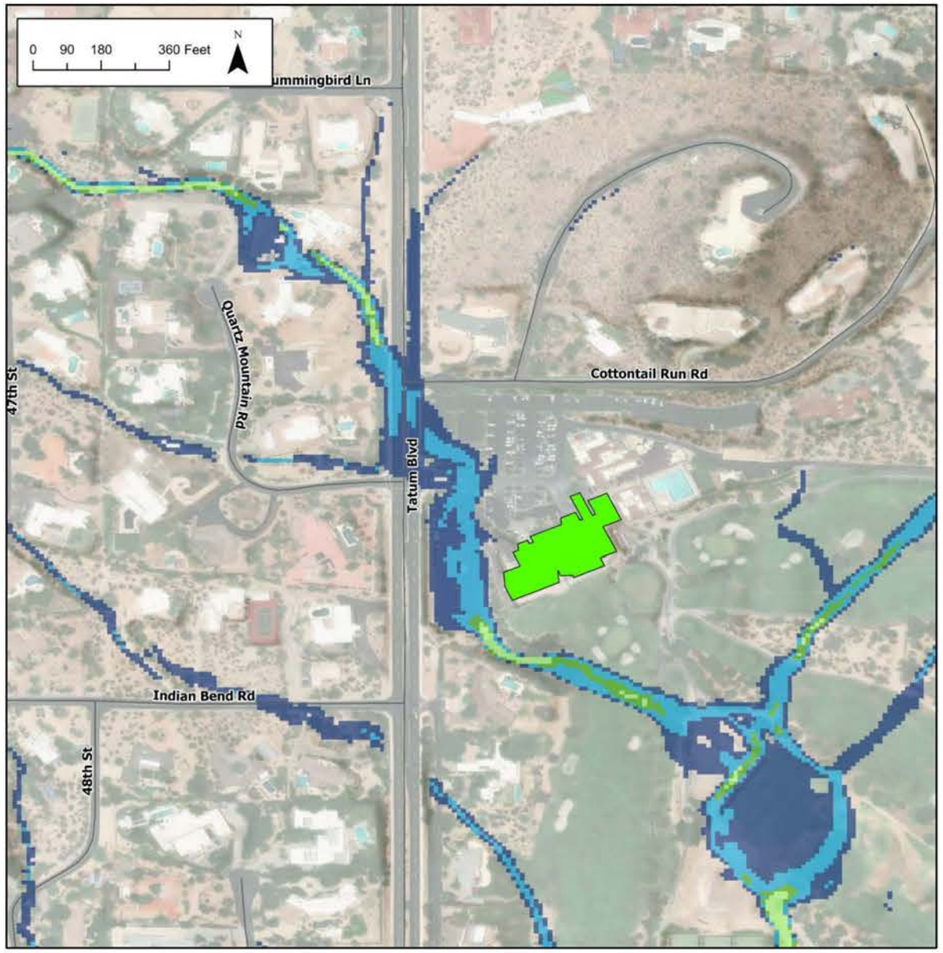
AREA Q EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA Q SEDIMENT DEPOSTION POTENTIAL MAP

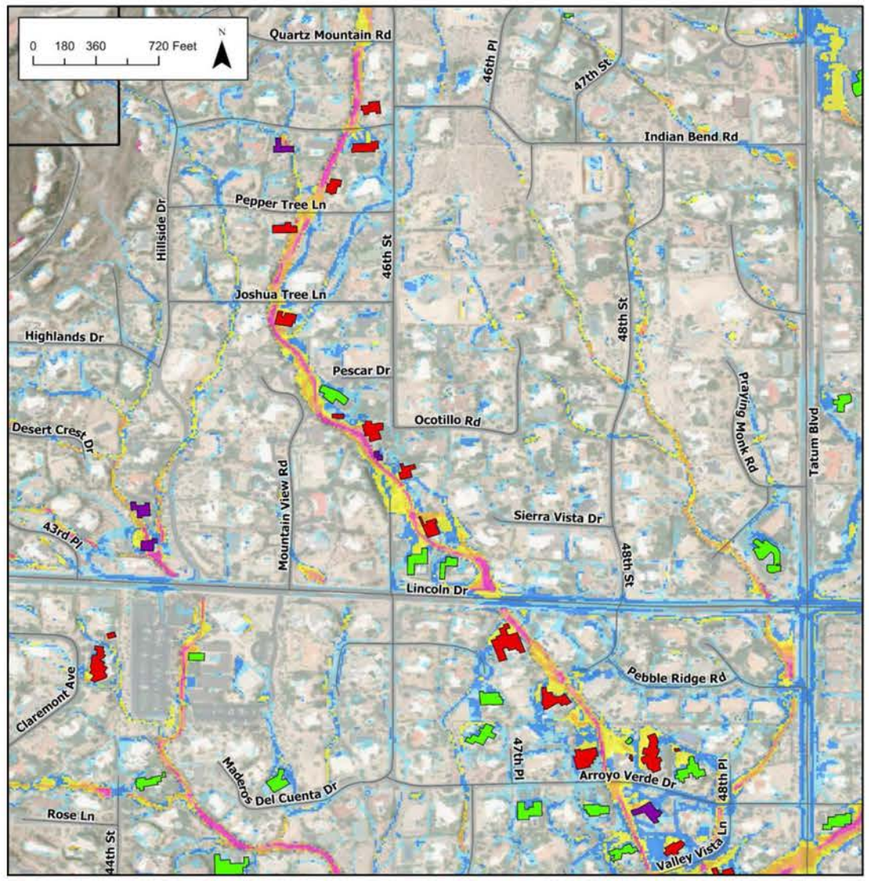


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

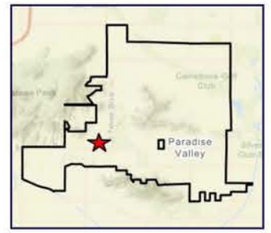
PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: R



LOCATION DESCRIPTION

LOCATION: *46th Street and Lincoln Drive*



PROBLEM DESCRIPTION:

- *Identified as a problem in the 2020 Cudia City Wash ADMS and remains a flooding hazard.*
- *Existing drainage infrastructure is undersized*

FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *Lincoln Dr dry utilities*

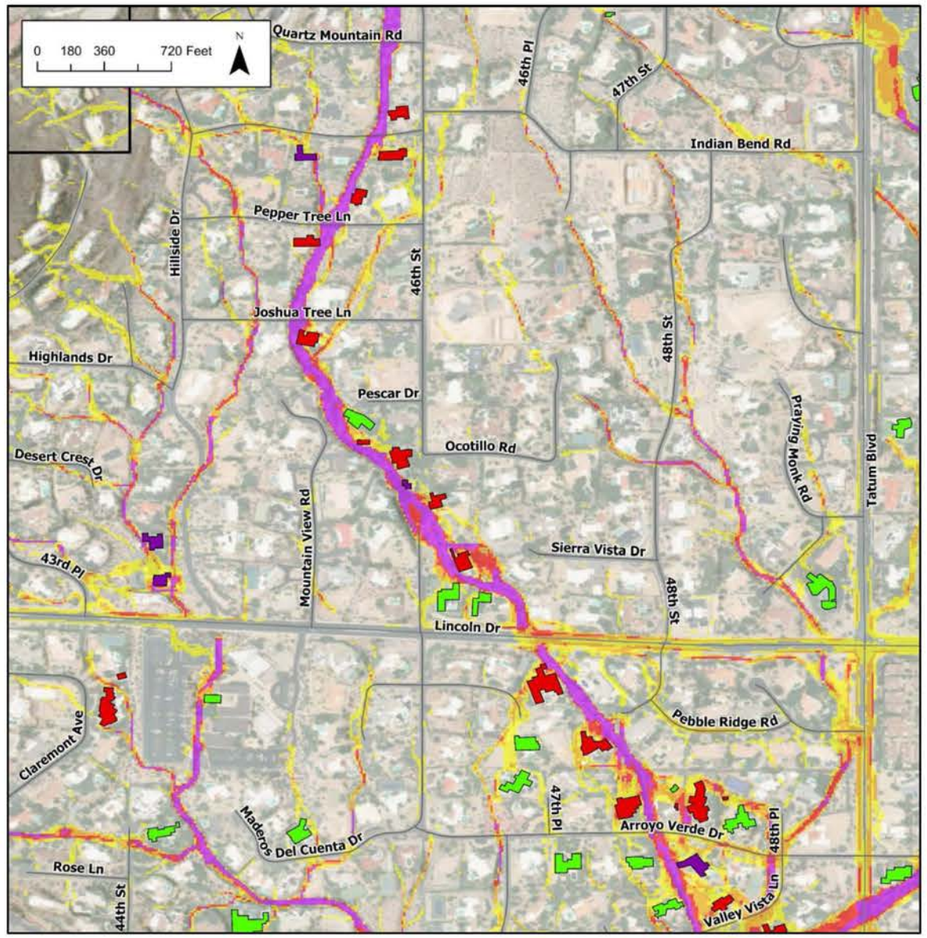
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Culverts*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Impacted Structures	*27*
Number of Hydraulic Structures Identified as Undersized	3
Maximum Depth on Roads	2.13 ft
Streets Overtopped by > 0.5 ft	5 Local; 1 Collector
Potential to Impact Emergency Service Access	No
Flood Hazard Designation	Moderate Flooding

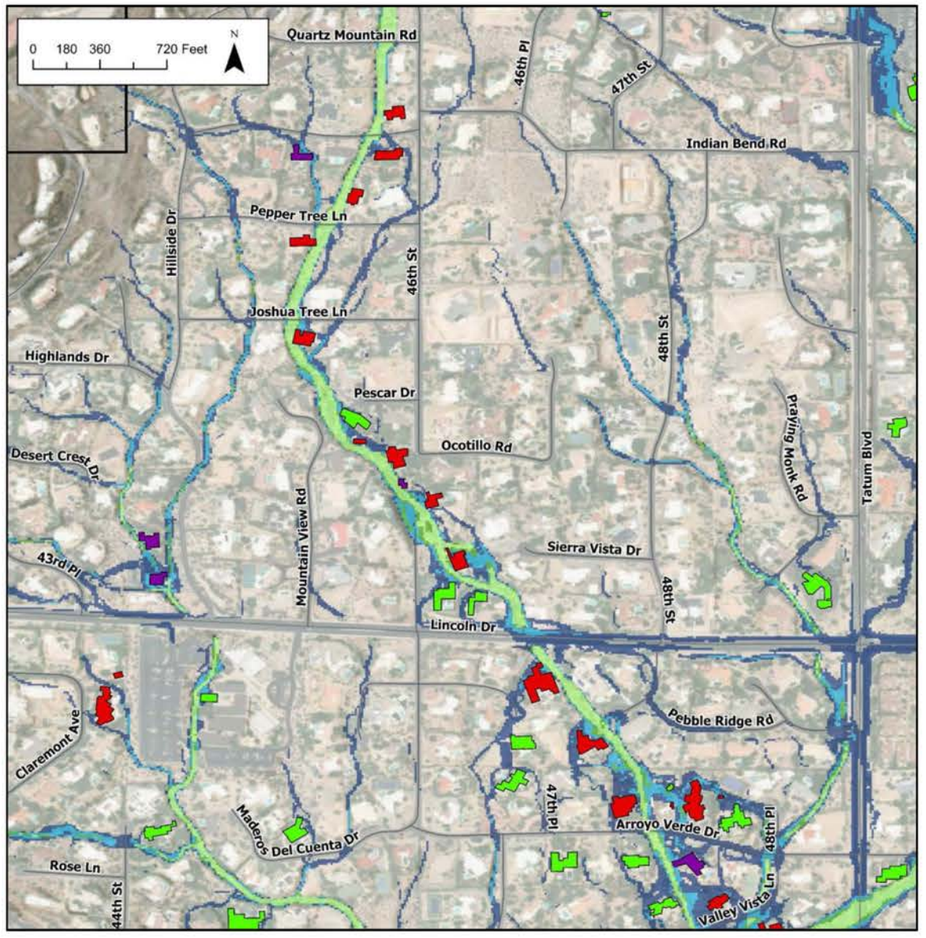
AREA R EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA R SEDIMENT DEPOSTION POTENTIAL MAP

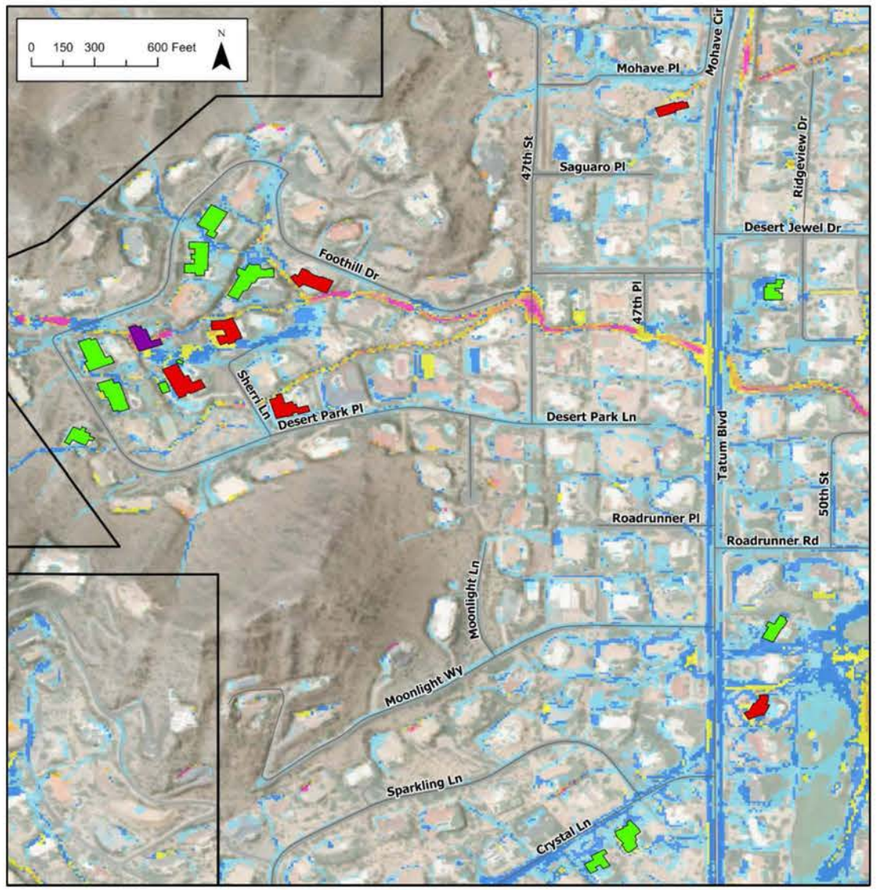


100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

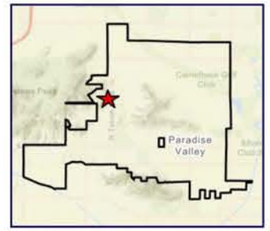
PARADISE VALLEY STORM WATER MASTER PLAN

FLOOD HAZARD AREA: S



LOCATION DESCRIPTION

LOCATION: *47th Street and Foothill Drive*



PROBLEM DESCRIPTION:

- *Identified as a problem in the 2019 Drainage Problem Areas Technical Memorandum, remaining a significant flooding hazard during major flood events*
- *Mountain runoff overtops 47th St by greater than 4 ft*

FLOOD HAZARD IMPACT: *Road overtopping, structure/property flooding*

PROPERTY OWNERSHIP: *Residential and Town Right of Way*

POTENTIAL UTILITY CONFLICTS: *Tatum Blvd storm drain and dry utilities*

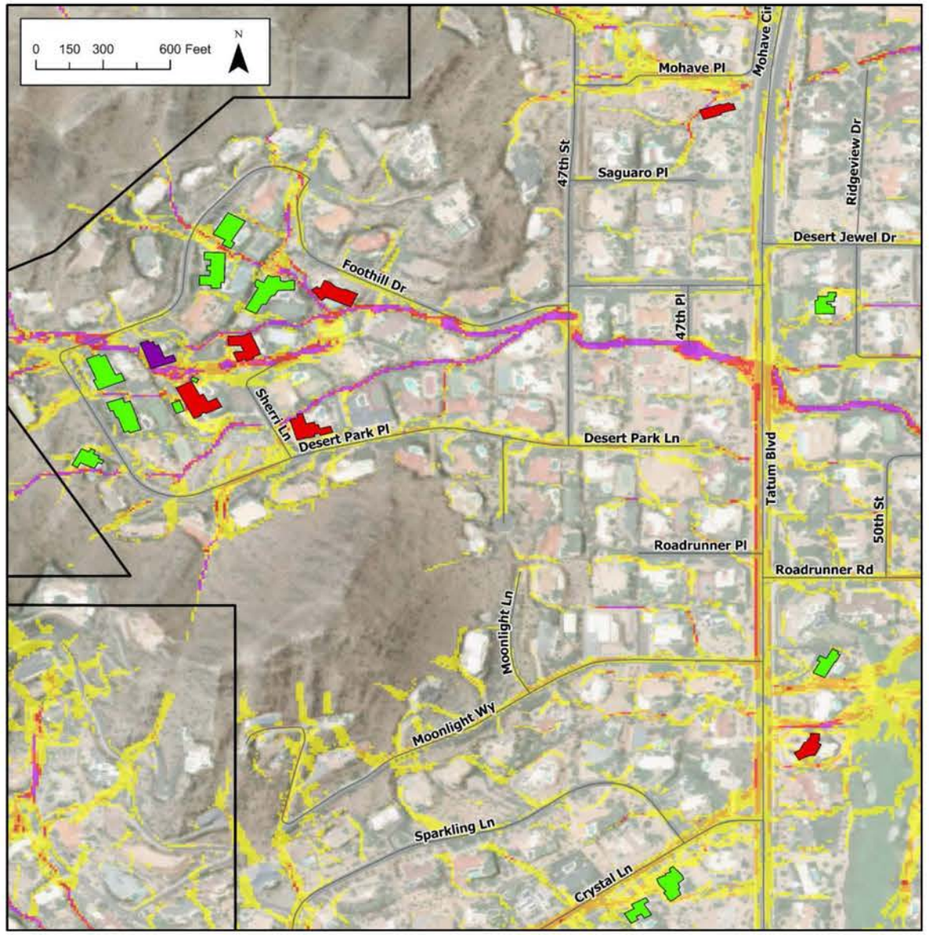
POTENTIAL MITIGATION ALTERNATIVES

- *Storm Drain*
- *Culverts*

IDENTIFIED FLOOD RISKS AND HAZARD CHARACTERIZATIONS

Number of Impacted Structures	*14*
Number of Hydraulic Structures Identified as Undersized	2
Maximum Depth on Roads	4.32 ft
Streets Overtopped by > 0.5 ft	1 Local; 1 Collector
Potential to Impact Emergency Service Access	Yes
Flood Hazard Designation	Severe Flooding

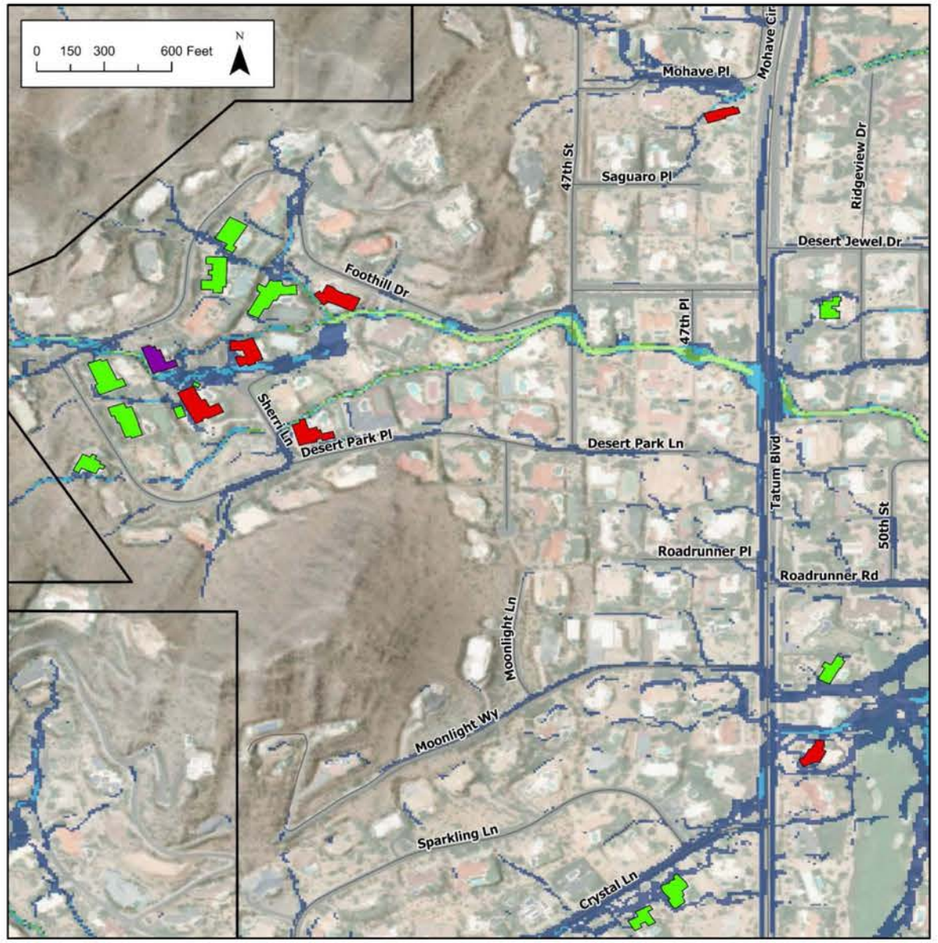
AREA S EROSION POTENTIAL MAP



100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Erosion Potential
- Extreme Erosion Potential
- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential

AREA S SEDIMENT DEPOSTION POTENTIAL MAP



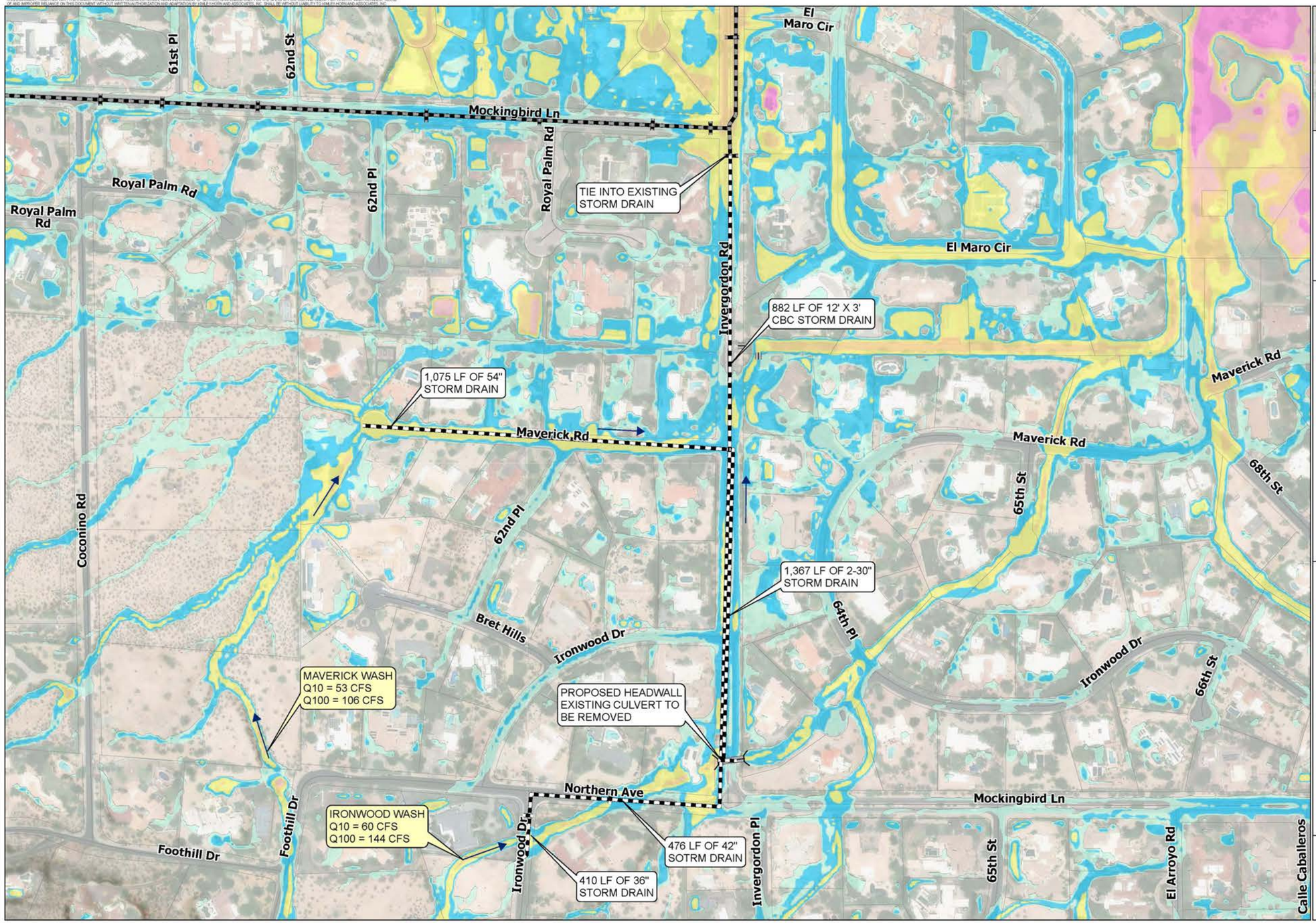
100yr Adjacent Building Depth
- 6 in - 12 in
- 12 in - 24 in
- > 24 in

Sediment Deposition Potential
- Low Deposition Potential
- Moderate Deposition Potential
- High Deposition Potential
- Extreme Deposition Potential

XVII. APPENDIX E – PROJECT ALTERNATIVES, EOPC, AND MATRIX

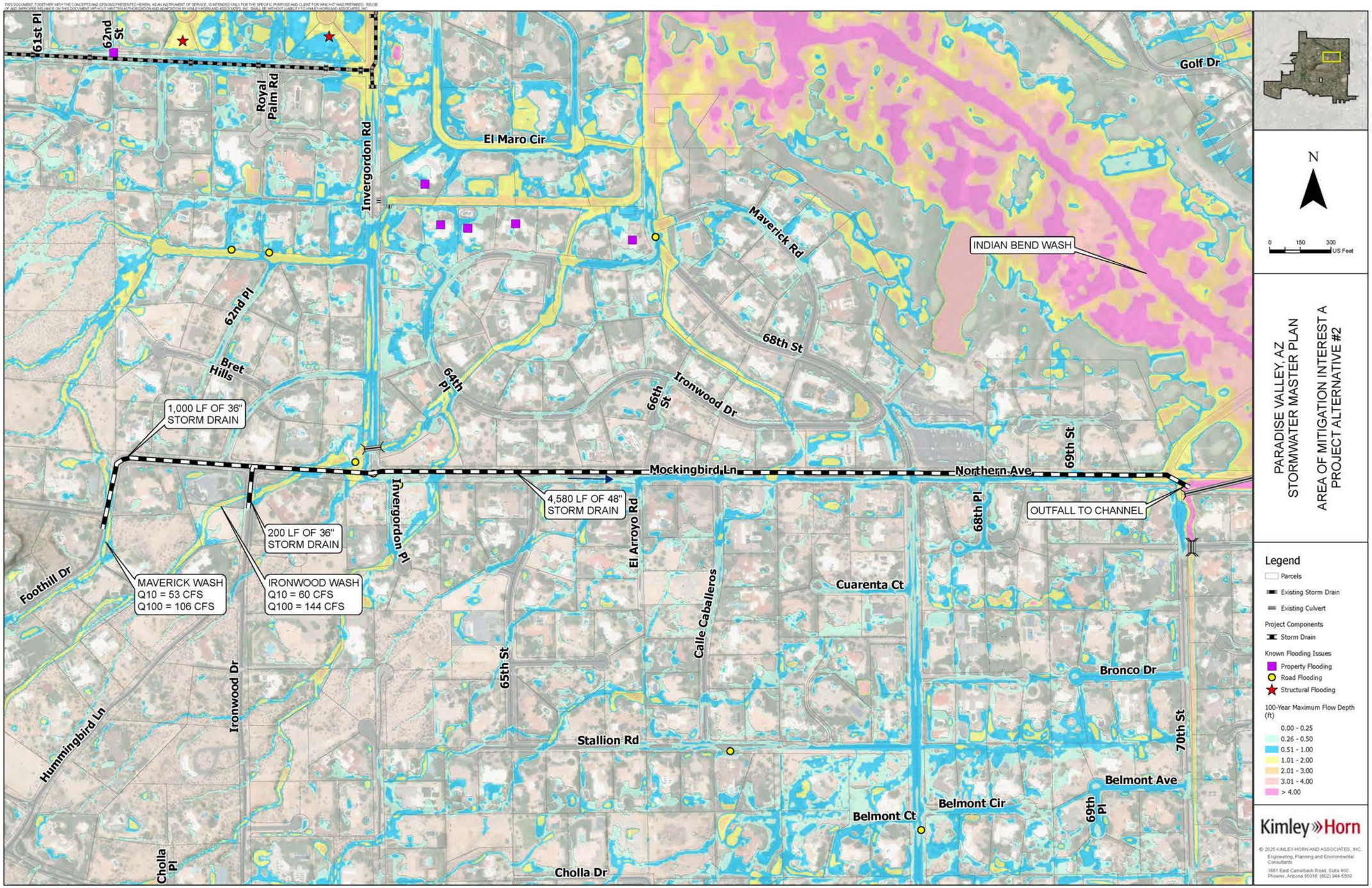
FLOOD HAZARD AREA A ALTERNATIVES

THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.



Conceptual Cost Estimate for Alternative 1

Item	Description	Unit	Quantity	Unit Price	Cost
1	12' x 3' RCBC	LF	1,770	$1,250	$2,212,500
2	36" RCP Storm Drain	LF	1,050	$320	$336,000
3	Storm Drain Connection	EA	1	$3,500	$3,500
4	Catch Basin	EA	21	$12,000	$252,000
5	Manhole	EA	25	$10,000	$250,000
6	Inlet Structure	EA	2	$25,000	$50,000
				Subtotal	3,104,000
7	SWPPP (2%)	LS	1	$62,080	$62,080
8	Mobilization/Demobilization (10%)	LS	1	$310,400	$310,400
9	Design (12%)	LS	1	$372,480	$372,480
10	Construction Management (10%)	LS	1	$310,400	$310,400
11	Utilities (3%)	LS	1	$93,120	$93,120
12	Traffic Control (3%)	LS	1	$93,120	$93,120
				Subtotal	$4,345,600
				Contingency (15%)	$651,840
				Total	$4,997,440



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Phoenix, Arizona 85016 (602) 944-5500

Conceptual Cost Estimate for Alternative 2

Item	Description	Unit	Quantity	Unit Price	Cost
1	36" RCP Storm Drain	LF	1,200	$320	$384,000
2	48" RCP Storm Drain	LF	4,580	$525	$2,404,500
3	Outlet Structure	EA	1	$2,100	$2,100
4	Catch Basin	EA	27	$12,000	$324,000
5	Manhole	EA	32	$10,000	$320,000
				Subtotal	3,434,600
6	SWPPP (1%)	LS	1	$34,346	$34,346
7	Mobilization/Demobilization (10%)	LS	1	$343,460	$343,460
8	Design (12%)	LS	1	$412,152	$412,152
9	Construction Management (10%)	LS	1	$343,460	$343,460
10	Utilities (3%)	LS	1	$103,038	$103,038
11	Traffic Control (3%)	LS	1	$103,038	$103,038
				Subtotal	$4,774,094
				Contingency (15%)	$716,114
				Total	$5,490,208

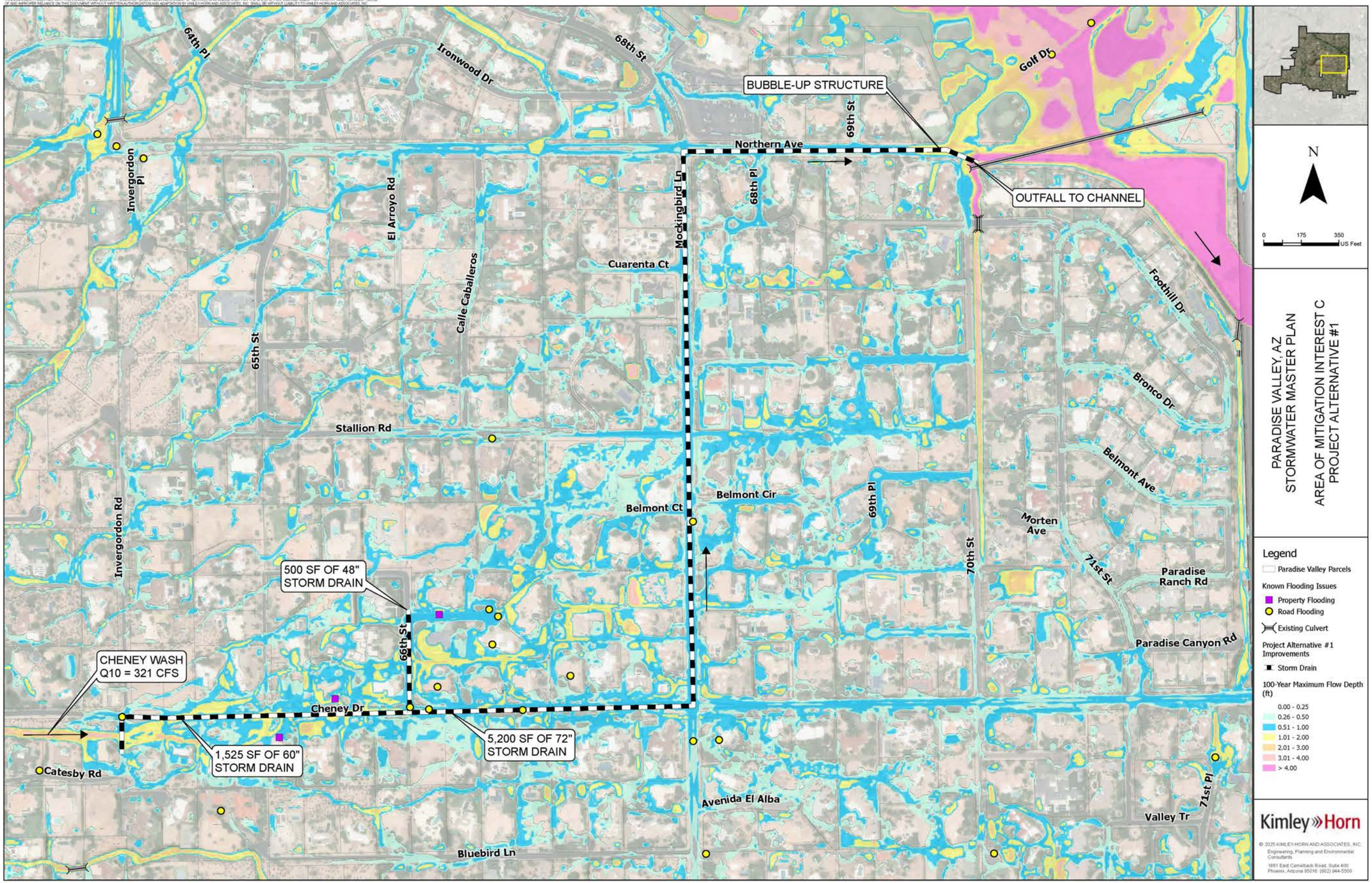
Area A Project Matrix

	Potential Stuctures Protected	Design and Construction Cost	Potential Streets Protected	GSI Benefits	Project Partnership	Multi-use Opportunities	O&M Constraints and Costs	Utility Constraints	Total Raw Score	Total Weighted Score	Significant R/W Acquisition
Priority Weighting 1 - 5	5	5	4	1	4	2	3	3			
Alternative 1	**1**	**2**	**2**	**1**	**2**	**1**	**2**	**1**	**12**	**43**	**No**
Alternative 2	**1**	**1**	**2**	**1**	**2**	**1**	**2**	**1**	**11**	**38**	**No**
Ranking Criteria	1 - 1 to 30 structures 2 - 31 to 50 structures 3 - > 51 structures	1 - Most expensive 2 - Least expensive	1 - Local street benefits only 2 - Collector street or local streets benefit 3 - Multiple collector streets and local streets benefit	1 - No opportunities 2 - Some opportunities	1 -Grant funding or partnerships unlikely 2 - Local partnerships/grant eligible 3 - Local and Federal partnerships/grant eligible	1 - No opportunities 2 - Some opportunities	1 - Maintenance after every storm event 2 - Maintenance at standard intervals	1 - Major constraints 2 - Minor constraints	19 - Highest achievable score	67 - Highest achievable score	

XVII. APPENDIX E – PROJECT ALTERNATIVES, EOPC, AND MATRIX

FLOOD HAZARD AREA C ALTERNATIVES

THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.



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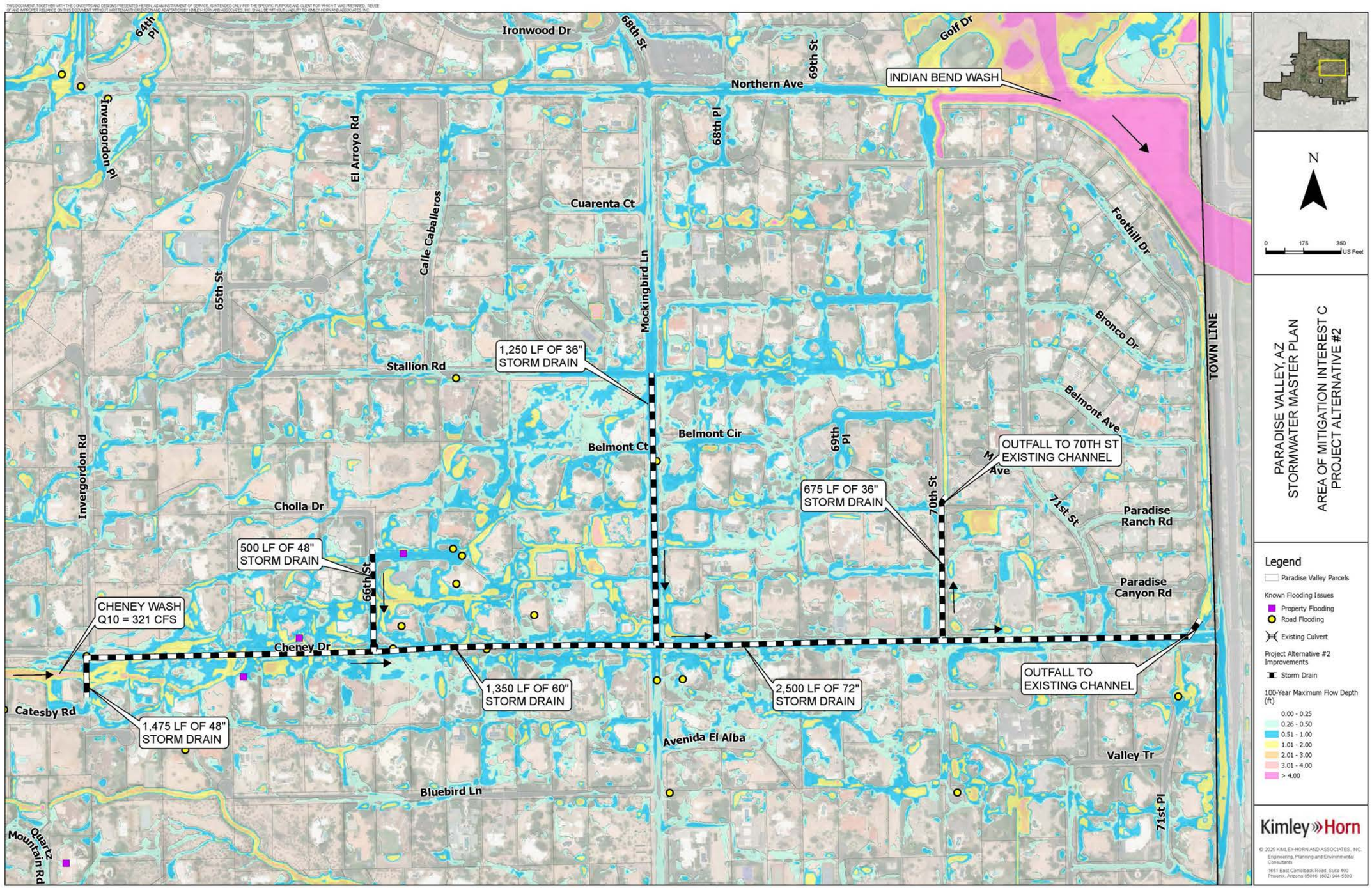
Engineering, Planning and Environmental Consultants
1661 East Camelback Road, Suite 400
Phoenix, Arizona 85016 (602) 944-5500

Conceptual Cost Estimate for Alternative 1

Item	Description	Unit	Quantity	Unit Price	Cost
1	48" RCP	LF	500	$525	$262,500
2	60" RCP	LF	1,525	$785	$1,197,125
3	72" RCP	LF	5,200	$1,200	$6,240,000
4	Manhole	EA	37	$10,000	$370,000
5	Catch Basin	EA	22	$32,000	$704,000
6	Removal of Concrete Sidewalks and Slabs	SF	8,050	$12	$96,600
				Sub Total	$8,870,225
7	SWPPP (1%)	LS	1	$88,702	$88,702
8	Mobilization/Demobilization (15%)	LS	1	$1,330,534	$1,330,534
9	Design (10%)	LS	1	$887,023	$887,023
10	Construction Management (10%)	LS	1	$887,023	$887,023
11	Utilities (3%)	LS	1	$266,107	$266,107
12	Traffic Control (5%)	LS	1	$443,511	$443,511
				Subtotal	$12,773,124
				Contingency (15%)	$1,915,969
				Total	$14,689,093


Ironwood Dr
64th Pl
68th St
69th St
Golf Dr
Northern Ave
INDIAN BEND WASH
Invergordon Pl
El Arroyo Rd
68th Pl
Cuarenta Ct
Calle Caballeros
65th St
Mockingbird Ln
Foothill Dr
Bronco Dr
TOWN LINE
1,250 LF OF 36" STORM DRAIN
Stallion Rd
Belmont Cir
Belmont Ave
Belmont Ct
69th Pl
OUTFALL TO 70TH ST EXISTING CHANNEL
675 LF OF 36" STORM DRAIN
70th St
71st St
Paradise Ranch Rd
Invergordon Rd
Cholla Dr
500 LF OF 48" STORM DRAIN
66th St
Paradise Canyon Rd
CHENEY WASH Q10 = 321 CFS
Cheney Dr
OUTFALL TO EXISTING CHANNEL
1,350 LF OF 60" STORM DRAIN
2,500 LF OF 72" STORM DRAIN
Catesby Rd
1,475 LF OF 48" STORM DRAIN
Avenida El Alba
Valley Tr
Bluebird Ln
71st Pl
Quartz Mountain Rd
N
0 175 350 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
AREA OF MITIGATION INTEREST C
PROJECT ALTERNATIVE #2
Legend
Paradise Valley Parcels
Known Flooding Issues
Property Flooding
Road Flooding
Existing Culvert
Project Alternative #2 Improvements
Storm Drain
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
Kimley»Horn
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Engineering, Planning and Environmental Consultants
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Phoenix, Arizona 85016 (602) 944-5500

Conceptual Cost Estimate for Alternative 2

Item	Description	Unit	Quantity	Unit Price	Cost
1	60" RCP	LF	1,350	$785	$1,059,750
2	36" RCP	LF	1,950	$320	$624,000
3	48" RCP	LF	1,975	$525	$1,036,875
4	72" RCP	LF	2,500	$1,200	$3,000,000
5	Manhole	EA	36	$10,000	$360,000
6	Catch Basin	EA	24	$32,000	$768,000
7	Removal of Concrete Sidewalks and Slabs	SF	7,825	$12	$93,900
				Sub Total	$6,942,525
8	SWPPP	LS	1	$20,000	$20,000
9	Mobilization/Demobilization (15%)	LS	1	$1,041,379	$1,041,379
10	Design (12%)	LS	1	$833,103	$833,103
11	Construction Management (10%)	LS	1	$694,253	$694,253
12	Utilities (2%)	LS	1	$138,851	$138,851
13	Traffic Control (3%)	LS	1	$208,276	$208,276
				Subtotal	$9,878,386
				Contingency (15%)	$1,481,758
				Total	$11,360,143

Area C Project Matrix

	Potential Stuctures Protected	Design and Construction Cost	Potential Streets Protected	GSI Benefits	Project Partnership	Multi-use Opportunities	O&M Constraints and Costs	Utility Constraints	Total Raw Score	Total Weighted Score	Significant R/W Aqusition
Priority Weighting 1 - 5	5	5	4	1	4	2	3	3			
Alternative 1	**3**	**1**	**3**	**1**	**1**	**1**	**2**	**1**	**13**	**48**	**No**
Alternative 2	**3**	**2**	**3**	**1**	**1**	**1**	**2**	**1**	**14**	**53**	**No**
Ranking Criteria	1 - 1 to 30 structures 2 - 31 to 50 structures 3 - > 51 structures	1 - Most expensive 2 - Least expensive	1 - Local street benefits only 2 - Collector street or local streets benefit 3 - Multiple collector streets and local streets benefit	1 - No opportunities 2 - Some opportunities	1 -Grant funding or partnerships unlikely 2 - Local partnerships/grant eligible 3 - Local and Federal partnerships/grant eligible	1 - No opportunities 2 - Some opportunities	1 - Maintenance after every storm event 2 - Maintenance at standard intervals	1 - Major constraints 2 - Minor constraints	19 - Highest achievable score	67 - Highest achievable score	

XVII. APPENDIX E – PROJECT ALTERNATIVES, EOPC, AND MATRIX

FLOOD HAZARD AREA E ALTERNATIVES

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MUMMY MOUNTAIN

LINCOLN WASH
Q10 = 40 CFS
Q100 = 125 CFS

435 LF OF 36" STORM DRAIN

LINCOLN WASH
Q10 = 79 CFS
Q100 = 170 CFS

780 LF OF 36" STORM DRAIN

3,285 LF OF 36" STORM DRAIN

2,300 LF OF 48" STORM DRAIN

OUTFALL TO RITZ-CARLTON CHANNEL

59th Pl
60th St
61st St
61st Pl
62nd St
63rd Pl
64th Pl
65th Pl
65th St
66th Pl
66th St
67th Pl
68th Pl
Arroyo Ct
Cardinal Dr
Desert Hills Rd
Invergordon Rd
Ironwood Dr
Judson Rd
Joshua Tree Ln
Indian Bend Rd
Cactus Wren Pl
Cactus Wren Rd
Redwing Rd
White Wing Rd
Lincoln Dr
Sierra Vista Rd
Horseshoe Ln
Ocotillo Rd
Huntress Dr
Naumann Dr
Malcomb Dr
Casa Blanca Dr
Arroyo Verde Dr
Mockingbird Ln
Solcito Ln

N

0 200 400 US Feet

PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
AREA OF MITIGATION INTEREST E
PROJECT ALTERNATIVE #1

Legend

- Paradise Valley Parcels
- Existing Storm Drain
- Existing Culvert

Known Flooding Issues

- Property Flooding
- Road Flooding
- Structural Flooding

Project Alternative #1 Improvements

- Storm Drain

100-Year Maximum Flow Depth (ft)

- 0.00 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- > 4.00

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Conceptual Cost Estimate for Alternative 1

Item	Description	Unit	Quantity	Unit Price	Cost
1	36" Storm Drain Pipe	LF	4,500	$320	$1,440,000
2	48" Storm Drain Pipe	LF	2,300	$525	$1,207,500
3	Manhole	EA	45	$12,000	$540,000
4	Outlet Structure	EA	1	$1,200	$1,200
5	Catch Basin	EA	25	$10,000	$250,000
				Subtotal	$3,438,700
8	SWPPP (1%)	LS	1	$34,387	$34,387
9	Mobilization/Demobilization (15%)	LS	1	$515,805	$515,805
10	Design (12%)	LS	1	$412,644	$412,644
11	Construction Management (10%)	LS	1	$343,870	$343,870
12	Utilities (2%)	LS	1	$68,774	$68,774
13	Traffic Control (2%)	LS	1	$68,774	$68,774
				Subtotal	$4,882,954
				Contingency (20%)	$976,591
				Total	$5,859,545

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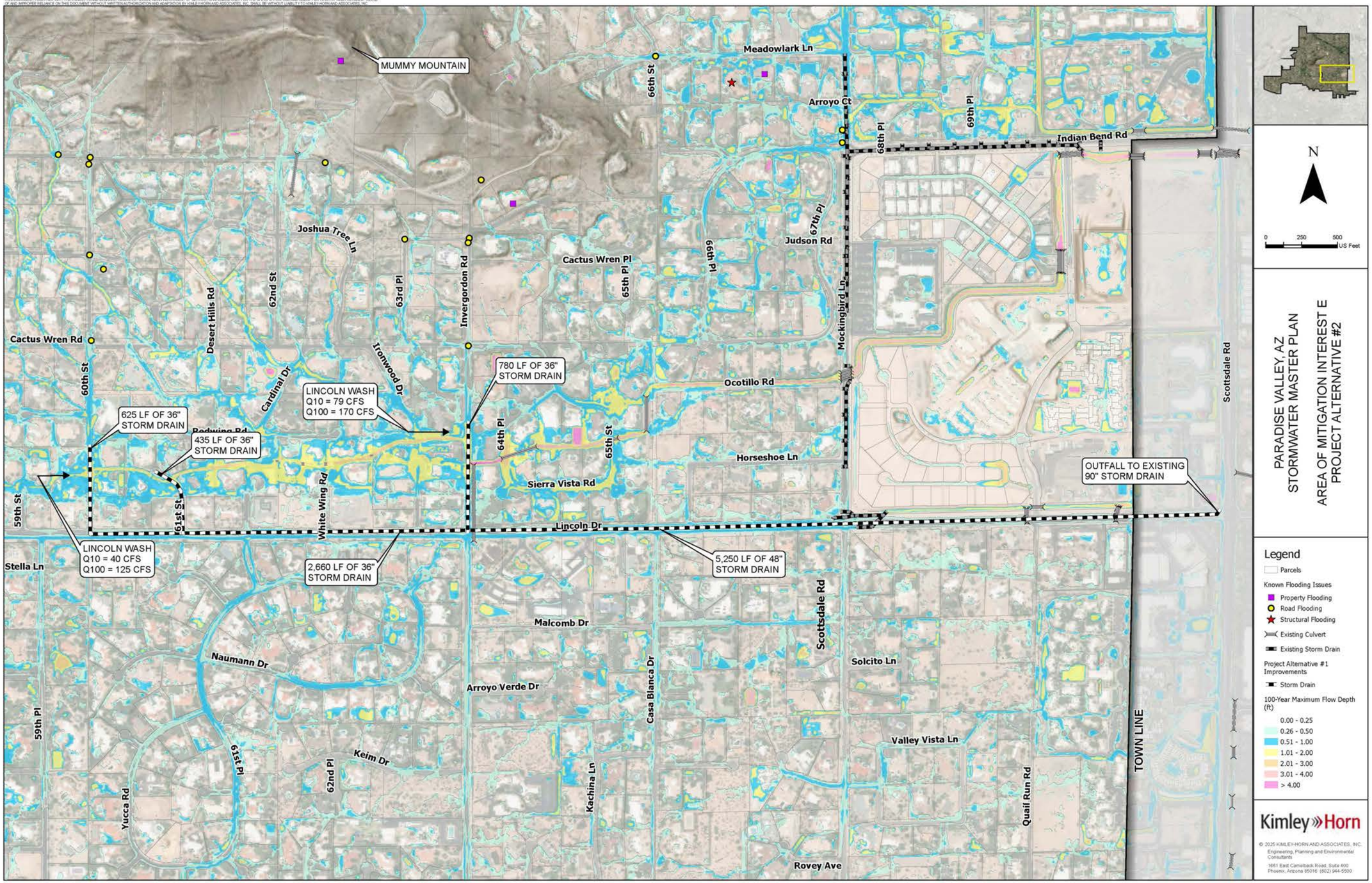
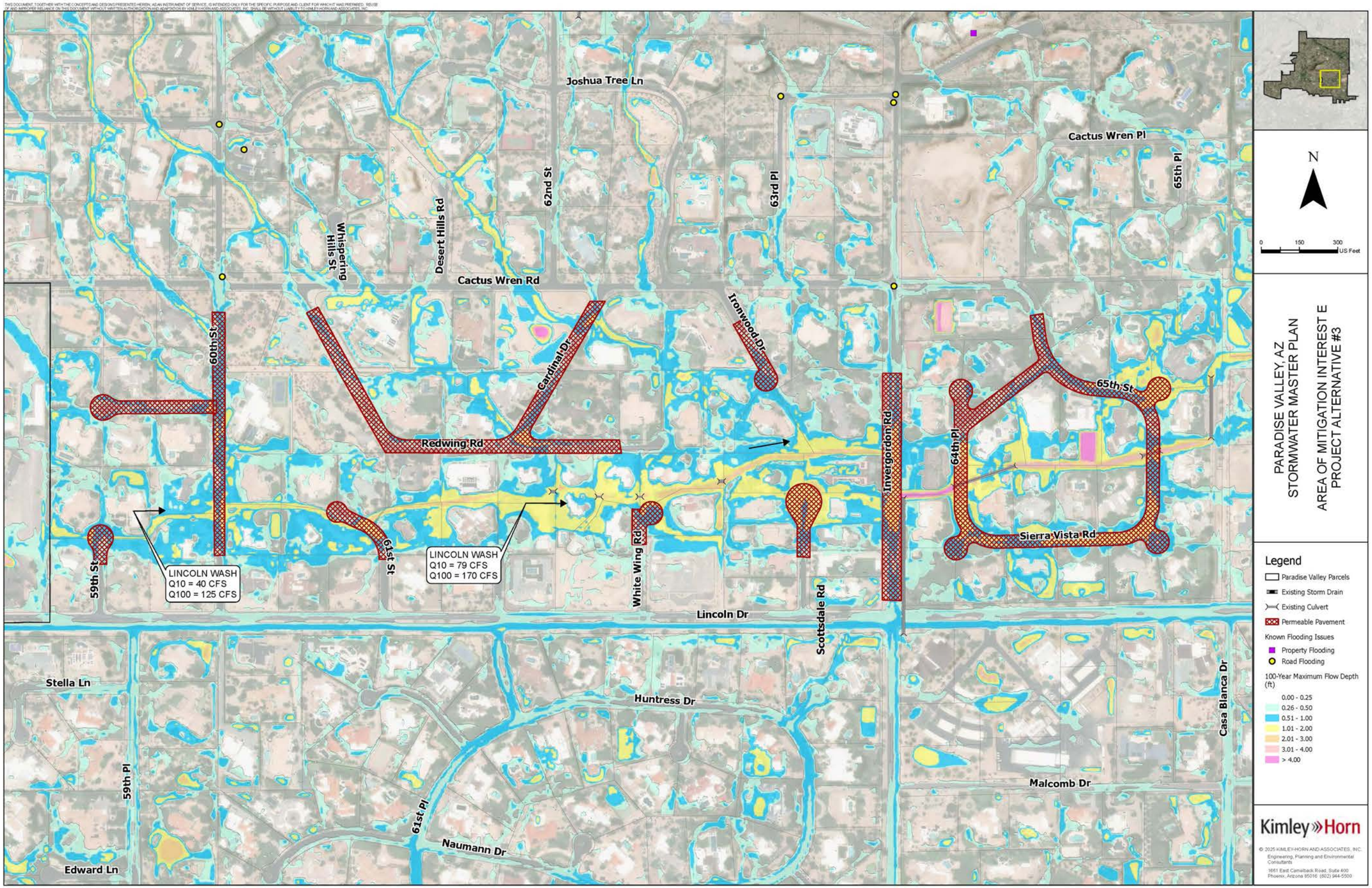


Conceptual Cost Estimate for Alternative 2

Item	Description	Unit	Quantity	Unit Price	Cost
1	36" Storm Drain Pipe	LF	4,500	$320	$1,440,000
2	48" Storm Drain Pipe	LF	5,250	$525	$2,756,250
5	Manhole	EA	52	$12,000	$624,000
6	Outlet Structure	EA	1	$1,200	$1,200
7	Catch Basin	EA	25	$10,000	$250,000
				Subtotal	$5,071,450
8	SWPPP (1%)	LS	1	$50,715	$50,715
9	Mobilization/Demobilization (15%)	LS	1	$760,718	$760,718
10	Design (12%)	LS	1	$608,574	$608,574
11	Construction Management (10%)	LS	1	$507,145	$507,145
12	Utilities (2%)	LS	1	$101,429	$101,429
13	Traffic Control (2%)	LS	1	$101,429	$101,429
				Subtotal	$7,201,459
				Contingency (20%)	$1,440,292
				Total	$8,641,751


Joshua Tree Ln
Cactus Wren Pl
65th Pl
62nd St
63rd Pl
Desert Hills Rd
Whispering Hills St
Cactus Wren Rd
Ironwood Dr
Cardinal Dr
60th St
65th St
Redwing Rd
64th Pl
Invergordon Rd
Sierra Vista Rd
LINCOLN WASH
Q10 = 40 CFS
Q100 = 125 CFS
LINCOLN WASH
Q10 = 79 CFS
Q100 = 170 CFS
59th St
61st St
White Wing Rd
Lincoln Dr
Scottsdale Rd
Casa Blanca Dr
Stella Ln
Huntress Dr
59th Pl
61st Pl
Malcomb Dr
Naumann Dr
Edward Ln
N
0 150 300 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
AREA OF MITIGATION INTEREST E
PROJECT ALTERNATIVE #3
Legend
Paradise Valley Parcels
Existing Storm Drain
Existing Culvert
Permeable Pavement
Known Flooding Issues
Property Flooding
Road Flooding
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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Conceptual Cost Estimate for Alternative 3

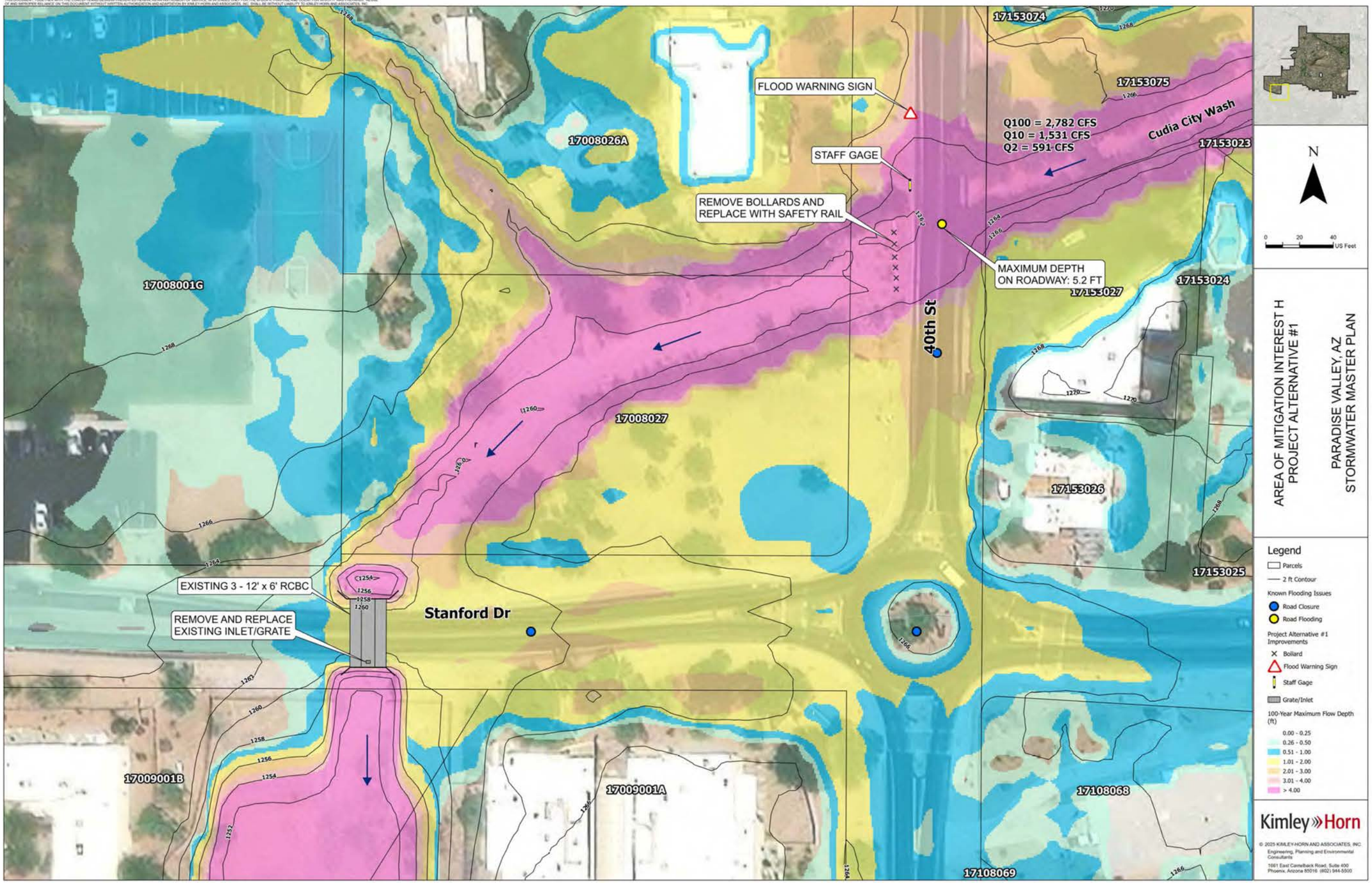
Item	Description	Unit	Quantity	Unit Price	Cost
1	Permeable Pavement	LF	7,900	$28	$221,200
2	Removal of Existing Pavement	SY	52,600	$10	$526,000
				Subtotal	$747,200
3	SWPPP (1%)	LS	1	$7,472	$7,472
4	Mobilization/Demobilization (15%)	LS	1	$112,080	$112,080
5	Design (12%)	LS	1	$89,664	$89,664
6	Construction Management (10%)	LS	1	$74,720	$74,720
7	Utilities (8%)	LS	1	$59,776	$59,776
8	Traffic Control (10%)	LS	1	$74,720	$74,720
				Subtotal	$1,165,632
				Contingency (20%)	$233,126
				Total	$1,398,758

Area E Project Matrix

	Potential Stuctures Protected	Design and Construction Cost	Potential Streets Protected	GSI Benefits	Project Partnership	Multi-use Opportunities	O&M Constraints and Costs	Utility Constraints	Total Raw Score	Total Weighted Score	Significant R/W Acquisition
Priority Weighting 1 - 5	5	5	4	1	4	2	3	3			
Alternative 1	**3**	**2**	**3**	**1**	**2**	**1**	**2**	**1**	**15**	**57**	**No**
Alternative 2	**3**	**1**	**3**	**1**	**1**	**1**	**2**	**1**	**13**	**48**	**No**
Alternative 3	**3**	**3**	**3**	**2**	**2**	**1**	**2**	**2**	**18**	**66**	**No**
Ranking Criteria	1 - 1 to 30 structures 2 - 31 to 50 structures 3 - > 51 structures	1 - Most expensive 2 - Median cost 3 - Least expensive	1 - Local street benefits only 2 - Collector street or local streets benefit 3 - Multiple collector streets and local streets benefit	1 - No opportunities 2 - Some opportunities	1 -Grant funding or partnerships unlikely 2 - Local partnerships/grant eligible 3 - Local and Federal partnerships/grant eligible	1 - No opportunities 2 - Some opportunities	1 - Maintenance after every storm event 2 - Maintenance at standard intervals	1 - Major constraints 2 - Minor constraints	20 - Maximum possible score	72 - Maximum possible score	

XVII. APPENDIX E – PROJECT ALTERNATIVES, EOPC, AND MATRIX

FLOOD HAZARD AREA H ALTERNATIVES


FLOOD WARNING SIGN
STAFF GAGE
REMOVE BOLLARDS AND REPLACE WITH SAFETY RAIL
MAXIMUM DEPTH ON ROADWAY: 5.2 FT
Q100 = 2,782 CFS
Q10 = 1,531 CFS
Q2 = 591 CFS
Cudia City Wash
40th St
Stanford Dr
EXISTING 3 - 12' x 6' RCBC
REMOVE AND REPLACE EXISTING INLET/GRATE
17008026A
17008001G
17008027
17009001B
17009001A
17153074
17153075
17153023
17153024
17153027
17153026
17153025
17108068
17108069
N
0 20 40 US Feet
AREA OF MITIGATION INTEREST H
PROJECT ALTERNATIVE #1
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
Legend
Parcels
2 ft Contour
Known Flooding Issues
Road Closure
Road Flooding
Project Alternative #1 Improvements
Bollard
Flood Warning Sign
Staff Gage
Grate/Inlet
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
Kimley»Horn
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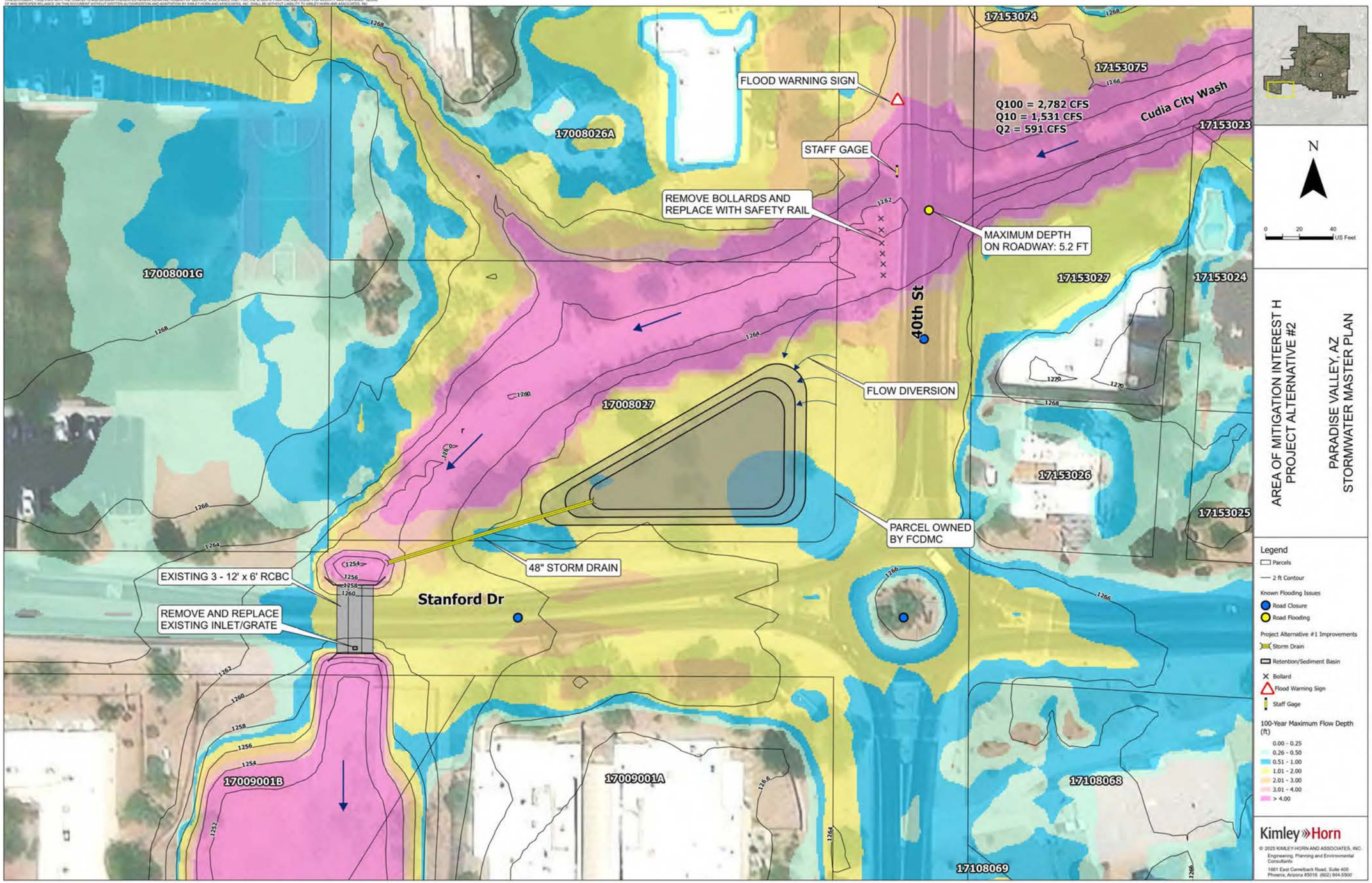
Conceptual Cost Estimate for Alternative 1

Item	Description	Unit	Quantity	Unit Price	Cost
1	Staff Gage	EA	1	$150	$150
2	Flood Warning Sign	EA	1	$250	$250
3	Protective Railing	LF	50	$175	$8,750
4	Removal of Curb and Gutter	LF	3	$250	$750
5	Curb & Gutter	LF	3	$100	$300
6	Concrete Sidewalk	SF	10	$35	$350
7	Storm Drain Pipe 36"	SF	15	$375	$5,625
8	Remove Bollards	EA	6	$260	$1,560
9	Removal of Pipe	LF	15	$75	$1,125
				Sub Total	$18,860
10	SWPPP	LS	1	$1,000	$1,000
11	Mobilization/Demobilization	LS	1	$15,000	$15,000
12	Design	LS	1	$15,000	$15,000
13	Construction Management	LS	1	$5,000	$5,000
14	Utilities	LS	1	$1,000	$1,000
15	Traffic Control	LS	1	$1,000	$1,000
				Subtotal	$56,860
				Contingency (20%)	$11,372
				Total	$68,232


FLOOD WARNING SIGN
STAFF GAGE
REMOVE BOLLARDS AND REPLACE WITH SAFETY RAIL
MAXIMUM DEPTH ON ROADWAY: 5.2 FT
Q100 = 2,782 CFS
Q10 = 1,531 CFS
Q2 = 591 CFS
Cudia City Wash
40th St
FLOW DIVERSION
PARCEL OWNED BY FCDMC
48" STORM DRAIN
EXISTING 3 - 12' x 6' RCBC
REMOVE AND REPLACE EXISTING INLET/GRATE
Stanford Dr
17008026A
17008001G
17008027
17009001B
17009001A
17153074
17153075
17153023
17153027
17153024
17153026
17153025
17108068
17108069
N
0 20 40 US Feet
AREA OF MITIGATION INTEREST H
PROJECT ALTERNATIVE #2
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
Legend
Parcels
2 ft Contour
Known Flooding Issues
Road Closure
Road Flooding
Project Alternative #1 Improvements
Storm Drain
Retention/Sediment Basin
Bollard
Flood Warning Sign
Staff Gage
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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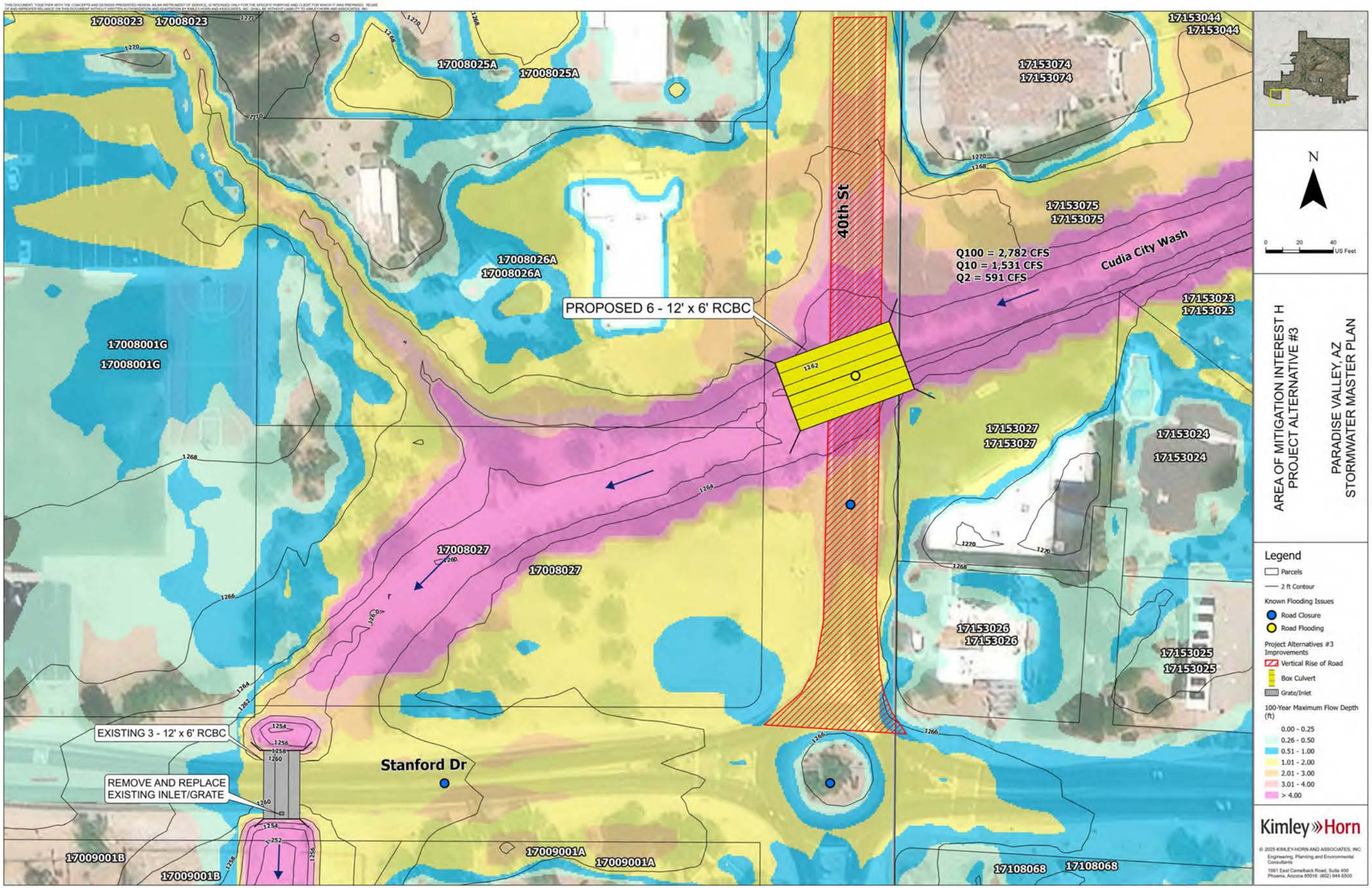
Conceptual Cost Estimate for Alternative 2

Item	Description	Unit	Quantity	Unit Price	Cost
1	Storm Drain Outlet	EA	1	$1,500	$1,500
2	Storm Drain Pipe 48"	LF	110	$410	$45,100
3	Manhole	EA	1	$10,000	$10,000
4	Staff Gage	EA	1	$150	$150
5	Flood Warning Sign	EA	1	$250	$250
6	Protective Railing	LF	50	$175	$8,750
7	Removal of Curb and Gutter	LF	3	$250	$750
8	Curb & Gutter	LF	3	$100	$300
9	Concrete Sidewalk	SF	10	$35	$350
10	Storm Drain Pipe 36"	SF	15	$375	$5,625
11	Remove Bollards	EA	6	$260	$1,560
12	Removal of Pipe	LF	15	$75	$1,125
13	Riprap	CY	5	$120	$600
14	Channel Excavation	CY	8,595	$25	$214,875
15	Diversion Structure	LS	1	$45,000	$45,000
16	Basin Excavation	CY	8,470	$18	$152,460
17	Landscaping	LS	1	$7,000	$7,000
				Sub Total	$495,395
18	SWPPP (3%)	LS	1	$14,862	$14,862
19	Mobilization/Demobilization	LS	1	$75,000	$75,000
20	Design (15%)	LS	1	$74,309	$74,309
21	Construction Management (10%)	LS	1	$49,540	$49,540
22	Utilities (2%)	LS	1	$9,908	$9,908
23	Traffic Control (3%)	LS	1	$14,862	$14,862
				Subtotal	$733,875
				Contingency (20%)	$146,775
				Total	$880,650


17008023
17008023
17008025A
17008025A
17153044
17153044
17153074
17153074
40th St
17153075
17153075
Q100 = 2,782 CFS
Q10 = 1,531 CFS
Q2 = 591 CFS
Cudia City Wash
17008026A
17008026A
PROPOSED 6 - 12' x 6' RCBC
17153023
17153023
17008001G
17008001G
17153027
17153027
17153024
17153024
17008027
17008027
17153026
17153026
17153025
17153025
EXISTING 3 - 12' x 6' RCBC
REMOVE AND REPLACE
EXISTING INLET/GRATE
Stanford Dr
17009001B
17009001B
17009001A
17009001A
17108068
17108068
N
0 20 40 US Feet
AREA OF MITIGATION INTEREST H
PROJECT ALTERNATIVE #3
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
Legend
Parcels
2 ft Contour
Known Flooding Issues
Road Closure
Road Flooding
Project Alternatives #3 Improvements
Vertical Rise of Road
Box Culvert
Grate/Inlet
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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1661 East Camelback Road, Suite 400
Phoenix, Arizona 85016 (602) 944-5500

Conceptual Cost Estimate for Alternative 3

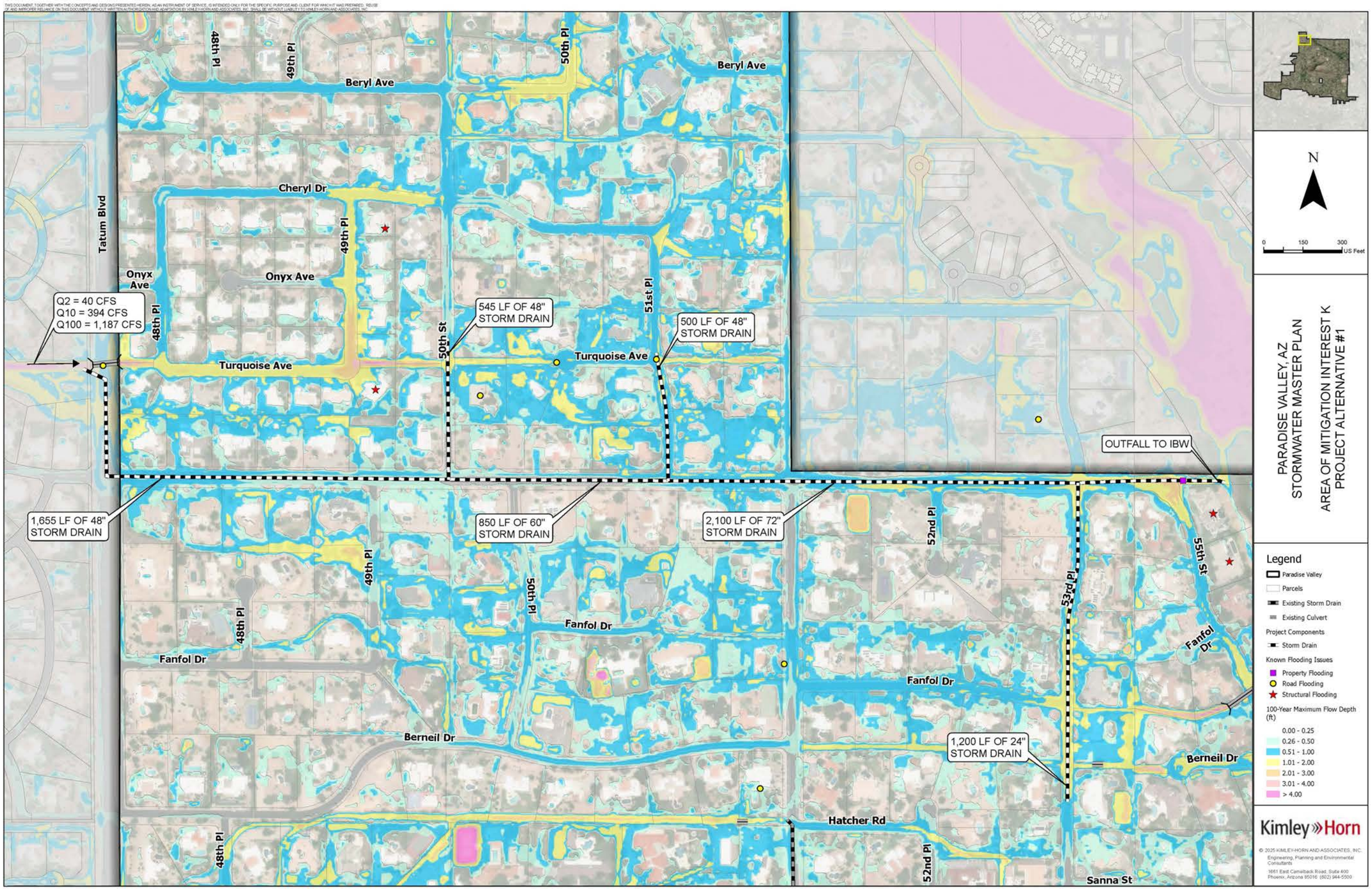
Item	Description	Unit	Quantity	Unit Price	Cost
1	Manhole	EA	3	$10,000	$30,000
2	6 - 12' x 6' RCBC	LF	40	$21,000	$840,000
3	New Wingwalls	LS	1	$30,000	$30,000
4	Removal of Curb and Gutter	LF	3	$250	$750
5	Curb & Gutter	LF	3	$100	$300
6	Concrete Sidewalk	SF	10	$35	$350
7	Storm Drain Pipe 36"	SF	15	$375	$5,625
8	Safety Rail	LF	220	$100	$22,000
9	Removal of Pipe	LF	15	$75	$1,125
10	Riprap	CY	250	$100	$25,000
11	Channel Excavation & Haul	CY	130	$55	$7,150
12	Roadway Profile Raise	SF	13,300	$20	$266,000
				Sub Total	$1,228,300
13	SWPPP (5%)	LS	1	$61,415	$61,415
14	Mobilization/Demobilization (15%)	LS	1	$184,245	$184,245
15	Design (12%)	LS	1	$147,396	$147,396
16	Construction Management (10%)	LS	1	$122,830	$122,830
17	Utilities (5%)	LS	1	$61,415	$61,415
18	Traffic Control (5%)	LS	1	$61,415	$61,415
				Subtotal	$1,867,016
				Contingency (20%)	$373,403
				Total	$2,240,419

Area H Project Matrix

	Potential Stuctures Protected	Potential Streets Protected	Design and Construction Cost	GSI Benefits	Project Partnership	Multi-use Opportunities	O&M Constraints and Costs	Utility Constraints	Total Raw Score	Total Weighted Score	Significant R/W Aqusition
Priority Weighting 1 - 5	5	4	5	1	4	2	3	3			
Alternative 1	**1**	**1**	**3**	**1**	**1**	**1**	**2**	**2**	**12**	**43**	**Yes**
Alternative 2	**1**	**2**	**2**	**1**	**2**	**2**	**1**	**2**	**13**	**45**	**No**
Alternative 3	**1**	**2**	**1**	**1**	**2**	**1**	**2**	**1**	**11**	**38**	**No**
Ranking Criteria	1 - 1 to 30 structures 2 - 31 to 50 structures 3 - > 51 structures	1 - Local street benefits only 2 - Collector street or local streets benefit 3 - Multiple collector streets and local streets benefit	1 - Most expensive 2 - Median cost 3 - Least expensive	1 - No opportunities 2 - Some opportunities	1 -Grant funding or partnerships unlikely 2 - Local partnerships/grant eligible 3 - Local and Federal partnerships/grant eligible	1 - No opportunities 2 - Some opportunities	1 - Maintenance after every storm event 2 - Maintenance at standard intervals	1 - Major constraints 2 - Minor constraints	20 - Maximum Possible Score	72 - Maximum Possible Score	

XVII. APPENDIX E – PROJECT ALTERNATIVES, EOPC, AND MATRIX

FLOOD HAZARD AREA K ALTERNATIVES


48th Pl
49th Pl
Beryl Ave
50th Pl
Beryl Ave
Cheryl Dr
Tatum Blvd
49th Pl
Onyx Ave
Onyx Ave
48th Pl
Q2 = 40 CFS
Q10 = 394 CFS
Q100 = 1,187 CFS
545 LF OF 48" STORM DRAIN
50th St
51st Pl
500 LF OF 48" STORM DRAIN
Turquoise Ave
Turquoise Ave
OUTFALL TO IBW
1,655 LF OF 48" STORM DRAIN
850 LF OF 60" STORM DRAIN
2,100 LF OF 72" STORM DRAIN
52nd Pl
55th St
49th Pl
48th Pl
50th Pl
Fanfol Dr
53rd Pl
Fanfol Dr
Fanfol Dr
Fanfol Dr
Berneil Dr
1,200 LF OF 24" STORM DRAIN
Berneil Dr
Hatcher Rd
48th Pl
52nd Pl
Sanna St
N
0 150 300
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
AREA OF MITIGATION INTEREST K
PROJECT ALTERNATIVE #1
Legend
Paradise Valley
Parcels
Existing Storm Drain
Existing Culvert
Project Components
Storm Drain
Known Flooding Issues
Property Flooding
Road Flooding
Structural Flooding
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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Conceptual Cost Estimate for Alternative 1

Item	Description	Unit	Quantity	Unit Price	Cost
1	60" Storm Drain	LF	850	$785	$667,250
2	48" Storm Drain	LF	2,700	$600	$1,620,000
3	24" Storm Drain	LF	1,200	$280	$336,000
4	72" Storm Drain	LF	2,100	$975	$2,047,500
5	Inlet Structure	EA	1	$2,300	$2,300
6	Outlet Structure	EA	1	$2,300	$2,300
7	Manhole	EA	43	$10,000	$430,000
8	Catch Basin	EA	36	$12,000	$432,000
				Subtotal	$5,537,350
9	SWPPP (1%)	LS	1	$55,374	$55,374
10	Mobilization/Demobilization (10%)	LS	1	$553,735	$553,735
11	Design (7%)	LS	1	$387,615	$387,615
12	Construction Management (8%)	LS	1	$442,988	$442,988
13	Utilities (2%)	LS	1	$110,747	$110,747
14	Traffic Control (2%)	LS	1	$110,747	$110,747
				Subtotal	$7,198,555
				Contingency (15%)	$1,079,783
				Total	$8,278,338

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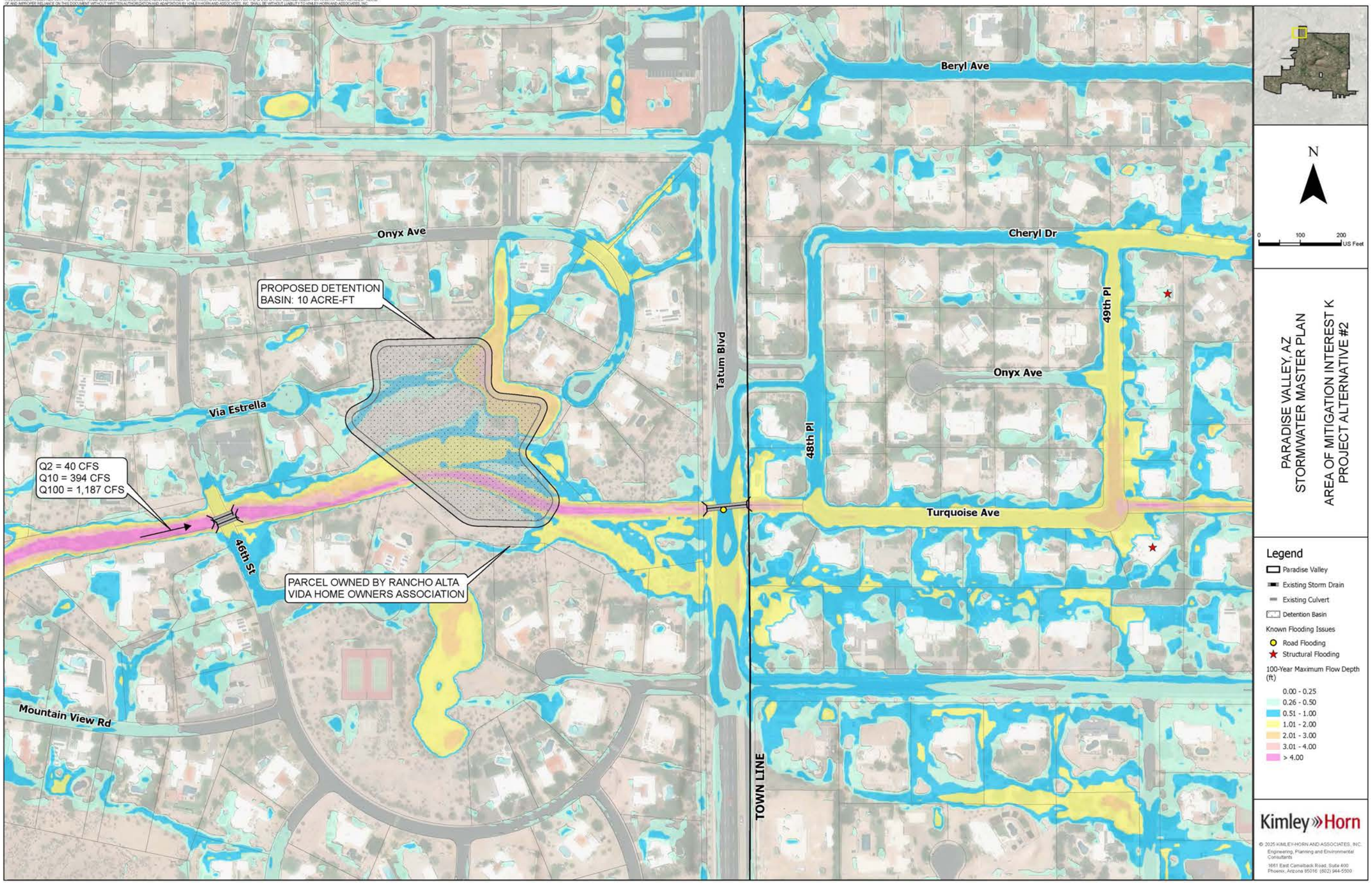

Conceptual Cost Estimate for Alternative 2

Item	Description	Unit	Quantity	Unit Price	Cost
1	Basin Excavation	CY	25,300	$42	$1,062,600
2	Landscaping	AC	4	$12,000	$48,000
3	Clearing and Grubbing	AC	4	$5,000	$20,000
				Subtotal	$1,130,600
4	SWPPP (2%)	LS	1	$22,612	$22,612
5	Mobilization/Demobilization (12%)	LS	1	$135,672	$135,672
6	Design (7%)	LS	1	$79,142	$79,142
7	Construction Management (10%)	LS	1	$113,060	$113,060
8	Utilities (2%)	LS	1	$22,612	$22,612
9	Traffic Control (1%)	LS	1	$11,306	$11,306
				Subtotal	$1,515,004
				Contingency (15%)	$227,251
				Total	$1,742,255

	Potential Stuctures Protected	Design and Construction Cost	Potential Streets Protected	GSI Benefits	Project Partnership	Multi-use Opportunities	O&M Constraints and Costs	Utility Constraints	Total Raw Score	Total Weighted Score	Significant R/W Acquisition
Priority Weighting 1 - 5	5	5	4	1	4	2	3	3			
Alternative 1	1	1	3	1	2	1	2	1	12	22	No
Alternative 2	1	2	3	2	2	2	2	2	16	26	Yes
Ranking Criteria	1 - 1 to 30 structures 2 - 31 to 50 structures 3 - > 51 structures	1 - Most expensive 2 - Least expensive	1 - Local street benefits only 2 - Collector street or local streets benefit 3 - Multiple collector streets and local streets benefit	1 - No opportunities 2 - Some opportunities	1 -Grant funding or partnerships unlikely 2 - Local partnerships/grant eligible 3 - Local and Federal partnerships/grant eligible	1 - No opportunities 2 - Some opportunities	1 - Maintenance after every storm event 2 - Maintenance at standard intervals	1 - Major constraints 2 - Minor constraints	19 - Highest achievable score	67 - Highest achievable score	

XVII. APPENDIX E – PROJECT ALTERNATIVES, EOPC, AND MATRIX

FLOOD HAZARD AREA L ALTERNATIVES

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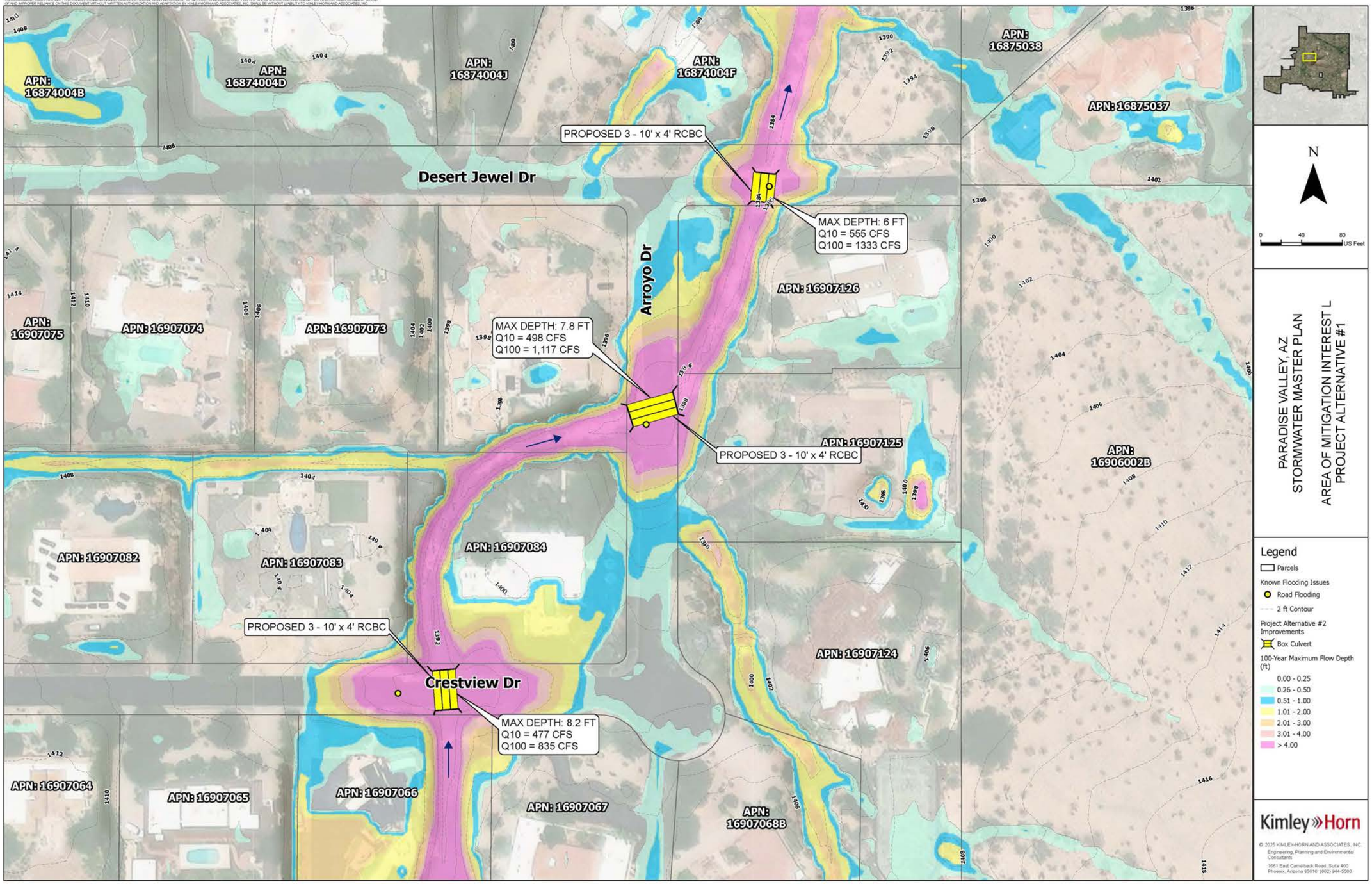

Conceptual Cost Estimate for Alternative 1

Item	Description	Unit	Quantity	Unit Price	Cost
1	3 - 10' x 4' RCBC	LF	140	$3,400	$476,000
2	Headwalls	EA	6	$10,000	$60,000
3	Grouted Riprap	CY	21	$470	$9,870
4	Demolition	SY	501	$58	$29,058
5	Earthwork/Sediment Basin	CY	900	$45	$40,500
6	Pavement Replacement	TON	165	$475	$78,375
				Sub Total	$693,803
7	SWPPP (5%)	LS	1	$34,690	$34,690
8	Mobilization/Demobilization (15%)	LS	1	$104,070	$104,070
9	Design (15%)	LS	1	$104,070	$104,070
10	Construction Management (12%)	LS	1	$83,256	$83,256
11	Utilities (5%)	LS	1	$34,690	$34,690
12	Traffic Control (5%)	LS	1	$34,690	$34,690
				Subtotal	$1,089,271
				Contingency (20%)	$217,854
				Total	$1,307,125

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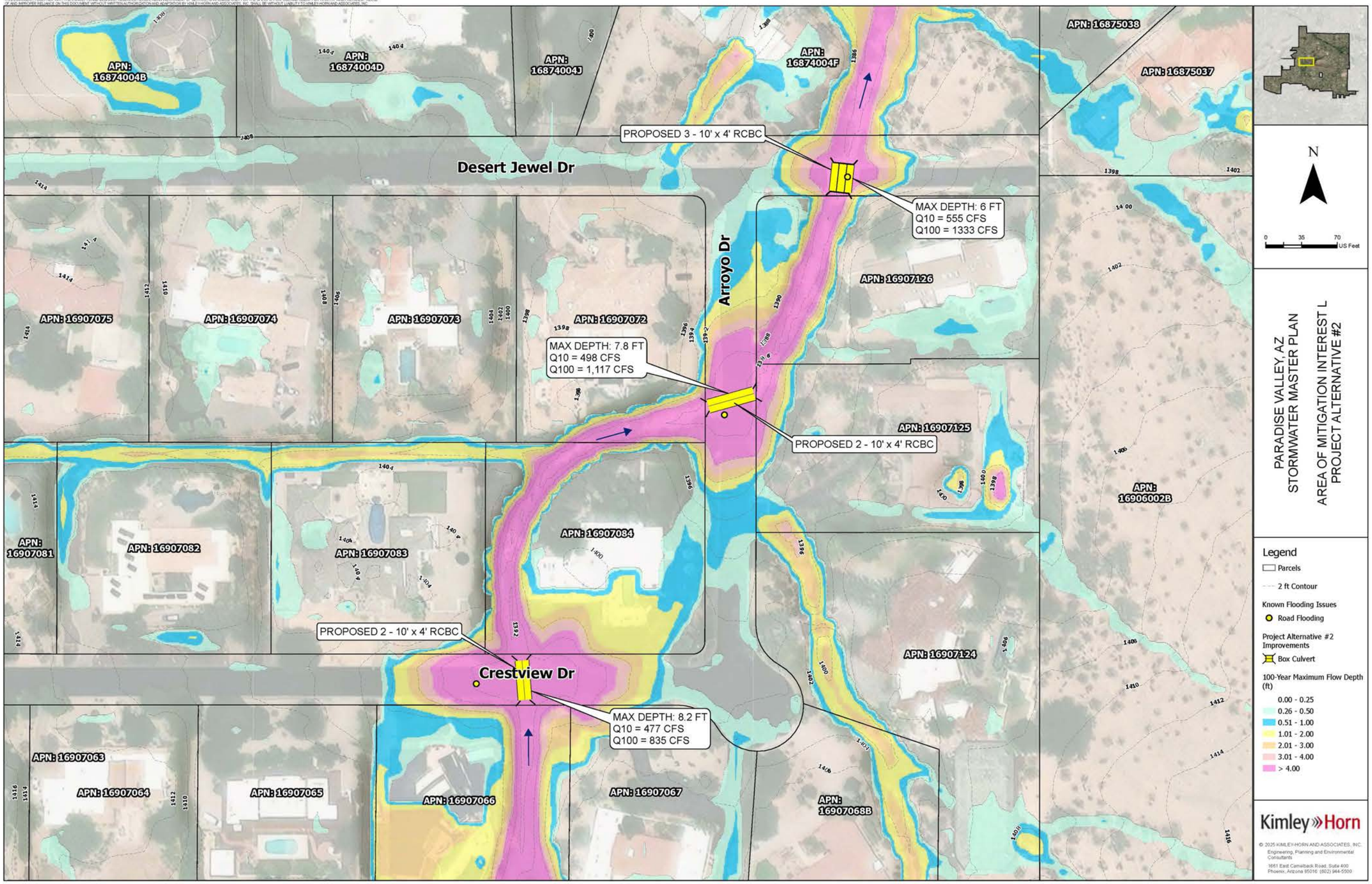

Conceptual Cost Estimate for Alternative 2

Item	Description	Unit	Quantity	Unit Price	Cost
1	2 - 10' x 4' RCBC	LF	110	$2,300	$253,000
2	3 - 10' x 4' RCBC	LF	30	$3,400	$102,000
3	Headwalls	EA	6	$10,000	$60,000
4	Grouted Riprap	CY	21	$470	$9,870
5	Demolition	SY	501	$58	$29,058
6	Earthwork/Sediment Basin	CY	780	$45	$35,100
7	Pavement Replacement	TON	165	$475	$78,375
				Sub Total	$567,403
8	SWPPP (5%)	LS	1	$28,370	$28,370
9	Mobilization/Demobilization	LS	1	$100,000	$100,000
10	Design	LS	1	$100,000	$100,000
11	Construction Management (15%)	LS	1	$85,110	$85,110
12	Utilities (5%)	LS	1	$28,370	$28,370
13	Traffic Control (5%)	LS	1	$28,370	$28,370
				Subtotal	$937,624
				Contingency (20%)	$187,525
				Total	$1,125,149

	Potential Stuctures Protected	Design and Construction Cost	Potential Streets Protected	GSI Benefits	Project Partnership	Multi-use Opportunities	O&M Constraints and Costs	Utility Constraints	Total Raw Score	Total Weighted Score	Significant R/W Acquisition?
Priority Weighting 1 - 5	5	5	4	1	4	2	3	3			
Alternative 1	1	1	1	1	2	1	2	2	11	17	No
Alternative 2	1	2	1	1	2	1	2	2	12	18	No
Ranking Criteria	1 - 1 to 30 structures 2 - 31 to 50 structures 3 - > 51 structures	1 - Most expensive 2 - Least Expensive	1 - Local street benefits only 2 - Collector street or local streets benefit 3 - Multiple collector streets and local streets benefit	1 - No opportunities 2 - Some opportunities	1 -Grant funding or partnerships unlikely 2 - Local partnerships/grant eligible 3 - Local and Federal partnerships/grant eligible	1 - No opportunities 2 - Some opportunities	1 - Maintenance after every storm event 2 - Maintenance at standard intervals	1 - Major constraints 2 - Minor constraints	19 - Maximum Possible Score	67 - Maximum Possible Score	

XVII. APPENDIX E – PROJECT ALTERNATIVES, EOPC, AND MATRIX

FLOOD HAZARD AREA N ALTERNATIVES

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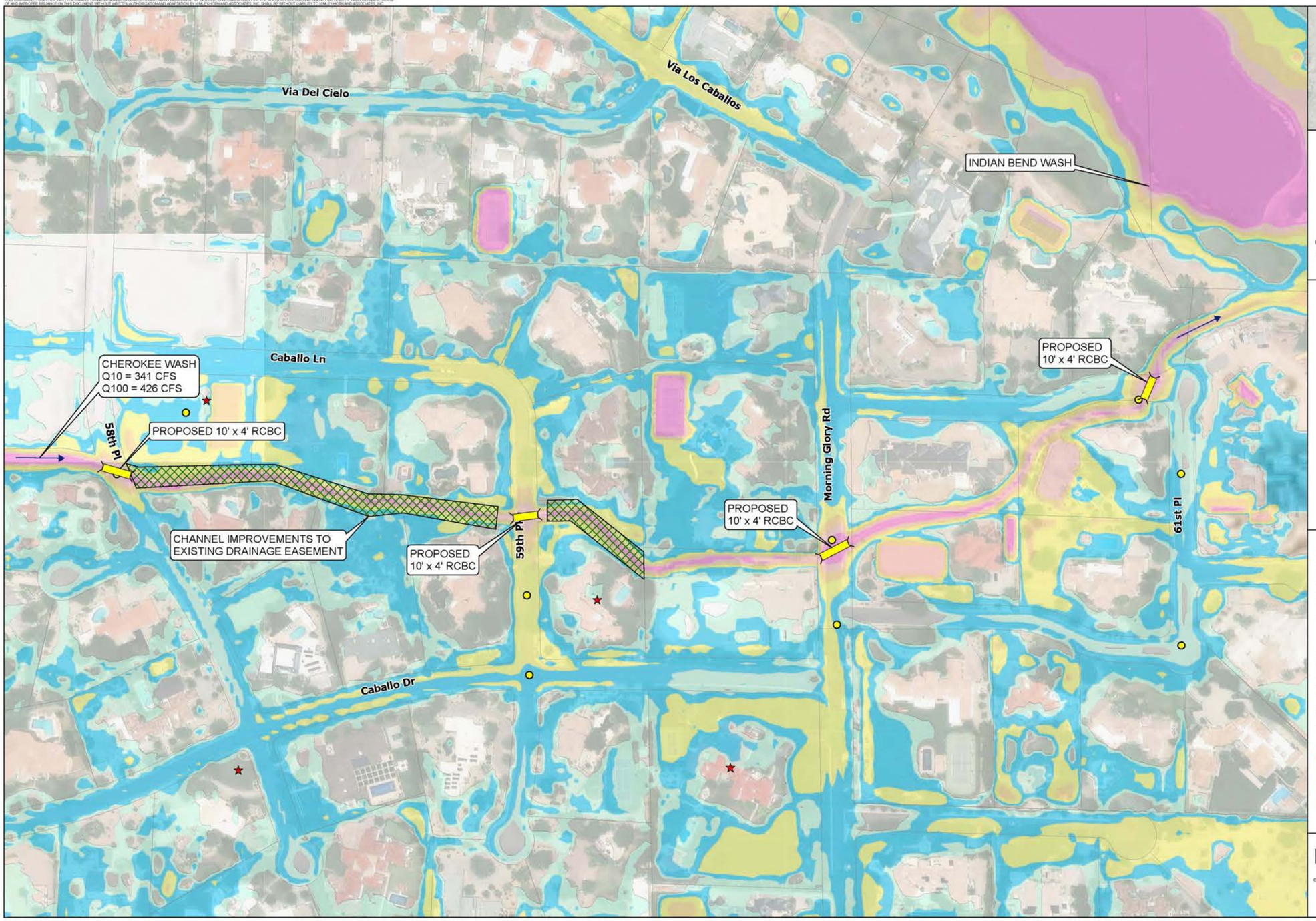

Conceptual Cost Estimate for Alternative 1

Item	Description	Unit	Quantity	Unit Price	Cost
1	4 - 10' x 4' RCBC	LF	200	$7,200	$1,440,000
2	Headwall	EA	8	$8,000	$64,000
3	Grouted Riprap	CY	32	$480	$15,360
4	Pavement Removal and Replacement	LF	800	$150	$120,000
6	Clearing and Grubbing	AC	1	$25,000	$25,000
7	Channel Grading	LS	1	$15,000	$15,000
				Subtotal	$1,679,360
8	SWPPP (3%)	LS	1	$50,381	$50,381
9	Mobilization/Demobilization (12%)	LS	1	$201,523	$201,523
10	Design (10%)	LS	1	$167,936	$167,936
11	Construction Management (10%)	LS	1	$167,936	$167,936
12	Utilities (5%)	LS	1	$83,968	$83,968
13	Traffic Control (5%)	LS	1	$83,968	$83,968
				Subtotal	$2,435,072
				Subtotal	$2,435,072
				Contingency (15%)	$365,261
				Total	$2,800,333

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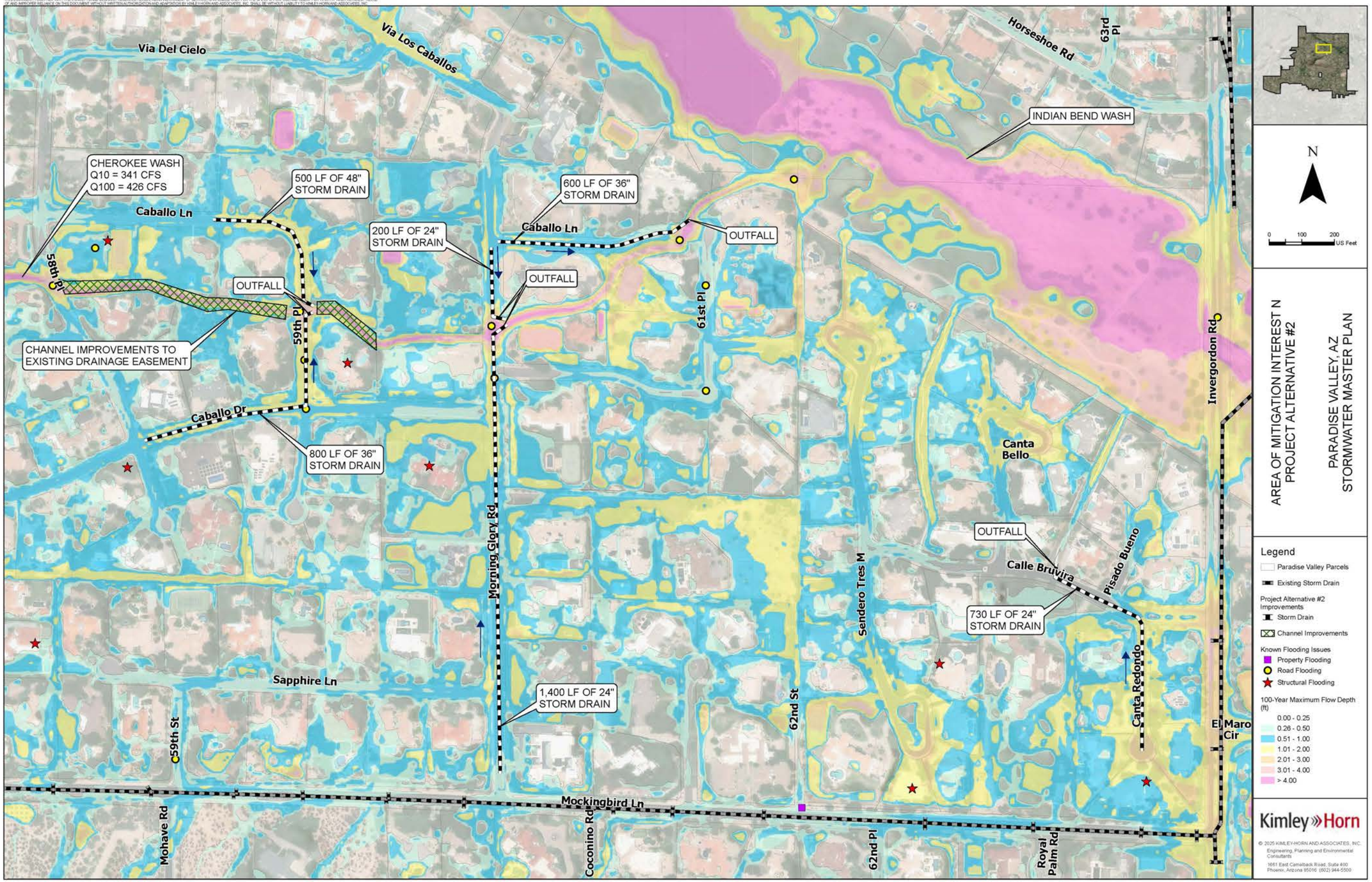


Conceptual Cost Estimate for Alternative 2

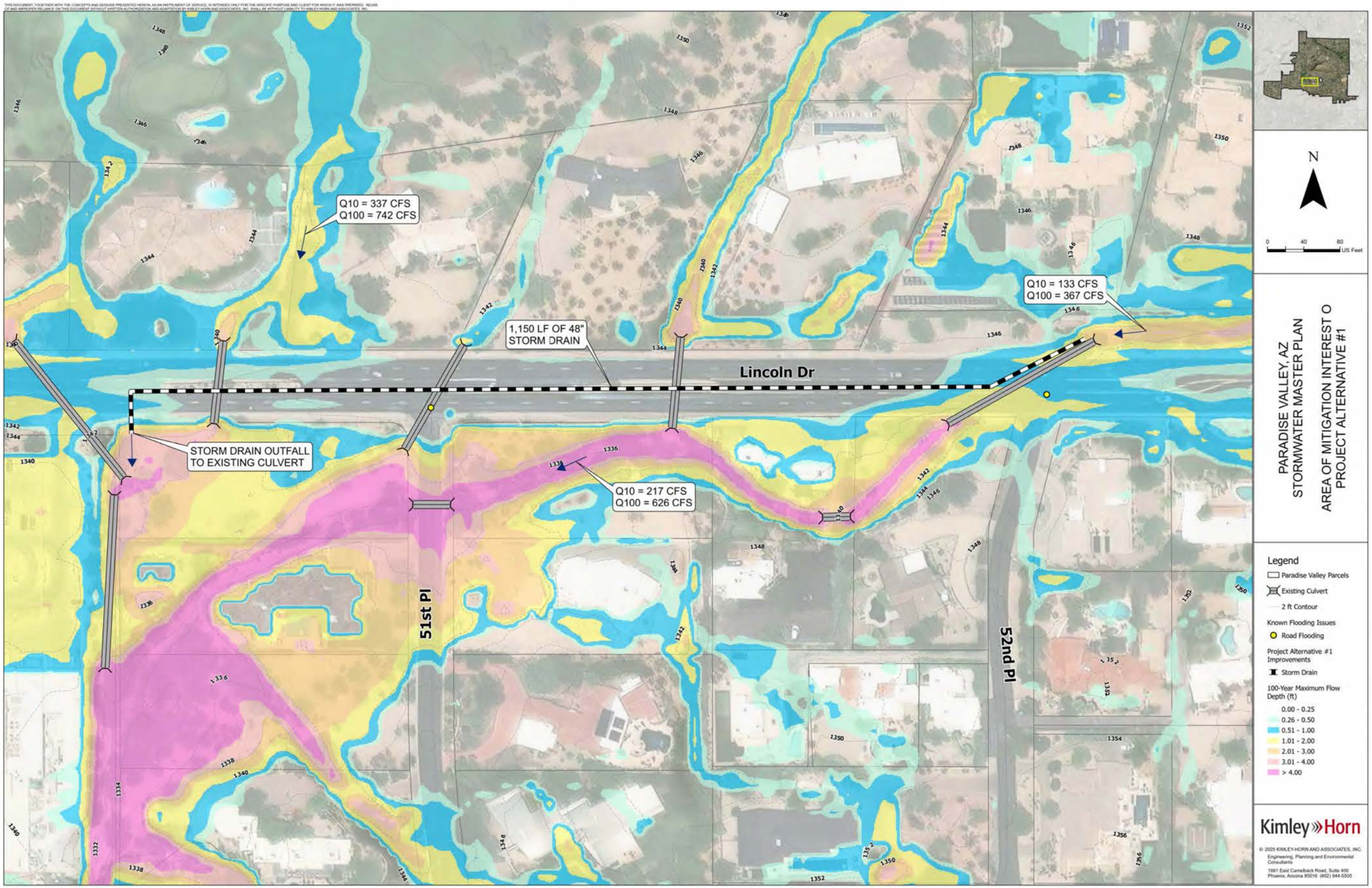
Item	Description	Unit	Quantity	Unit Price	Cost
1	36" RCP Storm Drain	LF	3,810	$420	$1,600,200
2	48" RCP Storm Drain	LF	525	$600	$315,000
3	Outlet structure	EA	5	$2,100	$10,500
4	Catch Basin	EA	21	$12,000	$252,000
5	Manhole	EA	24	$10,000	$240,000
6	Clearing and Grubbing	AC	1	$25,000	$25,000
7	Channel Grading	LS	1	$15,000	$15,000
				Subtotal	2,457,700
6	SWPPP (2%)	LS	1	$49,154	$49,154
7	Mobilization/Demobilization (10%)	LS	1	$245,770	$245,770
8	Design (12%)	LS	1	$294,924	$294,924
9	Construction Management (10%)	LS	1	$245,770	$245,770
10	Utilities (3%)	LS	1	$73,731	$73,731
11	Traffic Control (3%)	LS	1	$73,731	$73,731
				Subtotal	$3,440,780
				Contingency (15%)	$516,117
				Total	$3,956,897

Area N

	Potential Stuctures Protected	Design and Construction Cost	Potential Streets Protected	GSI Benefits	Project Partnership	Multi-use Opportunities	O&M Constraints and Costs	Utility Constraints	Total Raw Score	Total Weighted Score	Significant R/W Aqusition
Priority Weighting 1 - 5	5	5	4	1	4	2	3	3			
Alternative 1	**1**	**2**	**2**	**1**	**2**	**1**	**2**	**1**	**12**	**43**	**No**
Alternative 2	**1**	**1**	**2**	**1**	**2**	**1**	**2**	**1**	**11**	**38**	**No**
Ranking Criteria	1 - 1 to 30 structures 2 - 31 to 50 structures 3 - > 51 structures	1 - Most expensive 2 - Least expensive	1 - Local street benefits only 2 - Collector street or local streets benefit 3 - Multiple collector streets and local streets benefit	1 - No opportunities 2 - Some opportunities	1 -Grant funding or partnerships unlikely 2 - Local partnerships/grant eligible 3 - Local and Federal partnerships/grant eligible	1 - No opportunities 2 - Some opportunities	1 - Maintenance after every storm event 2 - Maintenance at standard intervals	1 - Major constraints 2 - Minor constraints	19 - Highest achievable score	67 - Highest achievable score	

XVII. APPENDIX E – PROJECT ALTERNATIVES, EOPC, AND MATRIX

FLOOD HAZARD AREA O ALTERNATIVES


Q10 = 337 CFS
Q100 = 742 CFS
1,150 LF OF 48" STORM DRAIN
Lincoln Dr
Q10 = 133 CFS
Q100 = 367 CFS
STORM DRAIN OUTFALL TO EXISTING CULVERT
Q10 = 217 CFS
Q100 = 626 CFS
51st Pl
52nd Pl
N
0 40 80 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
AREA OF MITIGATION INTEREST O
PROJECT ALTERNATIVE #1
Legend
Paradise Valley Parcels
Existing Culvert
2 ft Contour
Known Flooding Issues
Road Flooding
Project Alternative #1 Improvements
Storm Drain
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
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Engineering, Planning and Environmental Consultants
1661 East Camelback Road, Suite 400
Phoenix, Arizona 85016 (602) 944-5500

Conceptual Cost Estimate for Alternative 1

Item	Description	Unit	Quantity	Unit Price	Cost
1	Storm Drain 60"	LF	1,150	$780	$897,000
2	Catch Basin	EA	5	$10,000	$50,000
3	Inlet/Oulet Structure	EA	2	$3,600	$7,200
4	Remove and Replace Pavement	LF	1,200	$120	$144,000
5	Manhole	EA	6	$10,000	$60,000
				Subtotal	$1,158,200
6	SWPPP (5%)	LS	1	$57,910	$57,910
7	Mobilization/Demobilization (15%)	LS	1	$173,730	$173,730
8	Design (15%)	LS	1	$173,730	$173,730
9	Construction Management (12%)	LS	1	$138,984	$138,984
10	Utilities (10%)	LS	1	$115,820	$115,820
11	Traffic Control (10%)	LS	1	$115,820	$115,820
				Subtotal	$1,934,194
				Subtotal	$1,934,194
				Contingency (20%)	$386,839
				Total	$2,321,033

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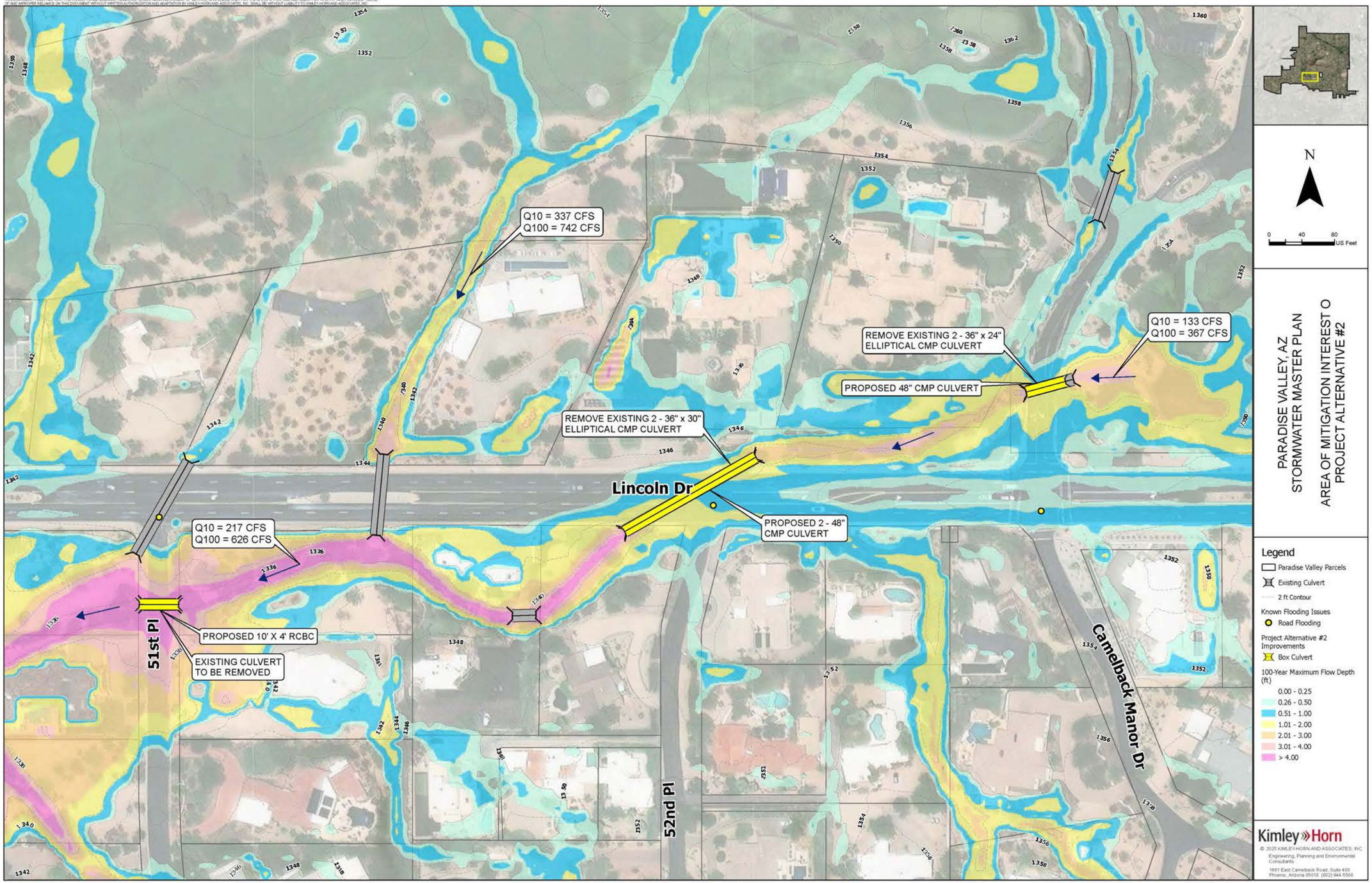

Conceptual Cost Estimate for Alternative 2

Item	Description	Unit	Quantity	Unit Price	Cost
1	10' x 4' RCBC	LF	150	$1,950	$292,500
2	48" RCP Culvert	LF	555	$570	$316,350
4	Headwalls	EA	6	$12,000	$72,000
5	Grouted Riprap	CY	22	$470	$10,340
6	Excavation	CY	1,050	$65	$68,250
7	Remove and Replace Pavement	LF	315	$220	$69,300
				Subtotal	$828,740
8	SWPPP (5%)	LS	1	$41,437	$41,437
9	Mobilization/Demobilization (15%)	LS	1	$124,311	$124,311
10	Design (10%)	LS	1	$124,311	$124,311
11	Construction Management (10%)	LS	1	$82,874	$82,874
12	Utilities (12%)	LS	1	$99,449	$99,449
13	Traffic Control (15%)	LS	1	$124,311	$124,311
				Subtotal	$1,425,433
				Contingency (25%)	$356,358
				Total	$1,781,791

Area O Project Matrix

	Potential Stuctures Protected	Design and Construction Cost	Potential Streets Protected	GSI Benefits	Project Partnership	Multi-use Opportunities	O&M Constraints and Costs	Utility Constraints	Total Raw Score	Total Weighted Score	Significant R/W Acquisition?
Priority Weighting 1 - 5	5	5	4	1	4	2	3	3			
Alternative 1	1	1	2	1	2	1	2	1	11	38	No
Alternative 2	1	2	2	1	2	1	2	1	12	43	No
Ranking Criteria	1 - 1 to 30 structures 2 - 31 to 50 structures 3 - > 51 structures	1 - Most expensive 2 - Least expensive	1 - Local street benefits only 2 - Collector street or local streets benefit 3 - Multiple collector streets and local streets benefit	1 - No opportunities 2 - Some opportunities	1 -Grant funding or partnerships unlikely 2 - Local partnerships/grant eligible 3 - Local and Federal partnerships/grant eligible	1 - No opportunities 2 - Some opportunities	1 - Maintenance after every storm event 2 - Maintenance at standard intervals	1 - Major constraints 2 - Minor constraints	19 - Maximum possible score	67 - Maximum possible score	

XVII. APPENDIX E – PROJECT ALTERNATIVES, EOPC, AND MATRIX

FLOOD HAZARD AREA H ALTERNATIVES

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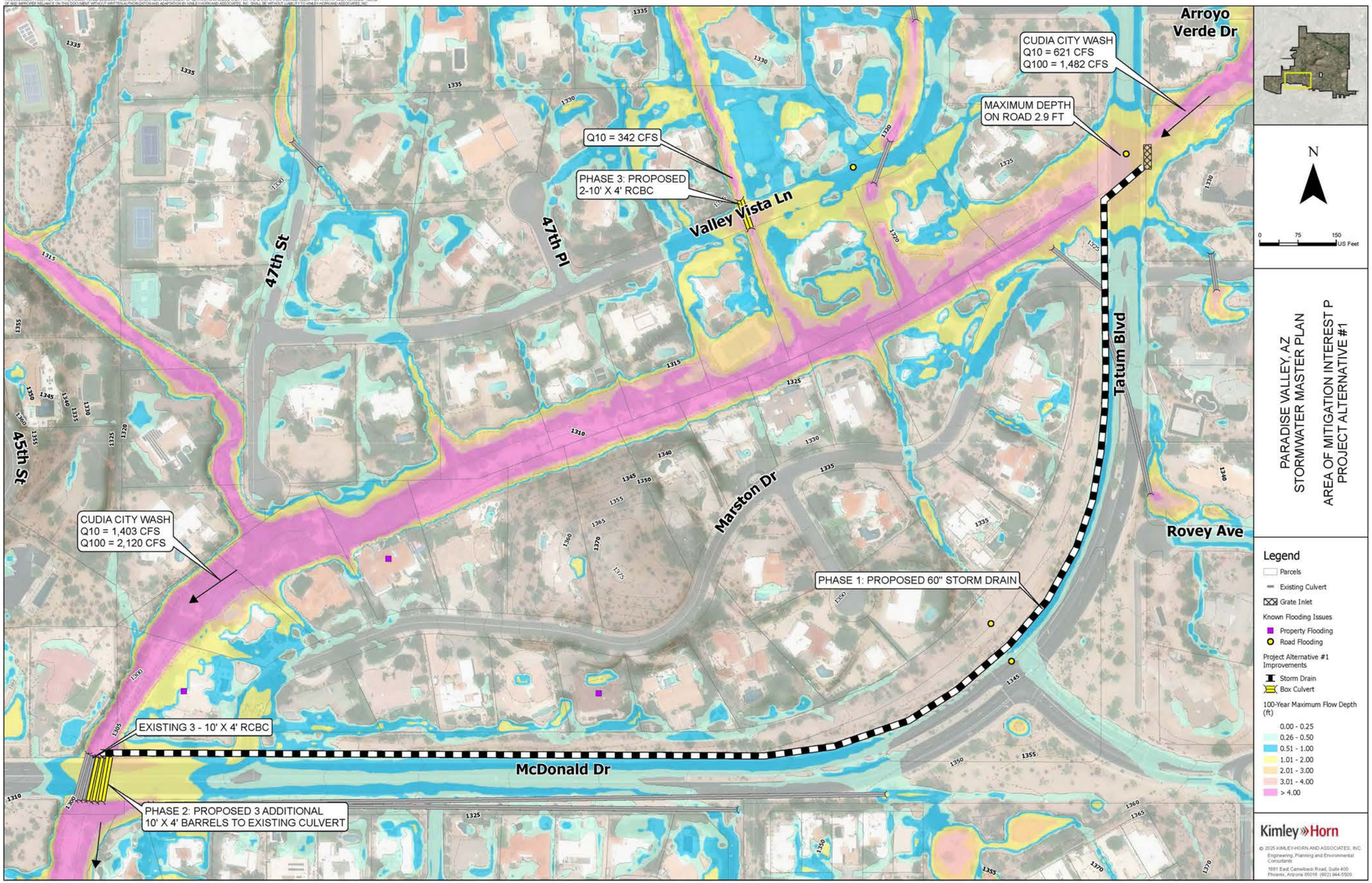

Conceptual Cost Estimate for Alternative 1

Item	Description	Unit	Quantity	Unit Price	Cost
	Phase 1: Tatum Boulevard Storm Drain				
1	Storm Drain (36") & Trenching	LF	2900	$1,300	$3,770,000
2	Outlet Structure	EA	1	$5,000	$5,000
3	Inlet Structure	EA	1	$3,500	$3,500
4	Remove and Replace Pavement	SY	35	$185	$6,475
5	Channel Excavation & Haul	CY	16,250	$20	$325,000
6	Clearing and Grubbing	AC	4.85	$4,000	$19,400
7	Landscaping	AC	4.85	$7,450	$36,133
				Subtotal	$4,165,508
8	SWPPP (1%)	LS	1	$41,655	$41,655
9	Mobilization/Demobilization (10%)	LS	1	$416,551	$416,551
10	Design (10%)	LS	1	$416,551	$416,551
11	Construction Management (10%)	LS	1	$416,551	$416,551
12	Utilities (3%)	LS	1	$124,965	$124,965
13	Traffic Control (3%)	LS	1	$124,965	$124,965
				Subtotal	$5,706,745
				Contingency (20%)	$1,141,349
				Total	$6,848,094
	Phase 2: McDonald Drive Culvert Expansion				
1	1 - 10' x 4' RCBC	LF	90	$2,200	$198,000
2	Drainage Excavation	CY	575	$185	$106,375
3	Pavement Removal and Replacment	SY	167	$185	$30,895
4	Headwall Extension	EA	2	$10,000	$20,000
				Subtotal	$355,270
5	SWPPP (5%)	LS	1	$17,764	$17,764
6	Mobilization/Demobilization	LS	1	$100,000	$100,000
7	Design	LS	1	$75,000	$75,000
8	Construction Management (15%)	LS	1	$53,291	$53,291
9	Utilities (8%)	LS	1	$28,422	$28,422
10	Traffic Control (8%)	LS	1	$28,422	$28,422
				Subtotal	$658,167
				Contingency (20%)	$131,633
				Total	$789,801
	Phase 3: Valley Vista Culvert				
1	36" RCP	LF	35	$435	$15,225
2	Headwall	EA	2	$1,200	$2,400
3	Grouted Riprap	CY	15	$270	$4,050
4	Remove and Replace Pavement	SY	20	$185	$3,700
5	Excavation	CY	32	$120	$3,840
				Subtotal	$29,215
6	SWPPP (5%)	LS	1	$1,461	$1,461
7	Mobilization/Demobilization	LS	1	$5,000	$5,000
8	Design	LS	1	$5,000	$5,000
9	Construction Management (10%)	LS	1	$2,922	$2,922
10	Utilities (5%)	LS	1	$1,461	$1,461
11	Traffic Control (5%)	LS	1	$1,461	$1,461
				Subtotal	$46,519
				Contingency (20%)	$9,304
				Total	$55,823

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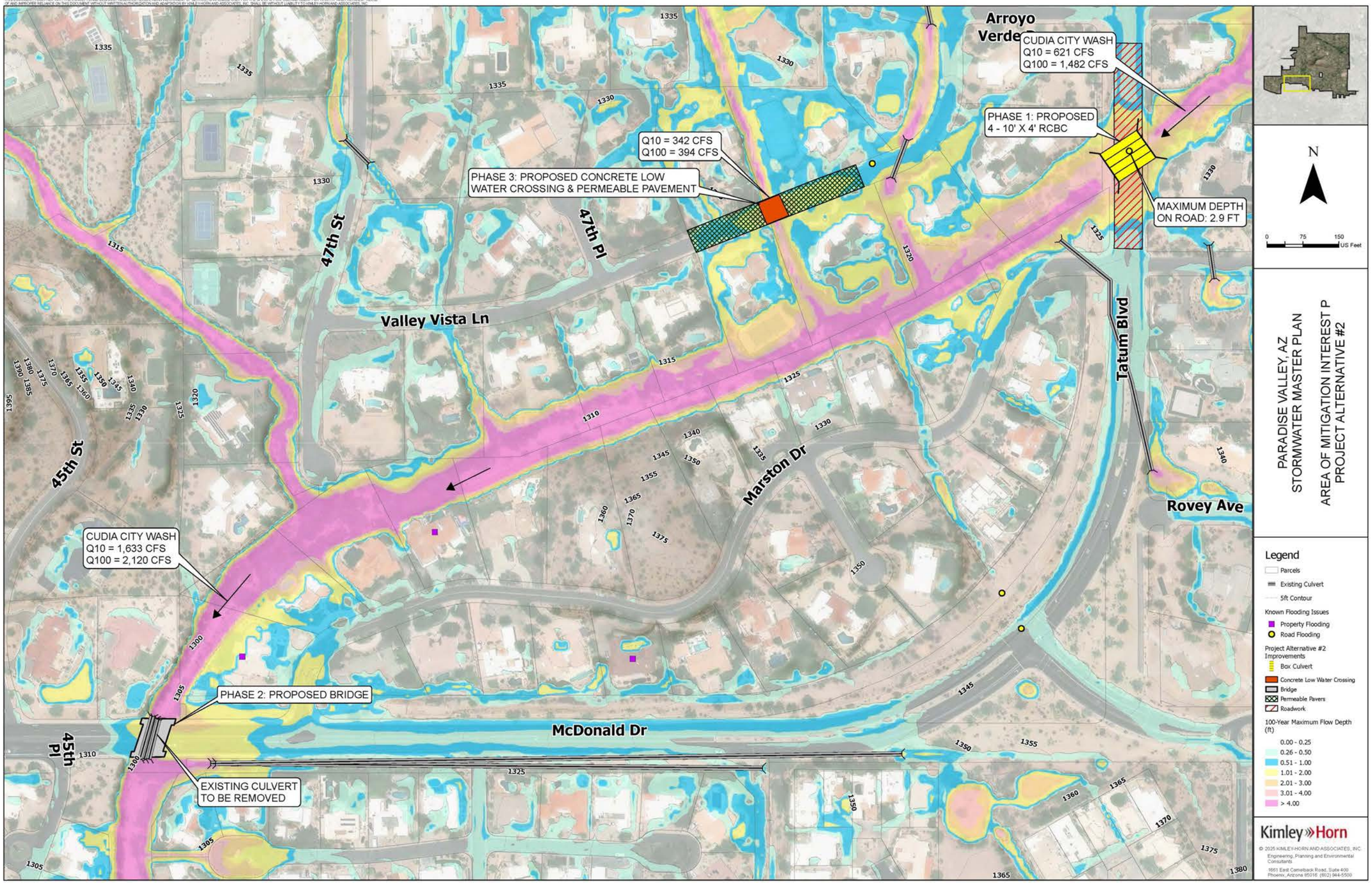

Conceptual Cost Estimate for Alternative 2

Item	Description	Unit	Quantity	Unit Price	Cost
	Phase 1: Tatum Boulevard Culvert				
1	4 - 10' x 4' RCBC	LF	110	$6,400	$704,000
2	Inlet	EA	1	$20,000	$20,000
3	Outlet	EA	1	$20,000	$20,000
4	Channel Excavation & Haul	CY	1,100	$55	$60,500
5	Manhole	EA	3	$10,000	$30,000
6	Roadway Profile Raise	LF	500	$550	$275,000
7	Riprap	CY	250	$100	$25,000
				Subtotal	$1,134,500
8	SWPPP (3%)	LS	1	$34,035	$34,035
9	Mobilization/Demobilization (10%)	LS	1	$113,450	$113,450
10	Design (10%)	LS	1	$113,450	$113,450
11	Construction Management (10%)	LS	1	$113,450	$113,450
12	Utilities (7%)	LS	1	$79,415	$79,415
13	Traffic Control (5%)	LS	1	$56,725	$56,725
				Subtotal	$1,645,025
				Contingency (20%)	$329,005
				Total	$1,974,030
	Phase 2: McDonald Drive Bridge				
1	Removal of Stuctural Concrete	CY	425	$305	$129,625
2	Precast, Prestressed Concrete Bridge Member	LF	100	$850	$85,000
3	Pedestrian-Traffic Bridge Railing	LF	120	$380	$45,600
4	Structural Concrete	CY	650	$2,750	$1,787,500
				Subtotal	$2,047,725
5	SWPPP (1%)	LS	1	$20,477	$20,477
6	Mobilization/Demobilization (10%)	LS	1	$204,773	$204,773
7	Design (10%)	LS	1	$204,773	$204,773
8	Construction Management (10%)	LS	1	$204,773	$204,773
9	Utilities (3%)	LS	1	$61,432	$61,432
10	Traffic Control (2%)	LS	1	$40,955	$40,955
				Subtotal	$2,784,908
				Contingency (20%)	$556,982
				Total	$3,341,890
	Phase 3: Valley Vista Low Water Crossing				
1	Removal of Existing Pavement	SY	970	$10	$9,700
2	Permeable Pavement	LF	375	$32	$12,000
3	Portland Cement Concrete Pavement	SY	100	$120	$12,000
				Subtotal	$33,700
4	SWPPP (3%)	LS	1	$1,011	$1,011
5	Mobilization/Demobilization	LS	1	$3,370	$3,370
6	Design (10%)	LS	1	$3,370	$3,370
7	Construction Management (10%)	LS	1	$3,370	$3,370
8	Utilities (5%)	LS	1	$1,685	$1,685
9	Traffic Control (3%)	LS	1	$1,011	$1,011
				Subtotal	$47,517
				Contingency (20%)	$9,503
				Total	$57,020

Area P Project Matrix

	Potential Stuctures Protected	Design and Construction Cost	Potential Streets Protected	GSI Benefits	Project Partnership	Multi-use Opportunities	O&M Constraints and Costs	Utility Constraints	Total Raw Score	Total Weighted Score	Significant R/W Acquisition?
Priority Weighting 1 - 5	5	5	4	1	4	2	3	3			
Phase 1: Alternative 1	1	1	2	1	2	1	2	1	11	38	No
Phase 1: Alternative 2	1	2	2	1	2	1	2	1	12	43	No
Phase 2: Alternative 1	1	2	2	1	2	1	2	1	12	43	No
Phase 2: Alternative 2	1	1	2	1	2	1	2	1	11	38	No
Phase 3: Alternative 1	1	2	1	1	2	1	2	2	12	42	No
Phase 3: Alternative 2	1	1	1	2	2	1	2	2	12	38	No
Ranking Criteria	1 - 1 to 30 structures 2 - 31 to 50 structures 3 - > 51 structures	1 - Most expensive 2 - Least expensive	1 - Local street benefits only 2 - Collector street or local streets benefit 3 - Multiple collector streets and local streets benefit	1 - No opportunities 2 - Some opportunities	1 - Grant funding or partnerships unlikely 2 - Local partnerships/grant eligible 3 - Local and Federal partnerships/grant eligible	1 - No opportunities 2 - Some opportunities	1 - Maintenance after every storm event 2 - Maintenance at standard intervals	1 - Major constraints 2 - Minor constraints	19 - Maximum Possible Score	67 - Maximum Possible Score	

XVIII. APPENDIX F – HIGHEST PRIORITY PROJECTS ANTICIPATED PERFORMANCE

FLOOD HAZARD AREA A

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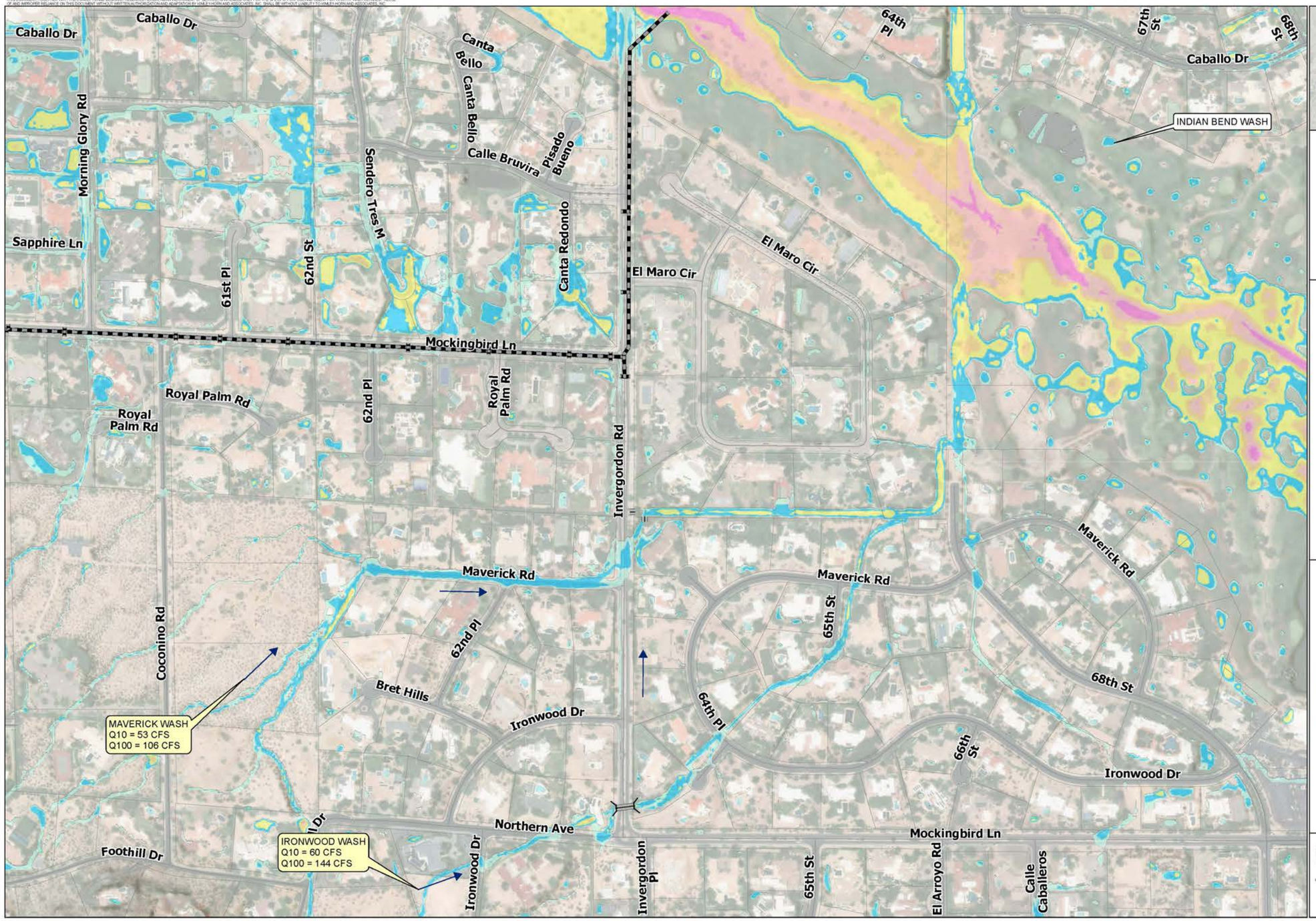

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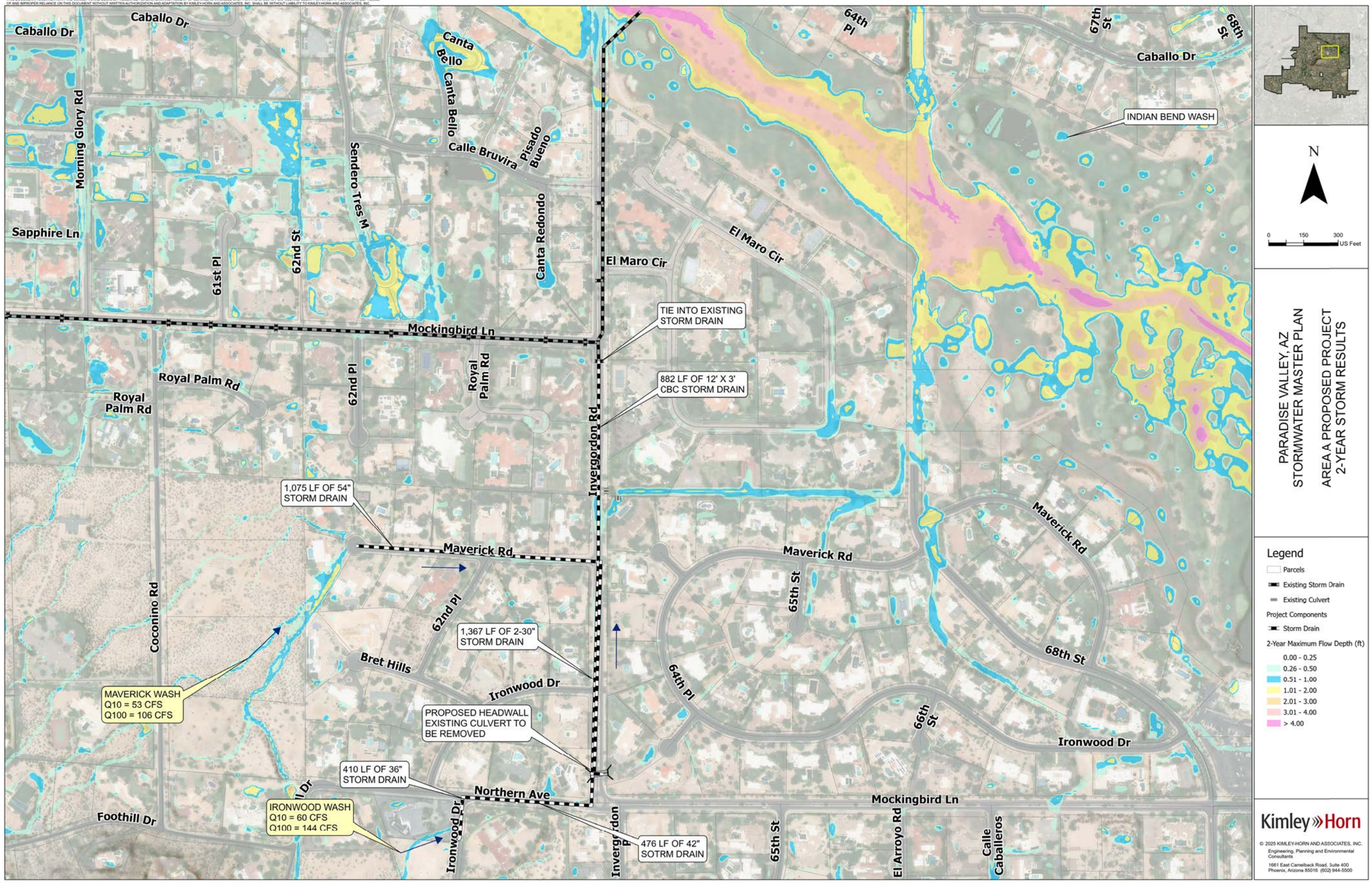

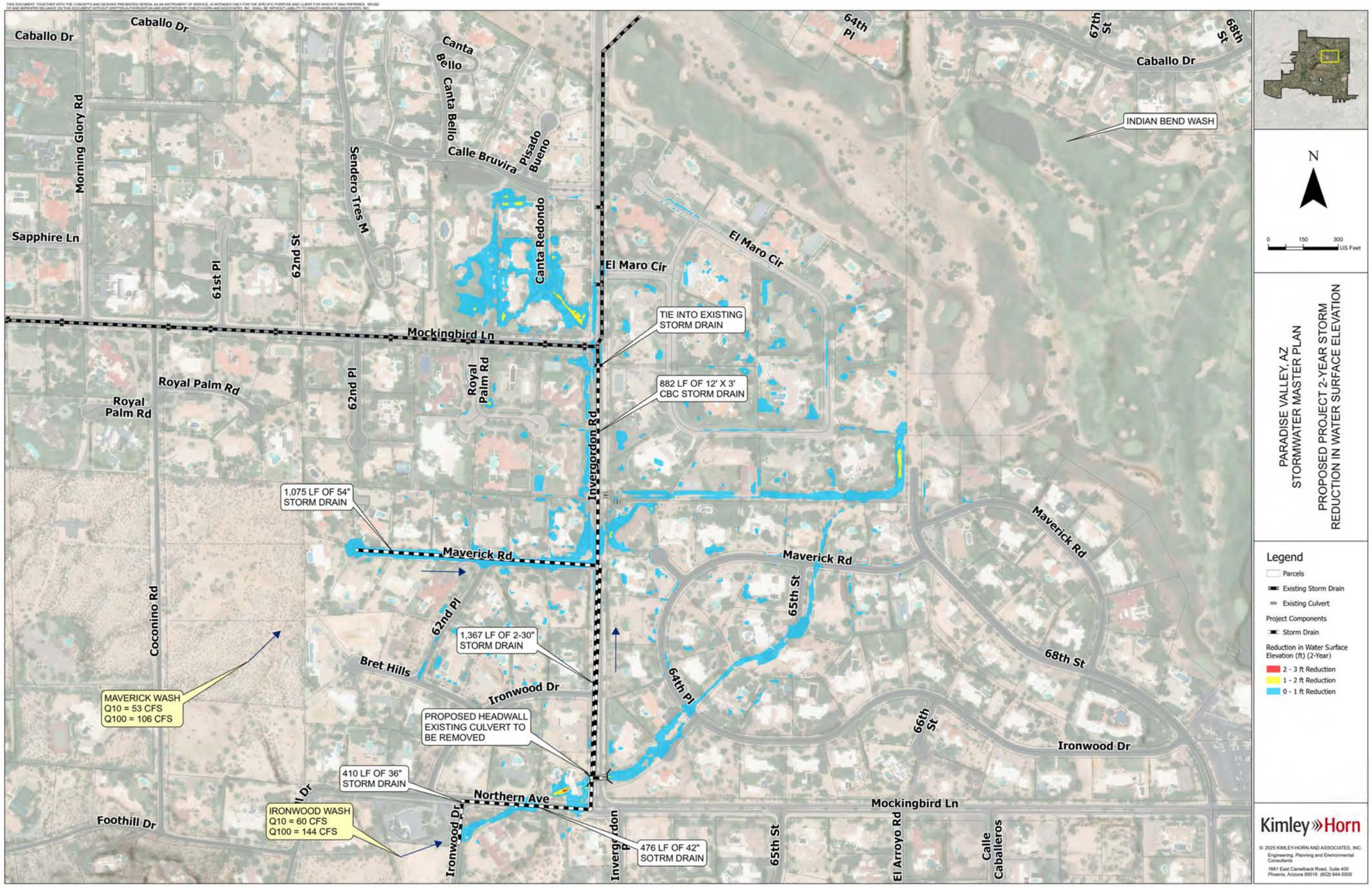
Caballo Dr
Caballo Dr
Morning Glory Rd
Canta Bello
Canta Bello
Sendero Tres M
Calle Bruvira
Pisado Bueno
Canta Redondo
64th Pl
67th St
68th St
Caballo Dr
INDIAN BEND WASH
Sapphire Ln
61st Pl
62nd St
El Maro Cir
El Maro Cir
TIE INTO EXISTING STORM DRAIN
Mockingbird Ln
882 LF OF 12' X 3' CBC STORM DRAIN
Royal Palm Rd
Royal Palm Rd
62nd Pl
Royal Palm Rd
Invergordon Rd
1,075 LF OF 54" STORM DRAIN
Maverick Rd
Maverick Rd
Maverick Rd
62nd Pl
65th St
1,367 LF OF 2-30" STORM DRAIN
Coconino Rd
Bret Hills
Ironwood Dr
64th Pl
68th St
MAVERICK WASH
Q10 = 53 CFS
Q100 = 106 CFS
PROPOSED HEADWALL
EXISTING CULVERT TO
BE REMOVED
66th St
Ironwood Dr
410 LF OF 36" STORM DRAIN
Northern Ave
Mockingbird Ln
IRONWOOD WASH
Q10 = 60 CFS
Q100 = 144 CFS
Foothill Dr
Ironwood Dr
Invergordon Rd
476 LF OF 42" SOTRM DRAIN
65th St
El Arroyo Rd
Calle Caballeros
N
0
150
300
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
PROPOSED PROJECT 2-YEAR STORM
REDUCTION IN WATER SURFACE ELEVATION
Legend
Parcels
Existing Storm Drain
Existing Culvert
Project Components
Storm Drain
Reduction in Water Surface Elevation (ft) (2-Year)
2 - 3 ft Reduction
1 - 2 ft Reduction
0 - 1 ft Reduction
Kimley»Horn
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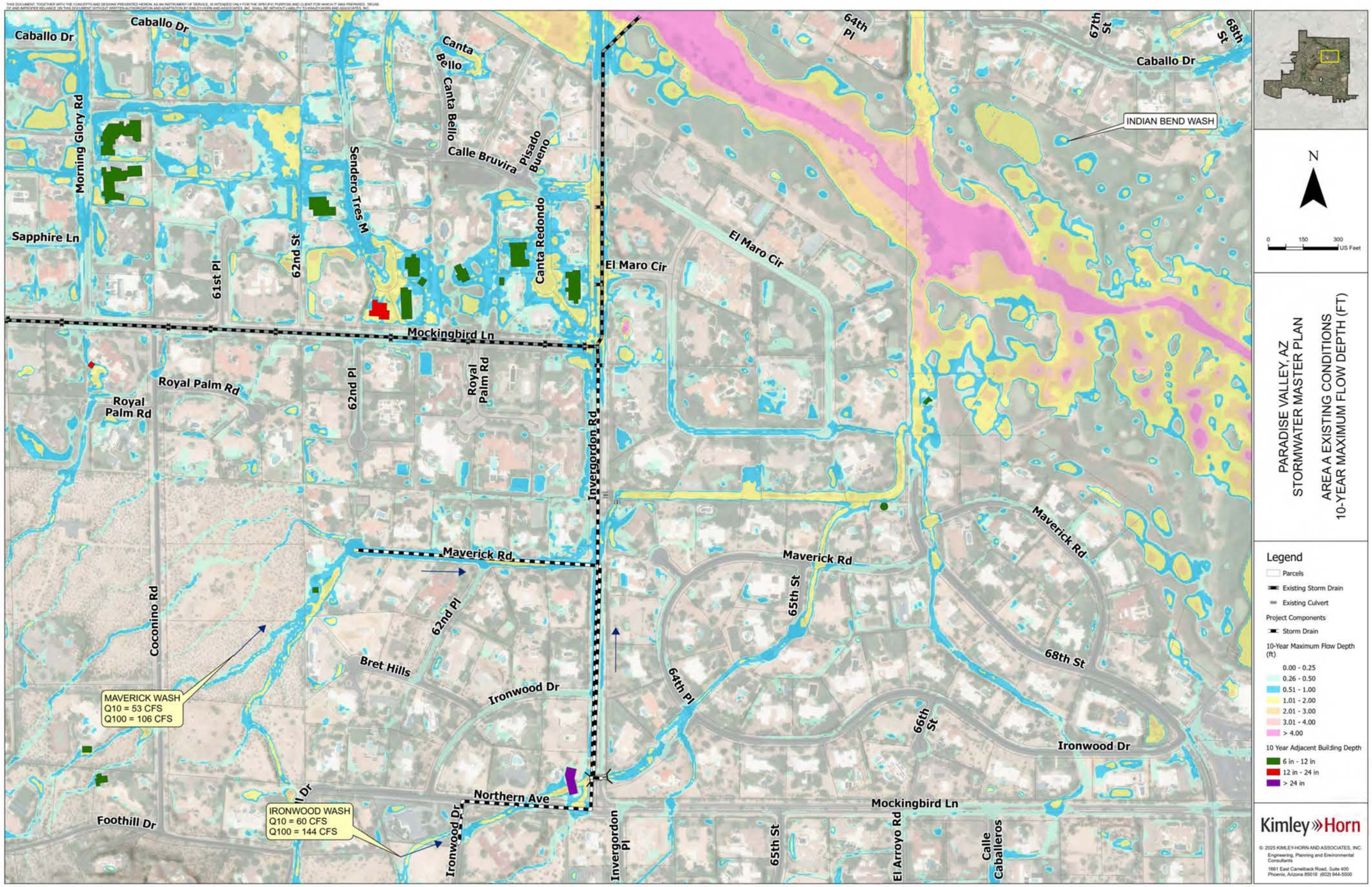
Phoenix, Arizona 85016 (602) 944-5500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Q10 = 60 CFS
Q100 = 144 CFS
N
0 150 300
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
AREA A EXISTING CONDITIONS
10-YEAR MAXIMUM FLOW DEPTH (FT)
Legend
Parcels
Existing Storm Drain
Existing Culvert
Project Components
Storm Drain
10-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
10 Year Adjacent Building Depth
6 in - 12 in
12 in - 24 in
> 24 in
Kimley»Horn
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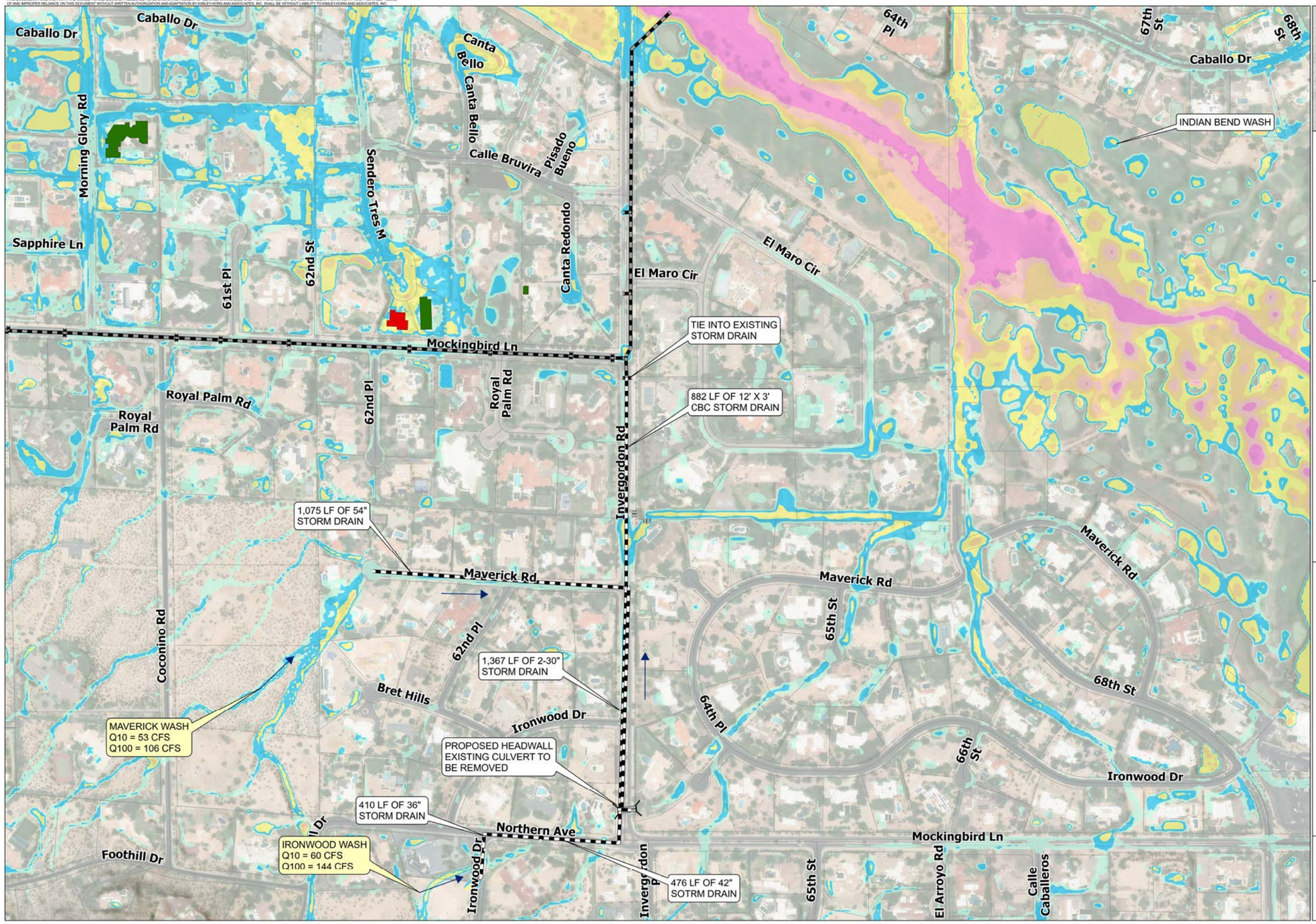

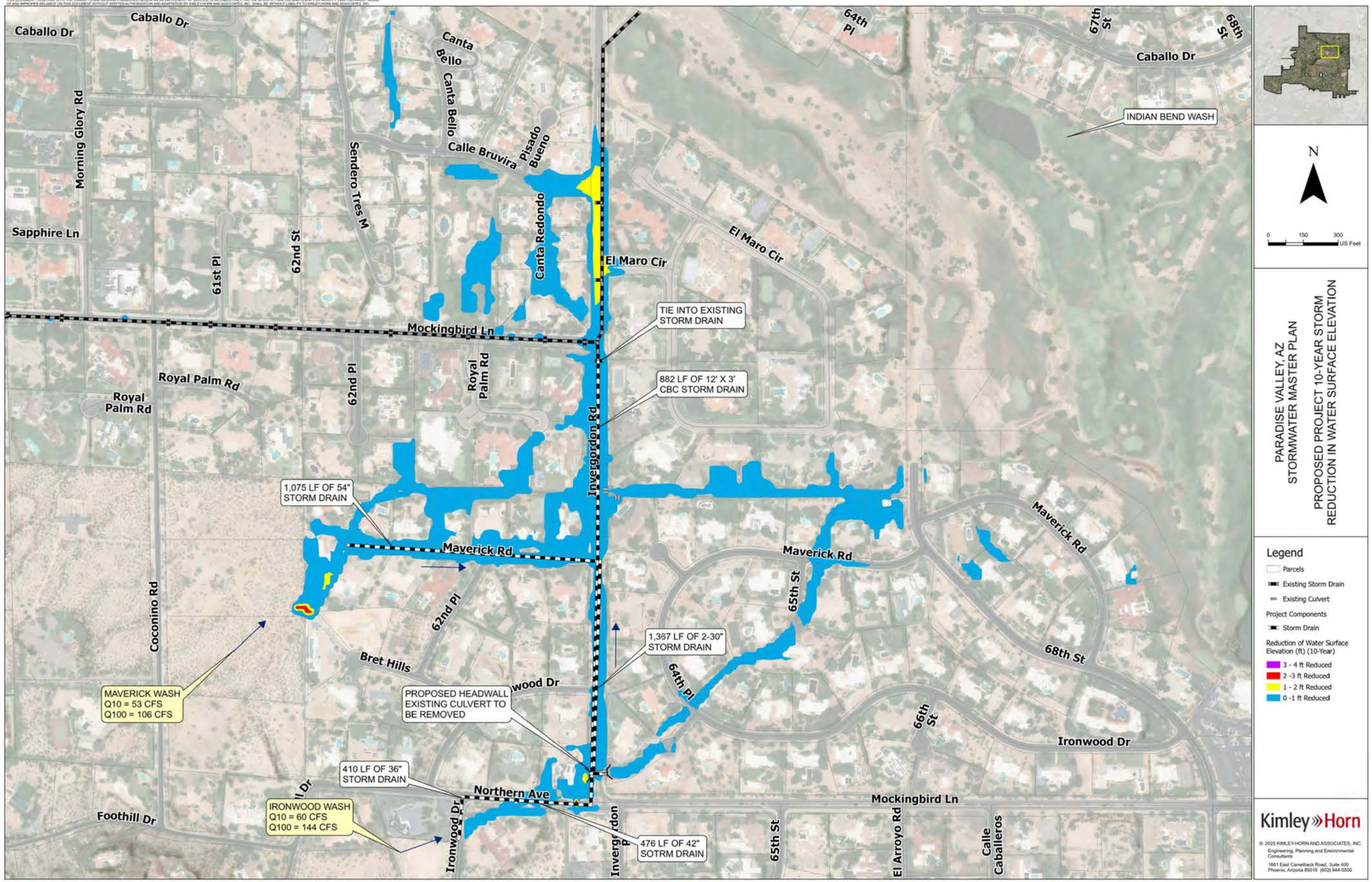
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Q100 = 144 CFS
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El Arroyo Rd
Calle Caballeros
N
0 150 300 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
PROPOSED PROJECT 10-YEAR STORM
REDUCTION IN WATER SURFACE ELEVATION
Legend
Parcels
Existing Storm Drain
Existing Culvert
Project Components
Storm Drain
Reduction of Water Surface Elevation (ft) (10-Year)
3 - 4 ft Reduced
2 -3 ft Reduced
1 - 2 ft Reduced
0 -1 ft Reduced
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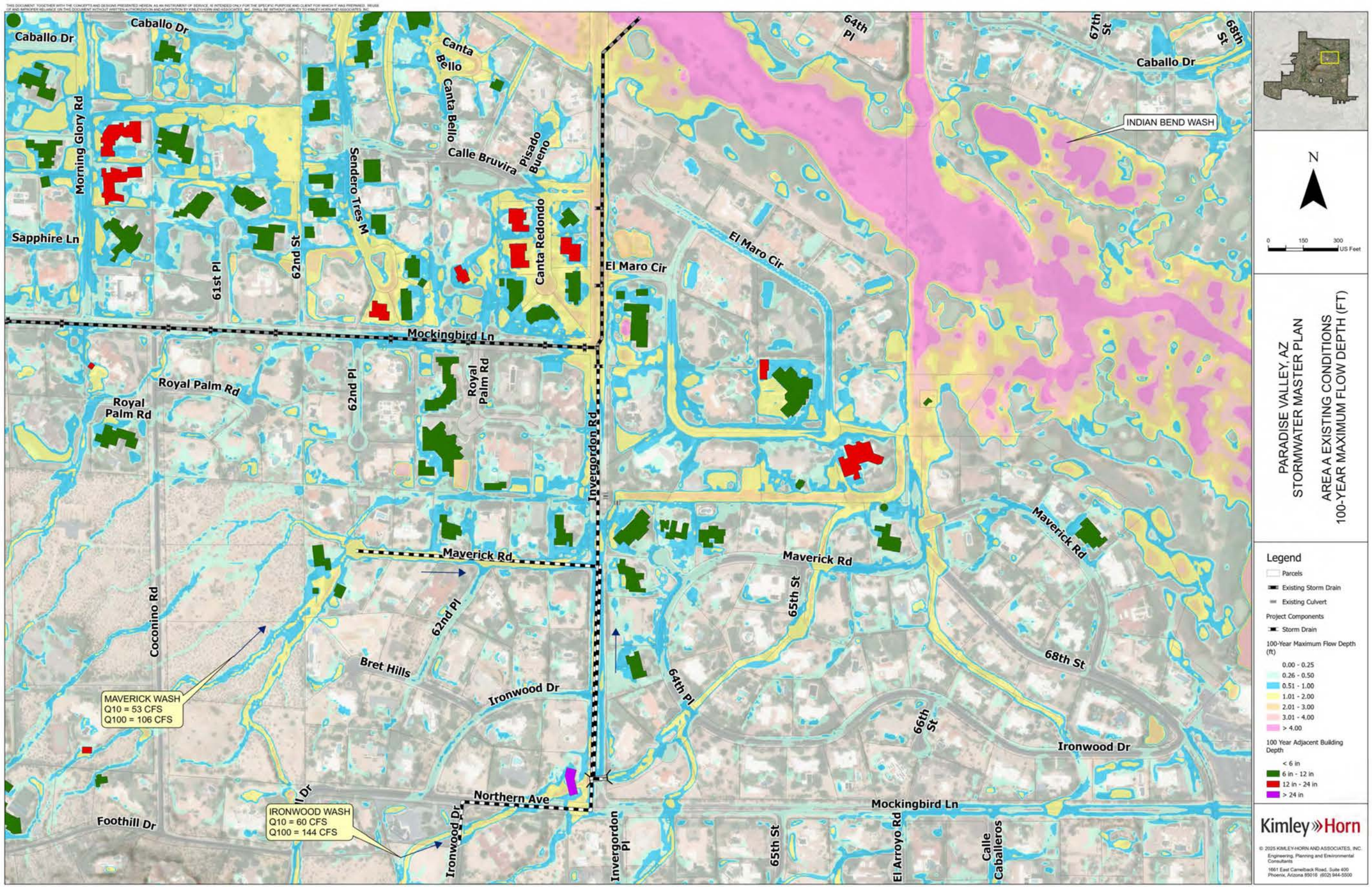
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6 in - 12 in
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> 24 in
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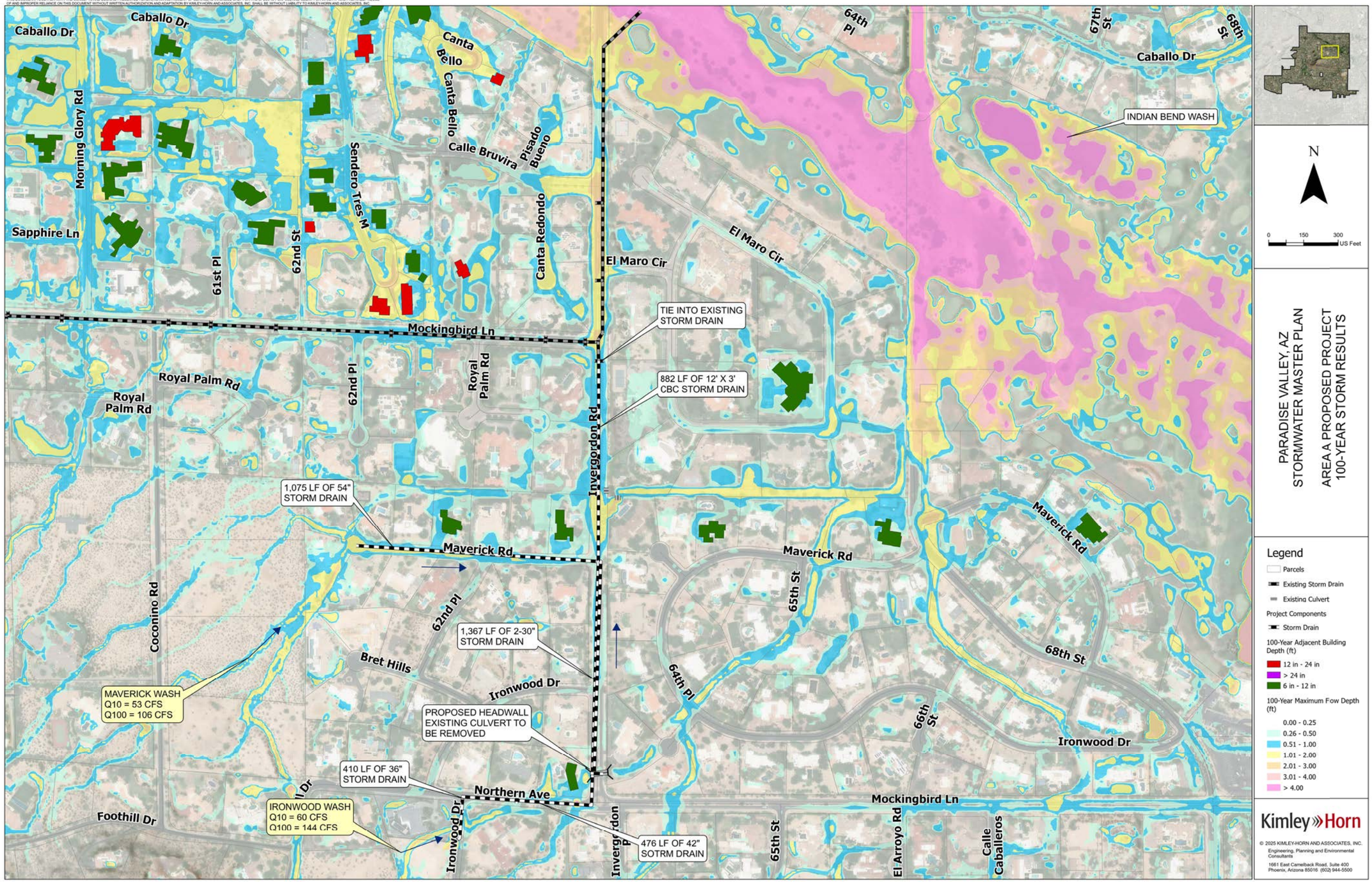

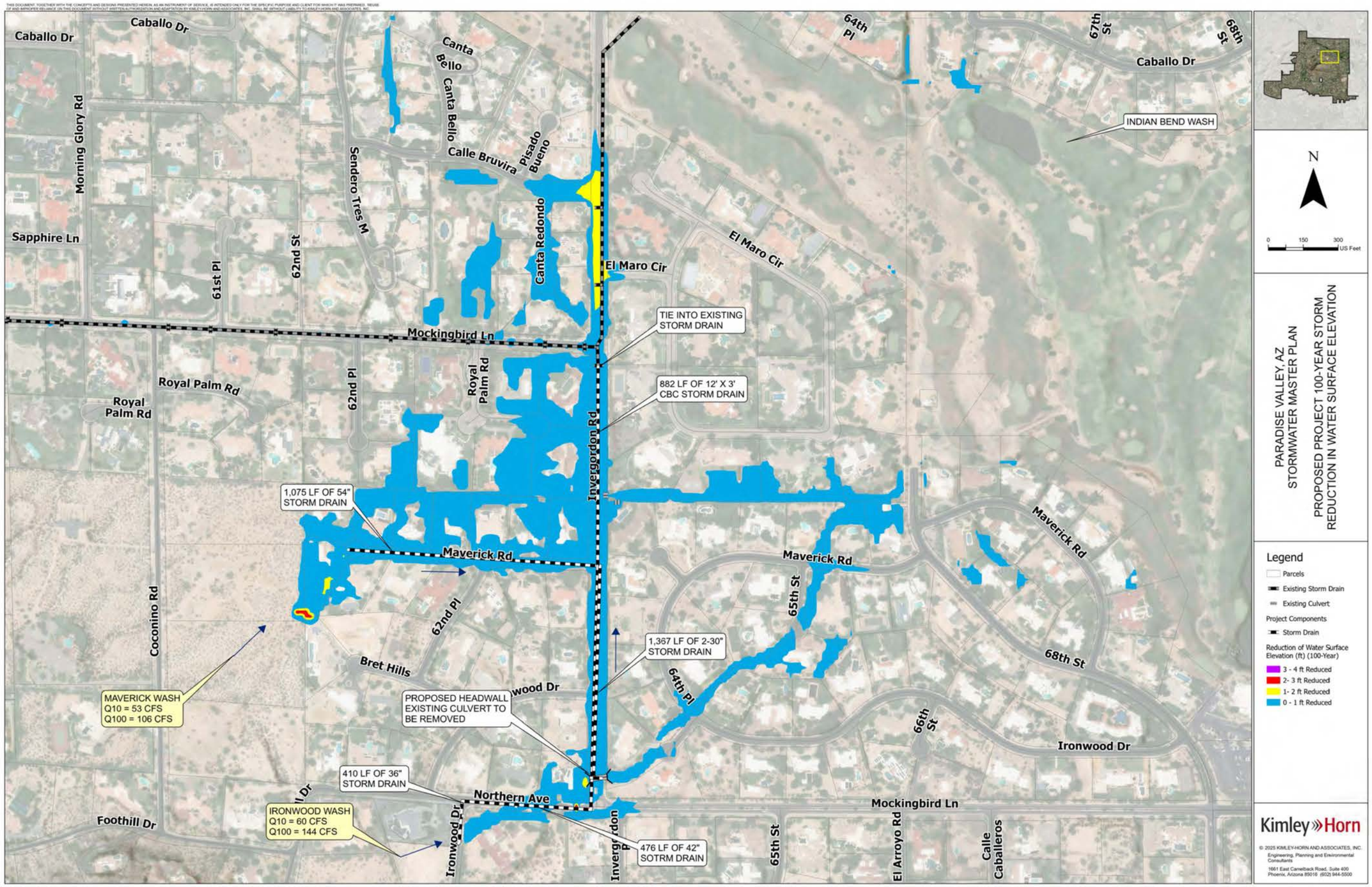
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REDUCTION IN WATER SURFACE ELEVATION
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Parcels
Existing Storm Drain
Existing Culvert
Project Components
Storm Drain
Reduction of Water Surface Elevation (ft) (100-Year)
3 - 4 ft Reduced
2- 3 ft Reduced
1- 2 ft Reduced
0 - 1 ft Reduced
Kimley»Horn
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XVIII. APPENDIX F – HIGHEST PRIORITY PROJECTS ANTICIPATED PERFORMANCE

FLOOD HAZARD AREA H

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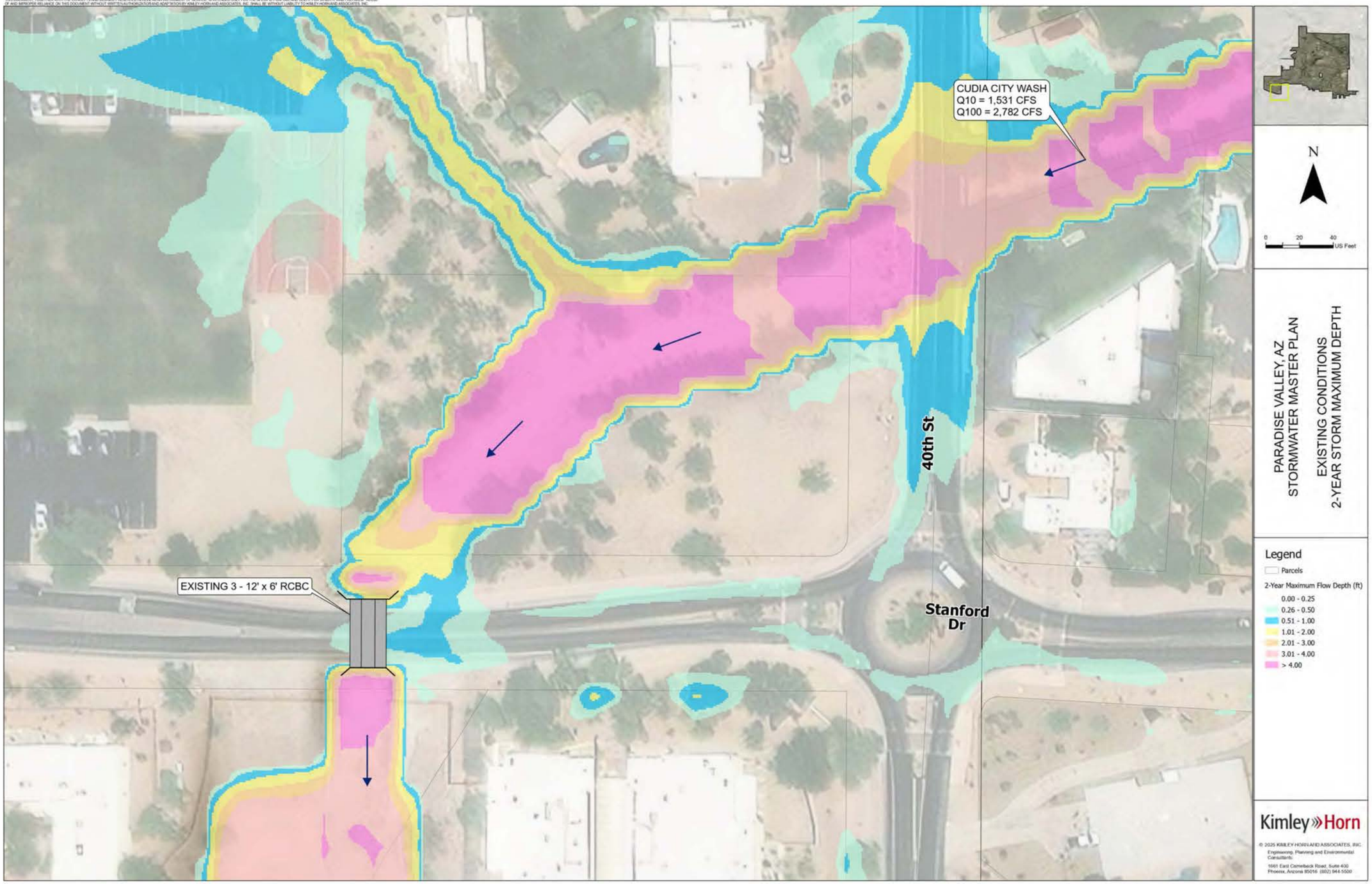

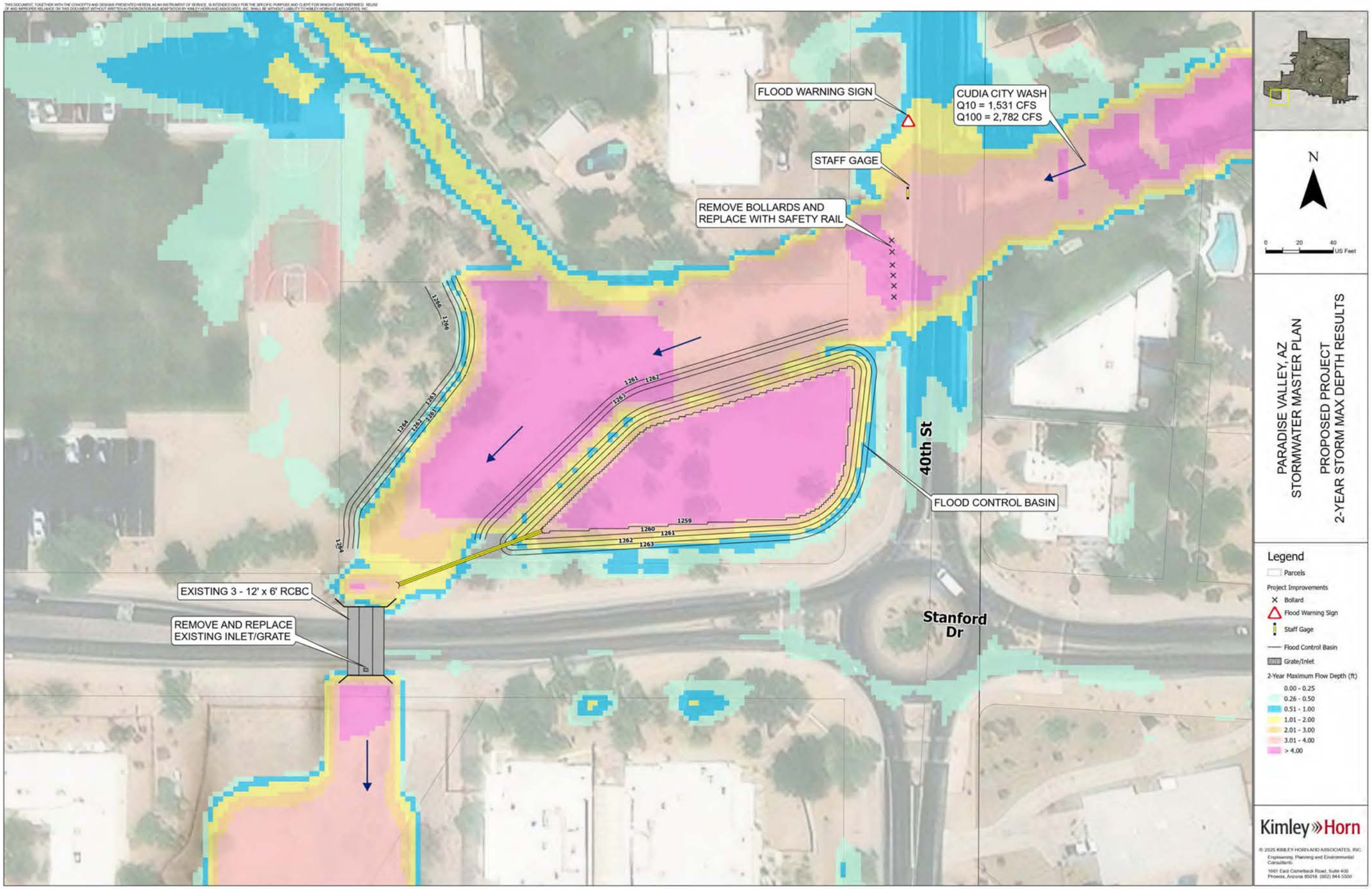

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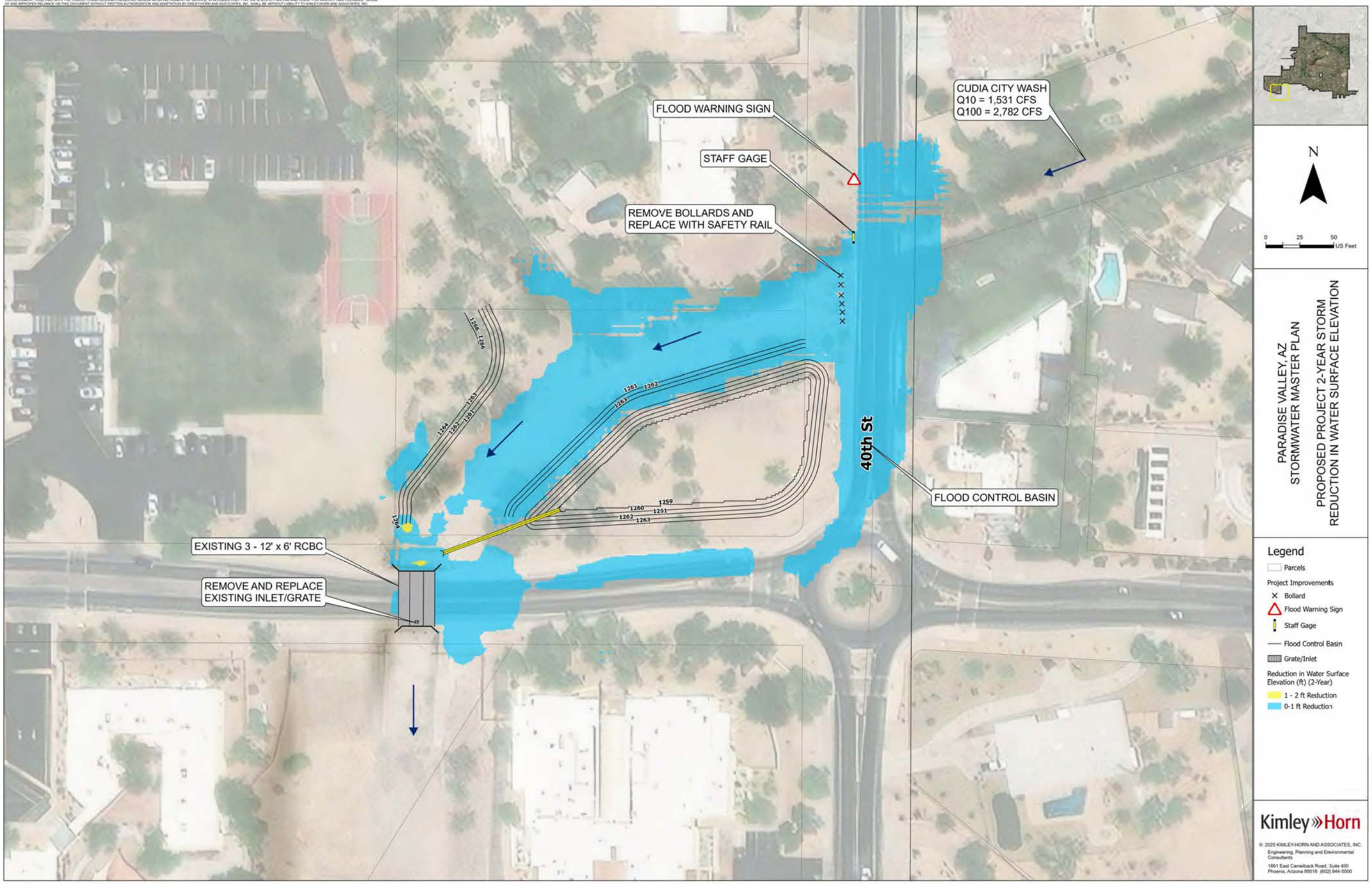

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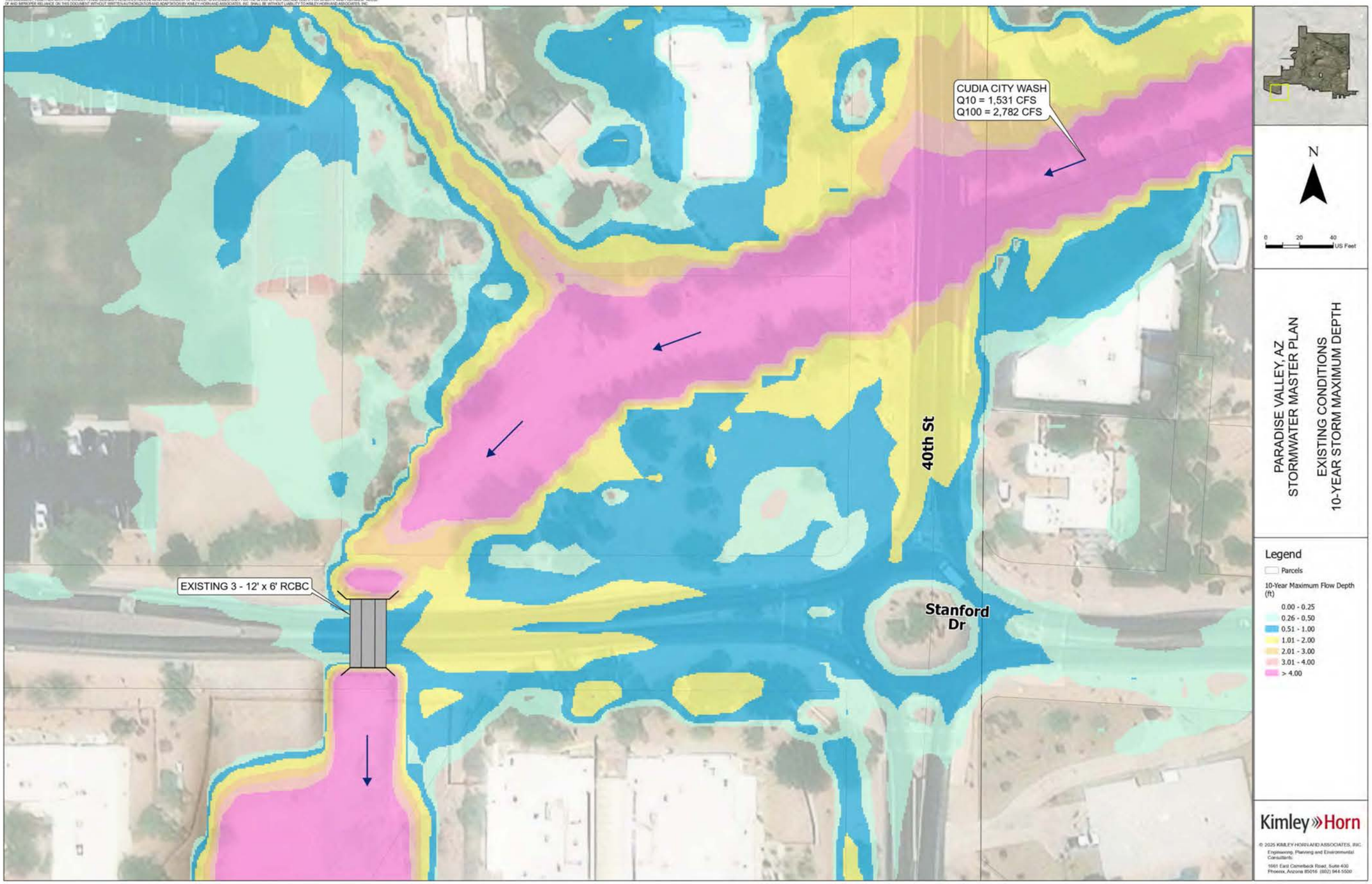

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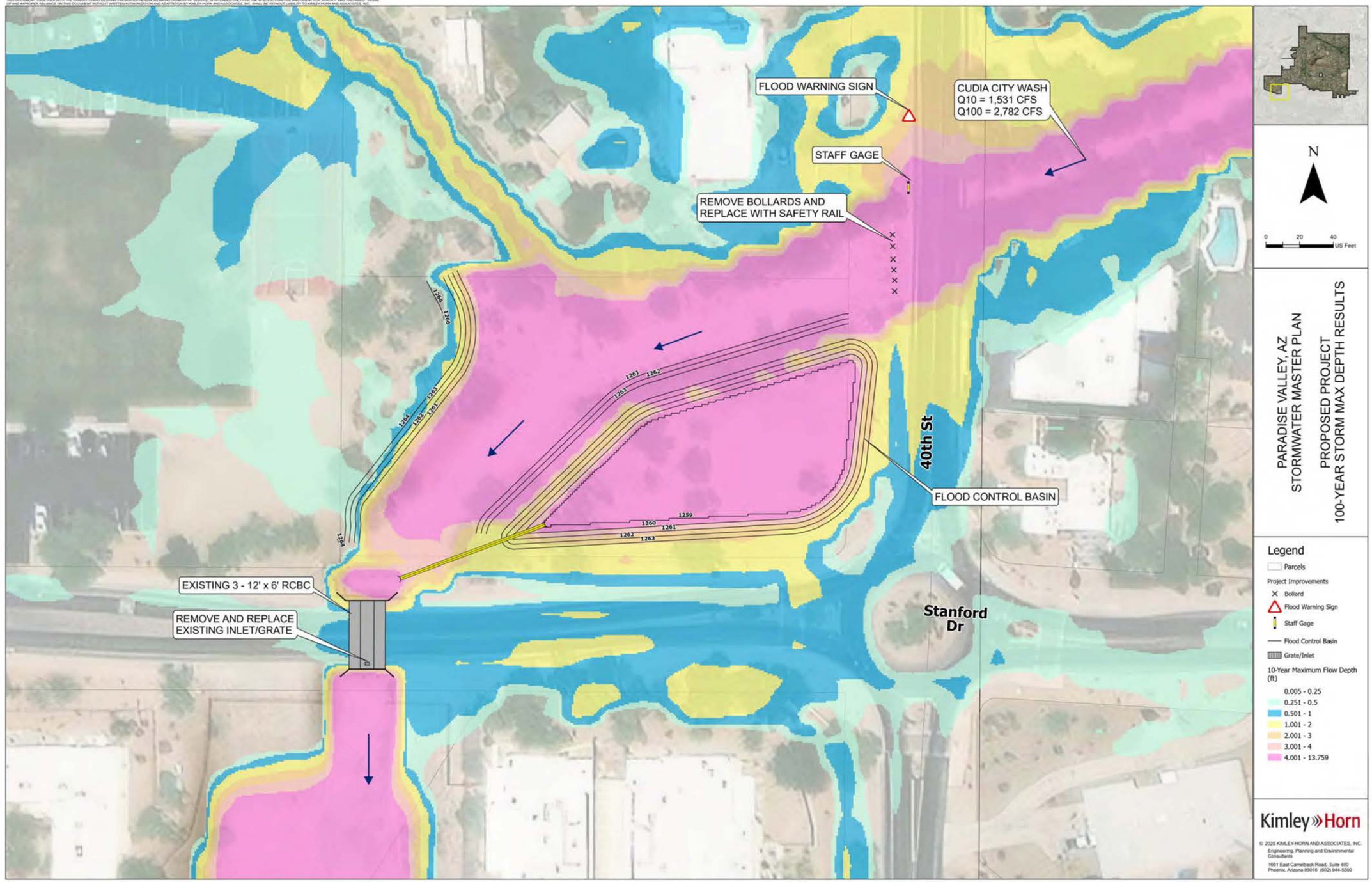

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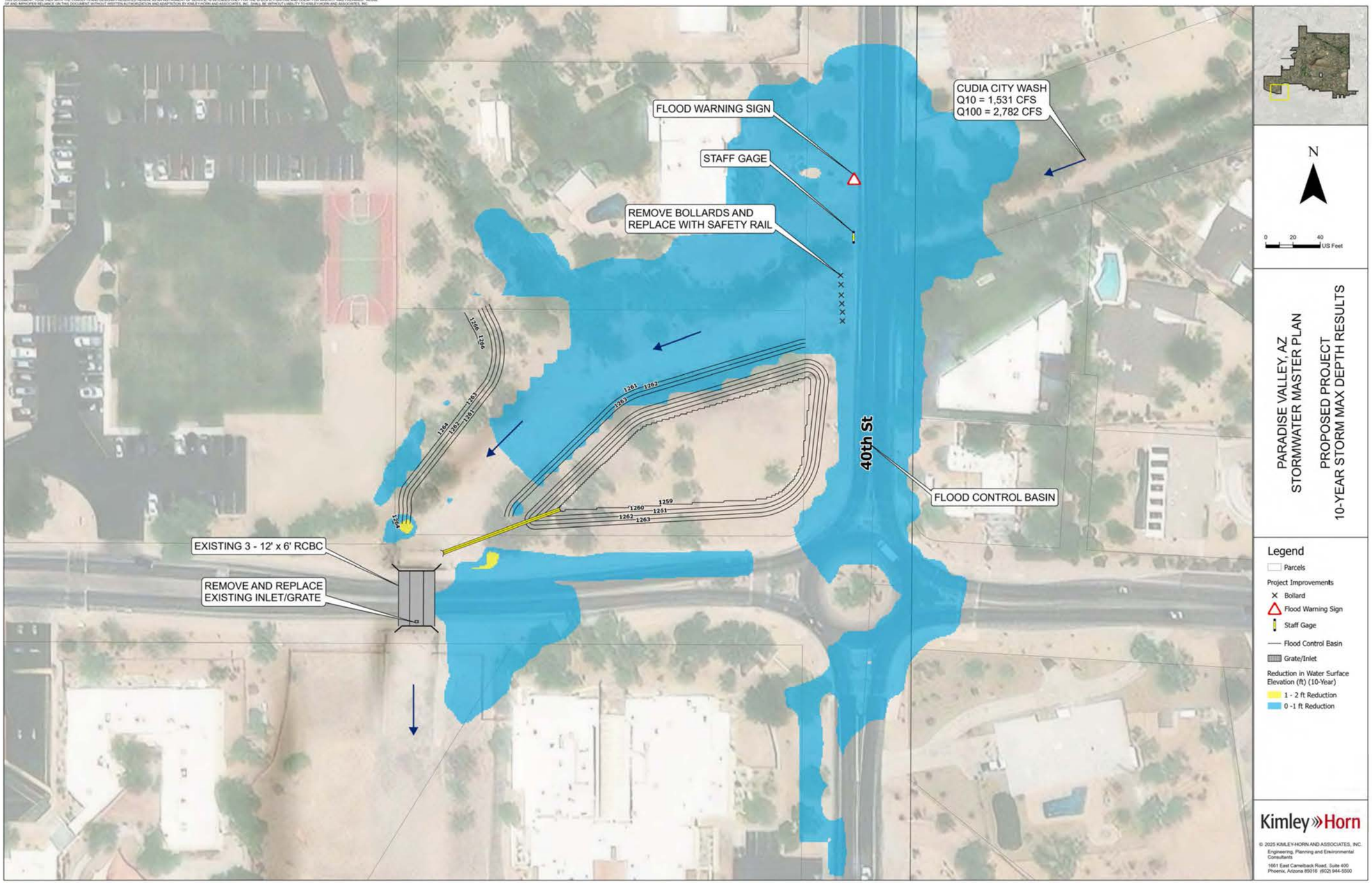

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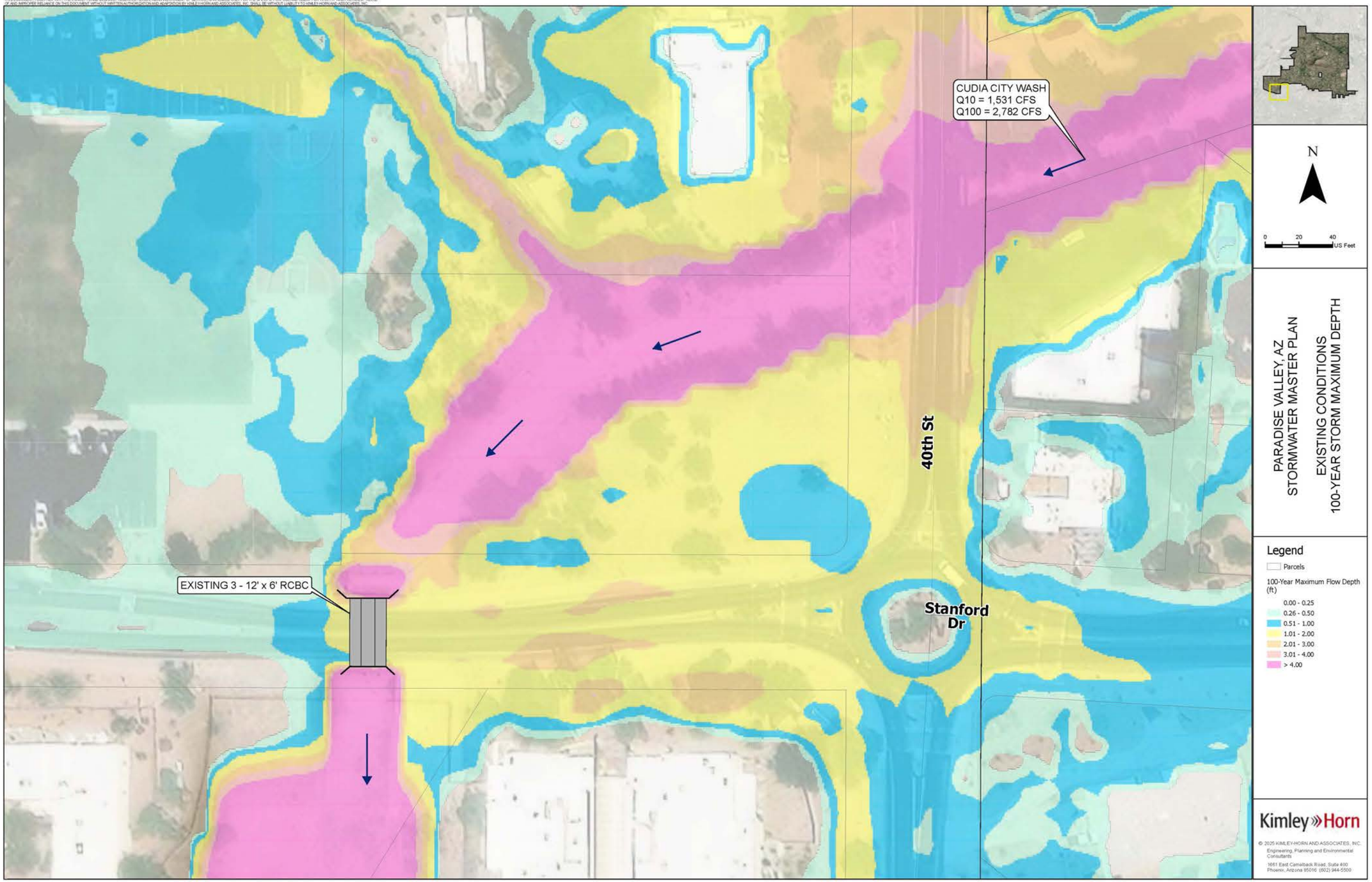

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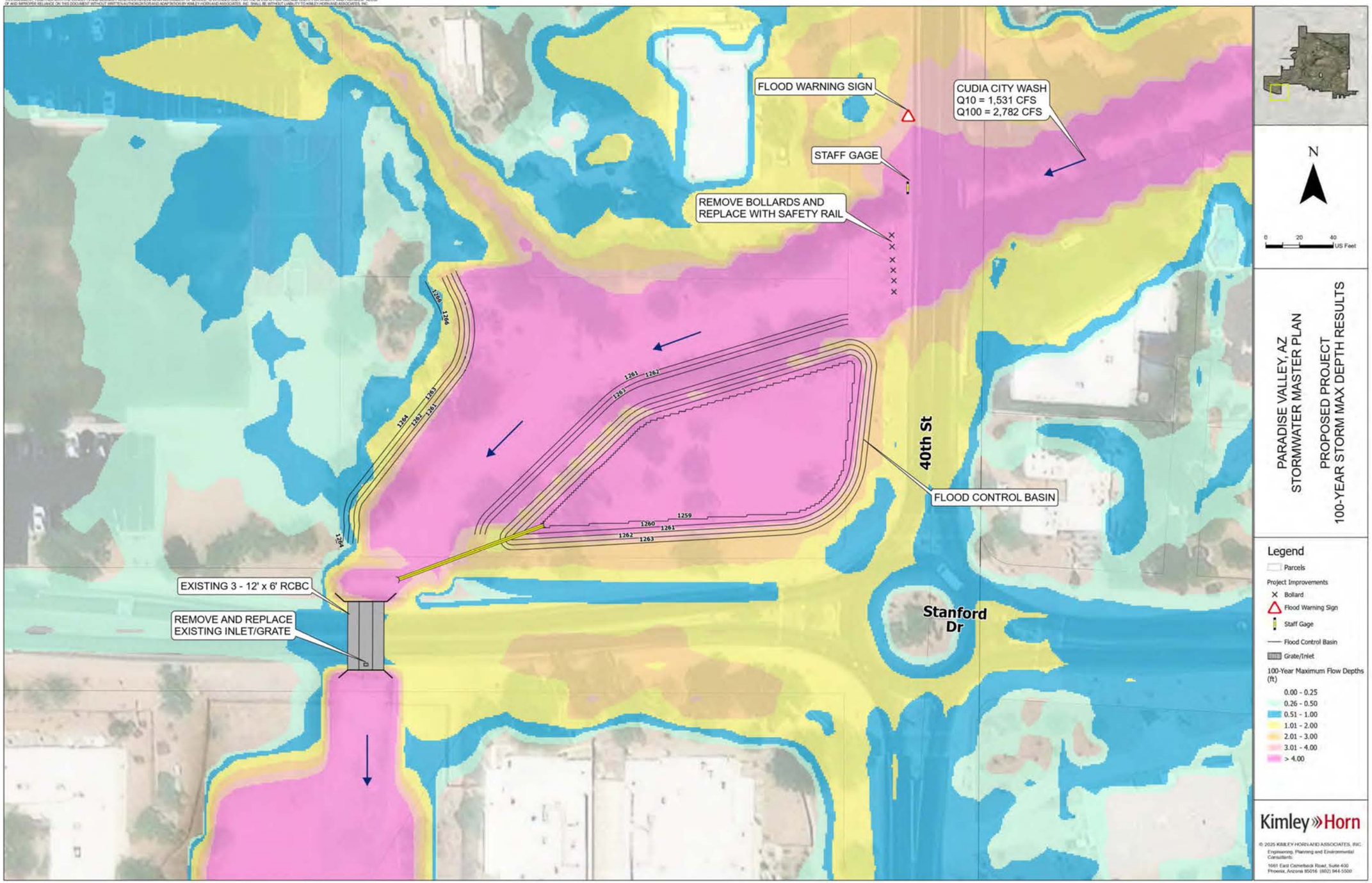

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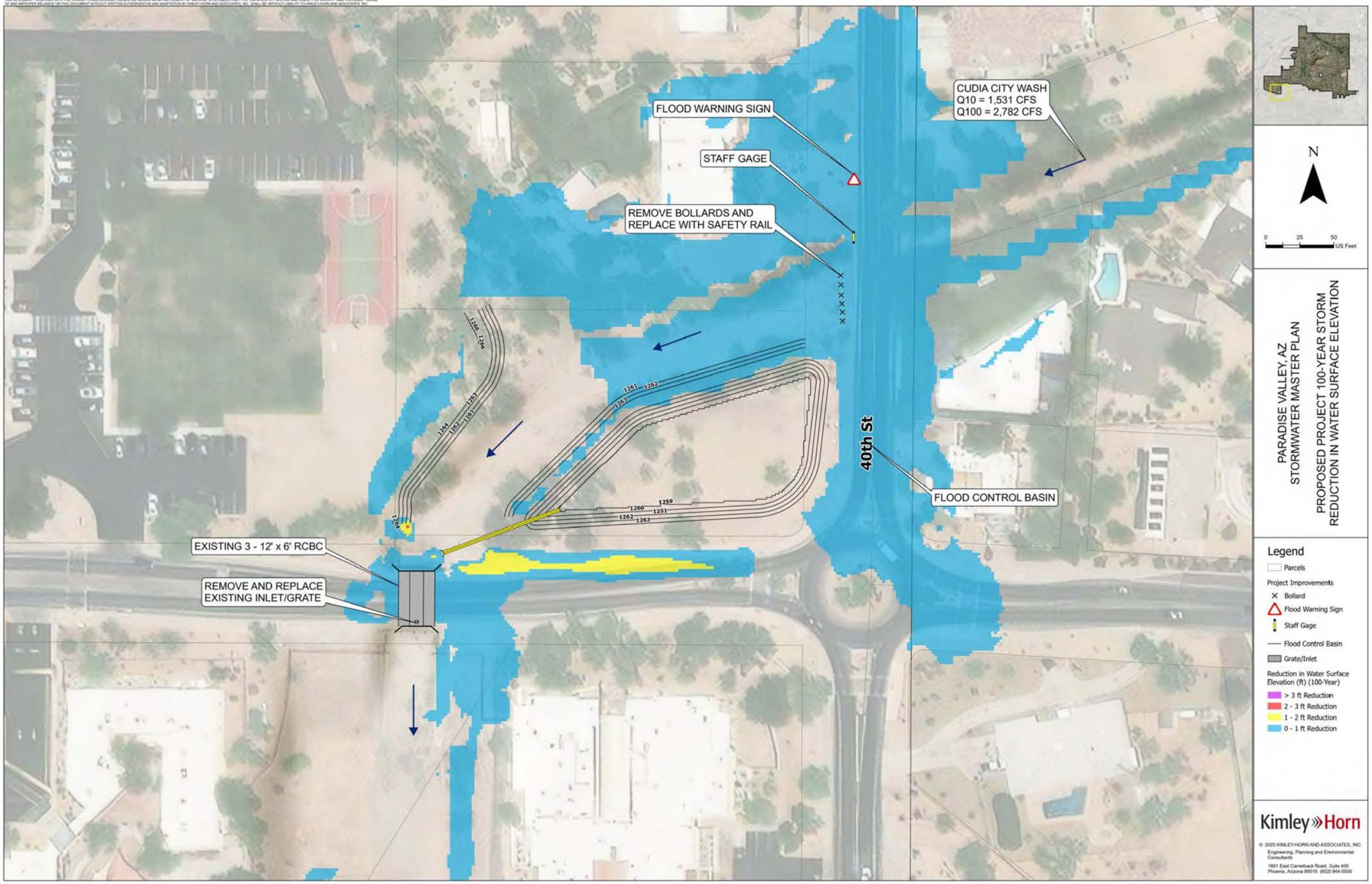
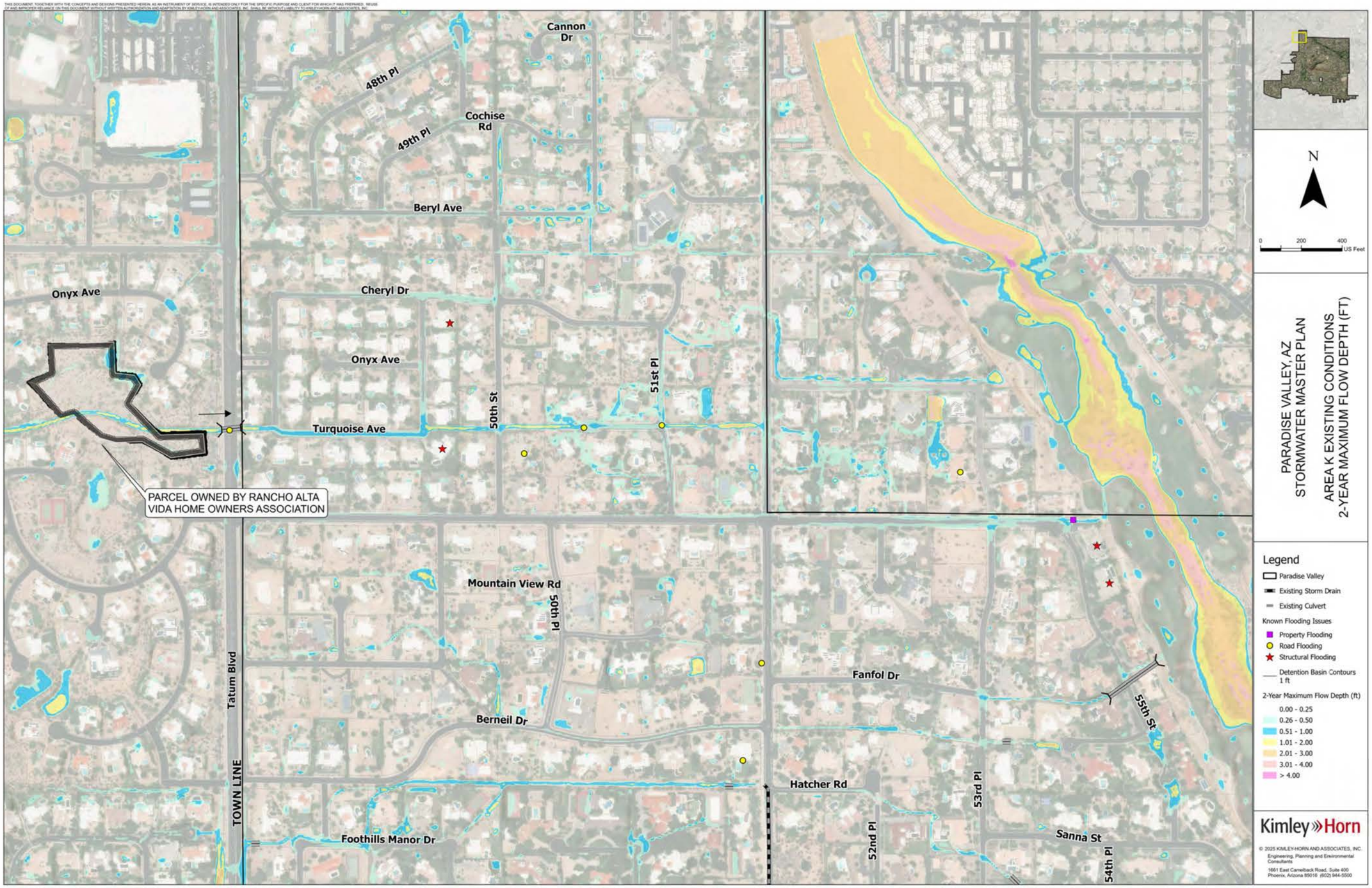


XVIII. APPENDIX F – HIGHEST PRIORITY PROJECTS ANTICIPATED PERFORMANCE

FLOOD HAZARD AREA K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Cheryl Dr
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51st Pl
Turquoise Ave
PARCEL OWNED BY RANCHO ALTA VIDA HOME OWNERS ASSOCIATION
Tatum Blvd
TOWN LINE
Mountain View Rd
50th Pl
Berneil Dr
Foothills Manor Dr
Fanfol Dr
Hatcher Rd
52nd Pl
53rd Pl
55th St
Sanna St
54th Pl
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200
400
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
AREA K EXISTING CONDITIONS
2-YEAR MAXIMUM FLOW DEPTH (FT)
Legend
Paradise Valley
Existing Storm Drain
Existing Culvert
Known Flooding Issues
Property Flooding
Road Flooding
Structural Flooding
Detention Basin Contours 1 ft
2-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
Kimley»Horn
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Phoenix, Arizona 85016 (602) 944-5500

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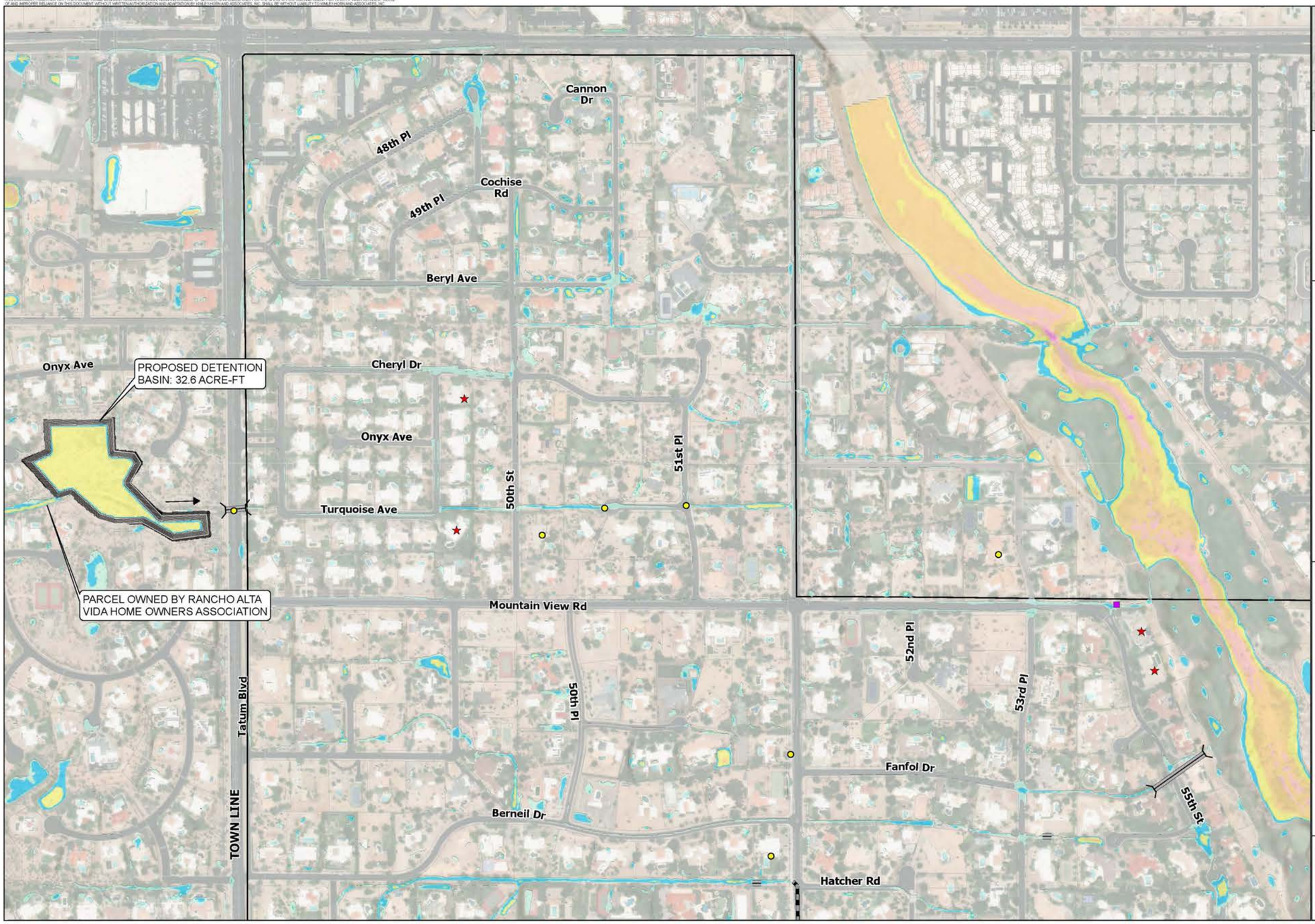

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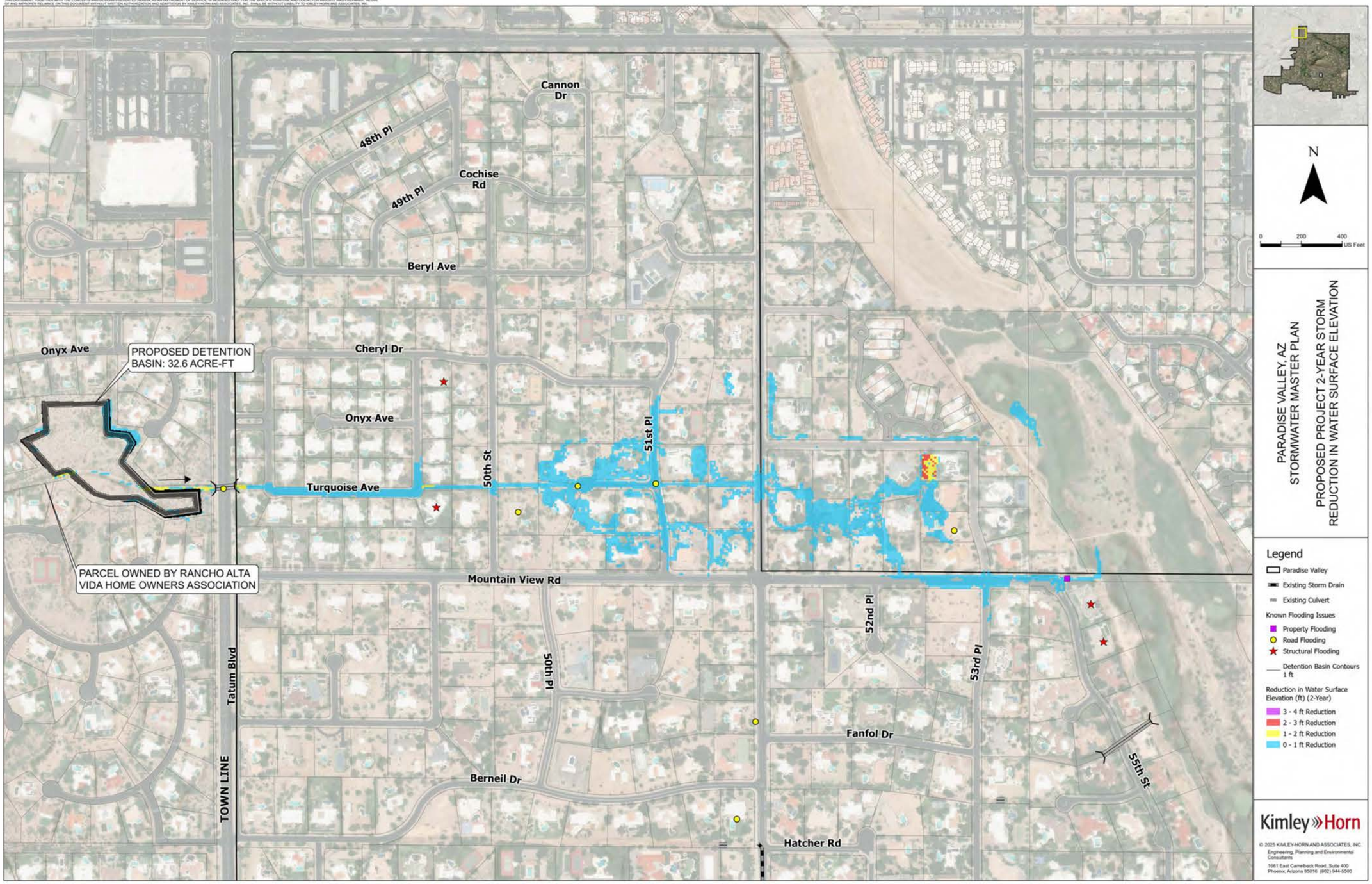

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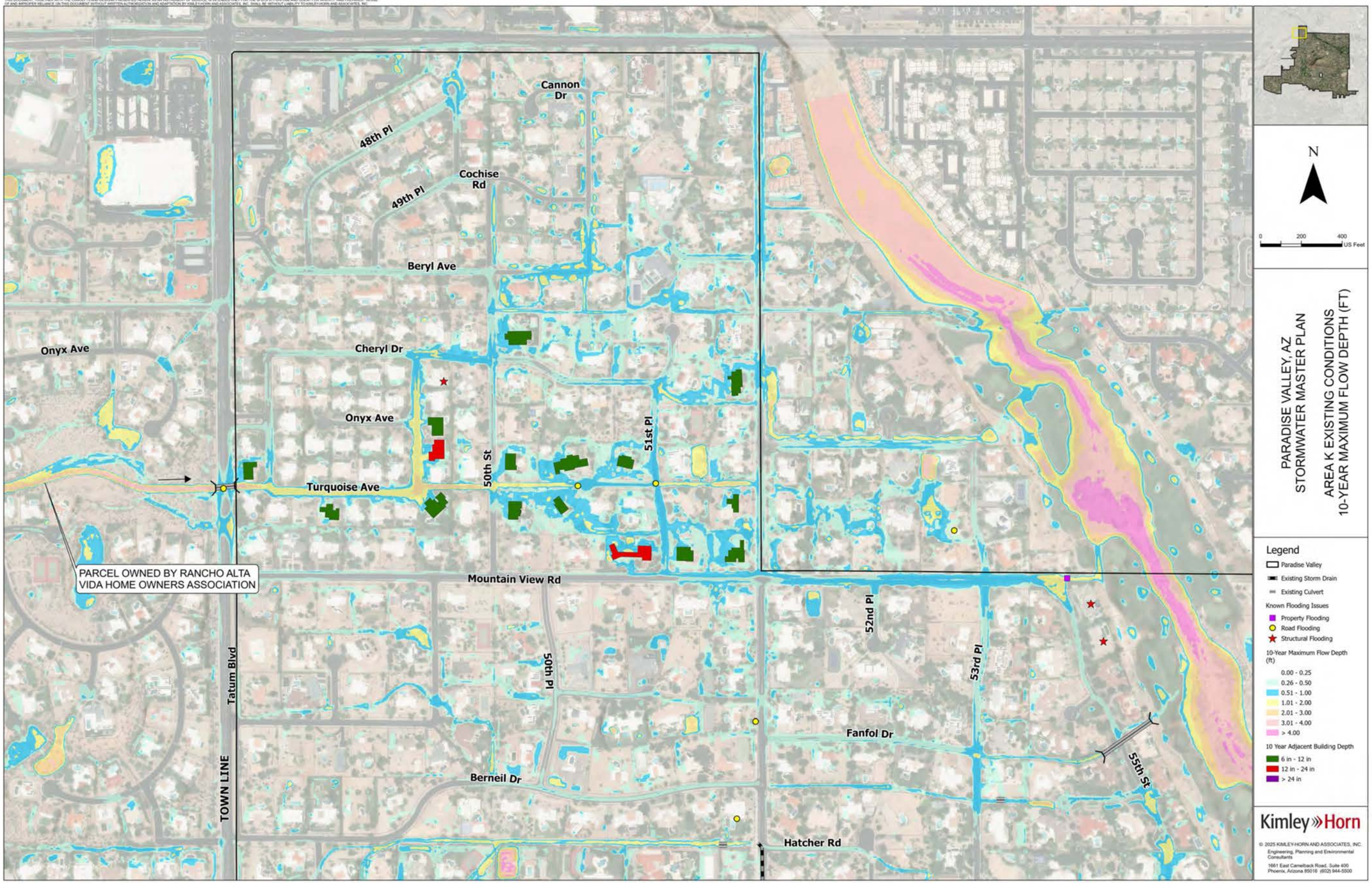

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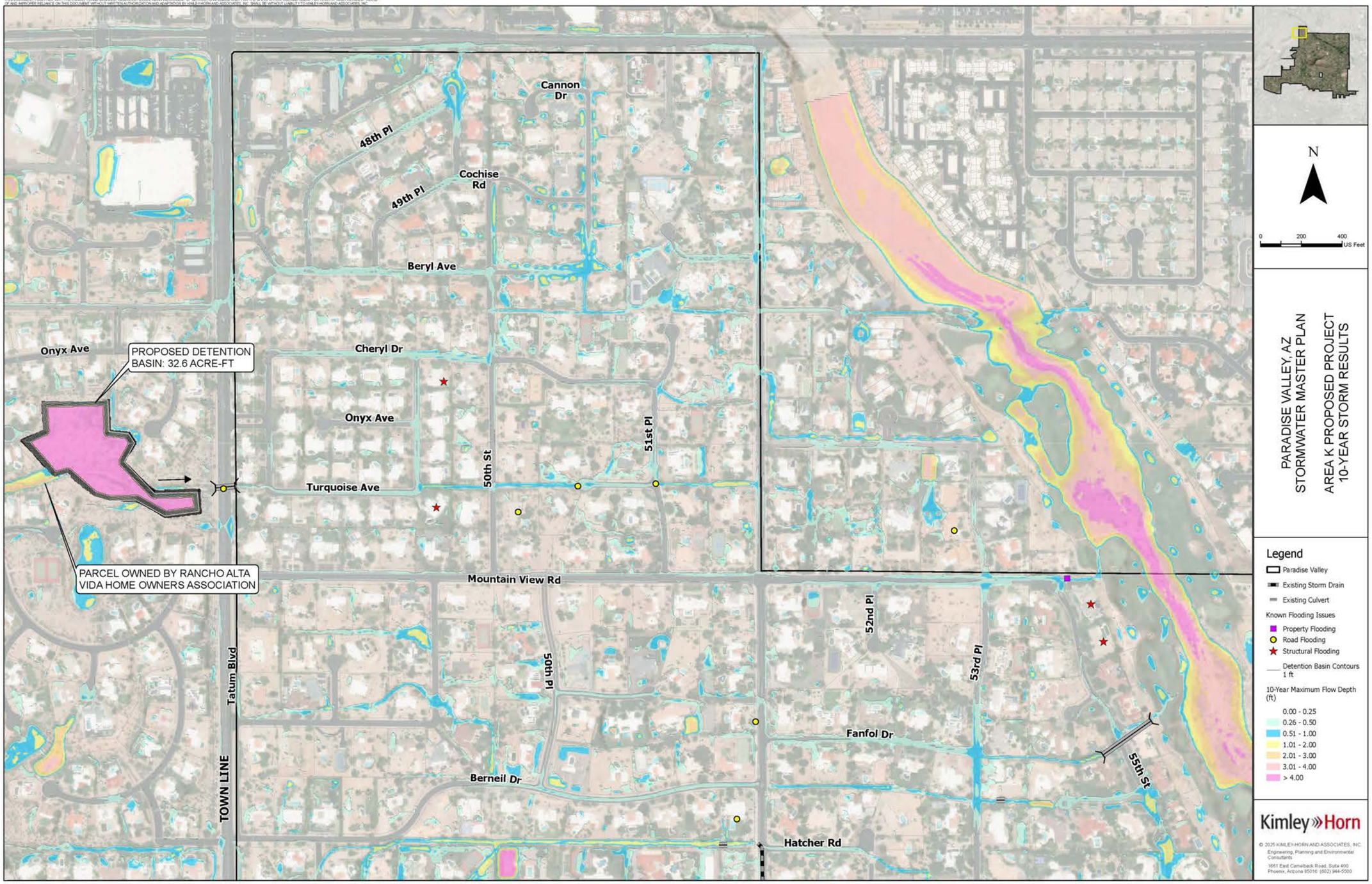

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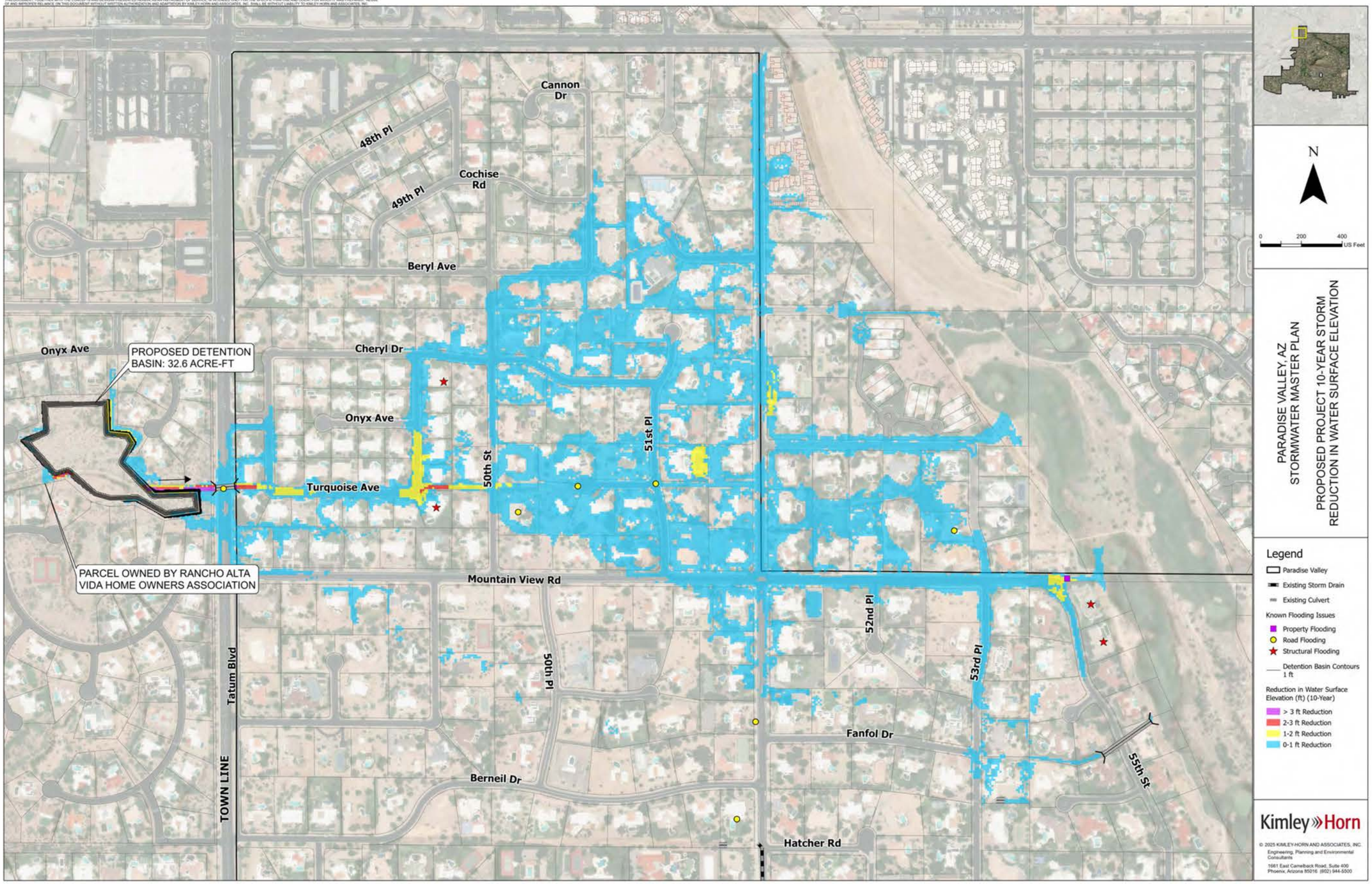

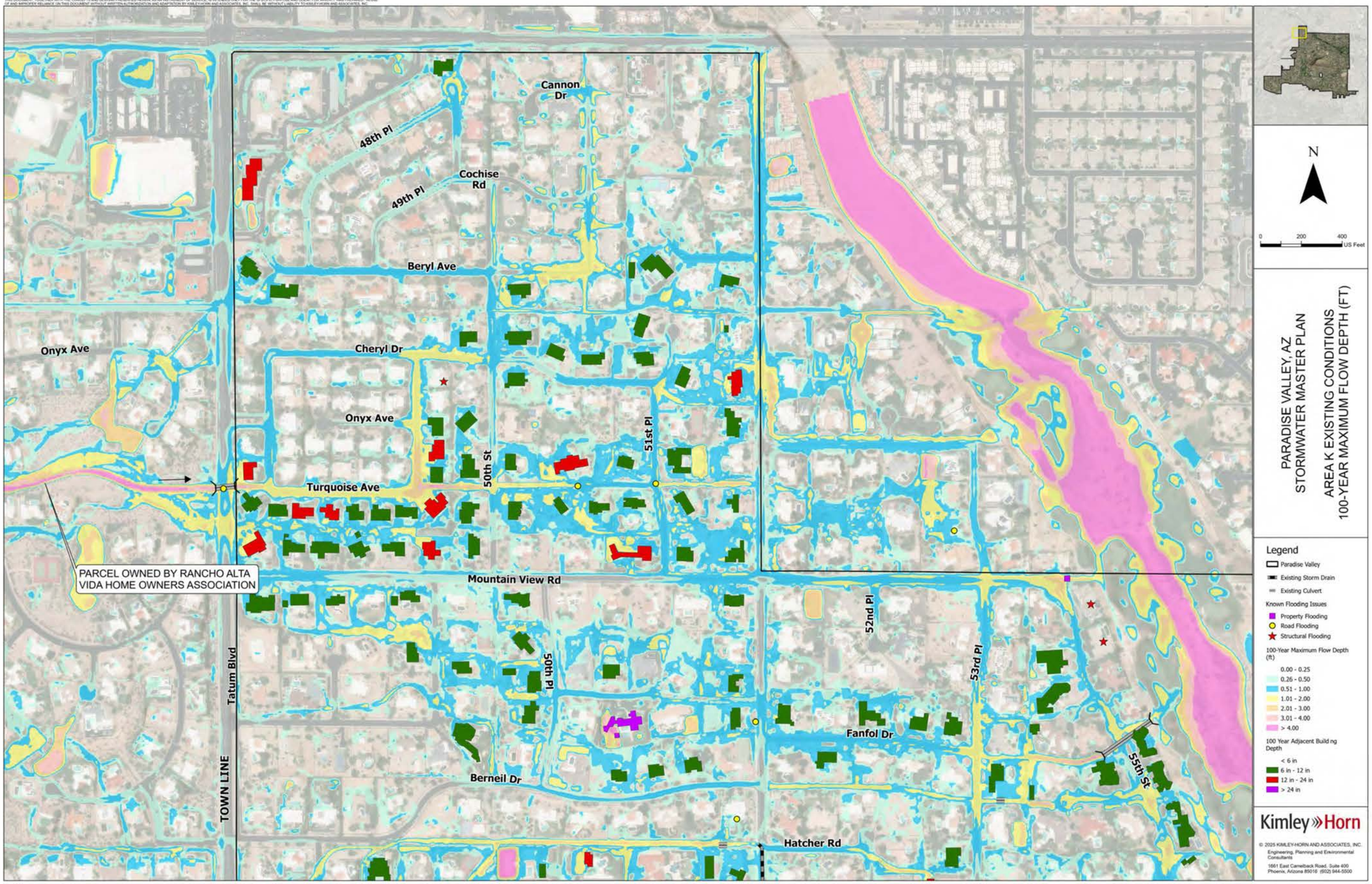
Cannon Dr
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Beryl Ave
Cheryl Dr
Onyx Ave
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51st Pl
Turquoise Ave
PARCEL OWNED BY RANCHO ALTA VIDA HOME OWNERS ASSOCIATION
Mountain View Rd
Tatum Blvd
TOWN LINE
50th Pl
52nd Pl
53rd Pl
Fanfol Dr
55th St
Berneil Dr
Hatcher Rd
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0 200 400 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
AREA K EXISTING CONDITIONS
100-YEAR MAXIMUM FLOW DEPTH (FT)
Legend
Paradise Valley
Existing Storm Drain
Existing Culvert
Known Flooding Issues
Property Flooding
Road Flooding
Structural Flooding
100-Year Maximum Flow Depth (ft)
0.00 - 0.25
0.26 - 0.50
0.51 - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
> 4.00
100 Year Adjacent Build ng Depth
< 6 in
6 in - 12 in
12 in - 24 in
> 24 in
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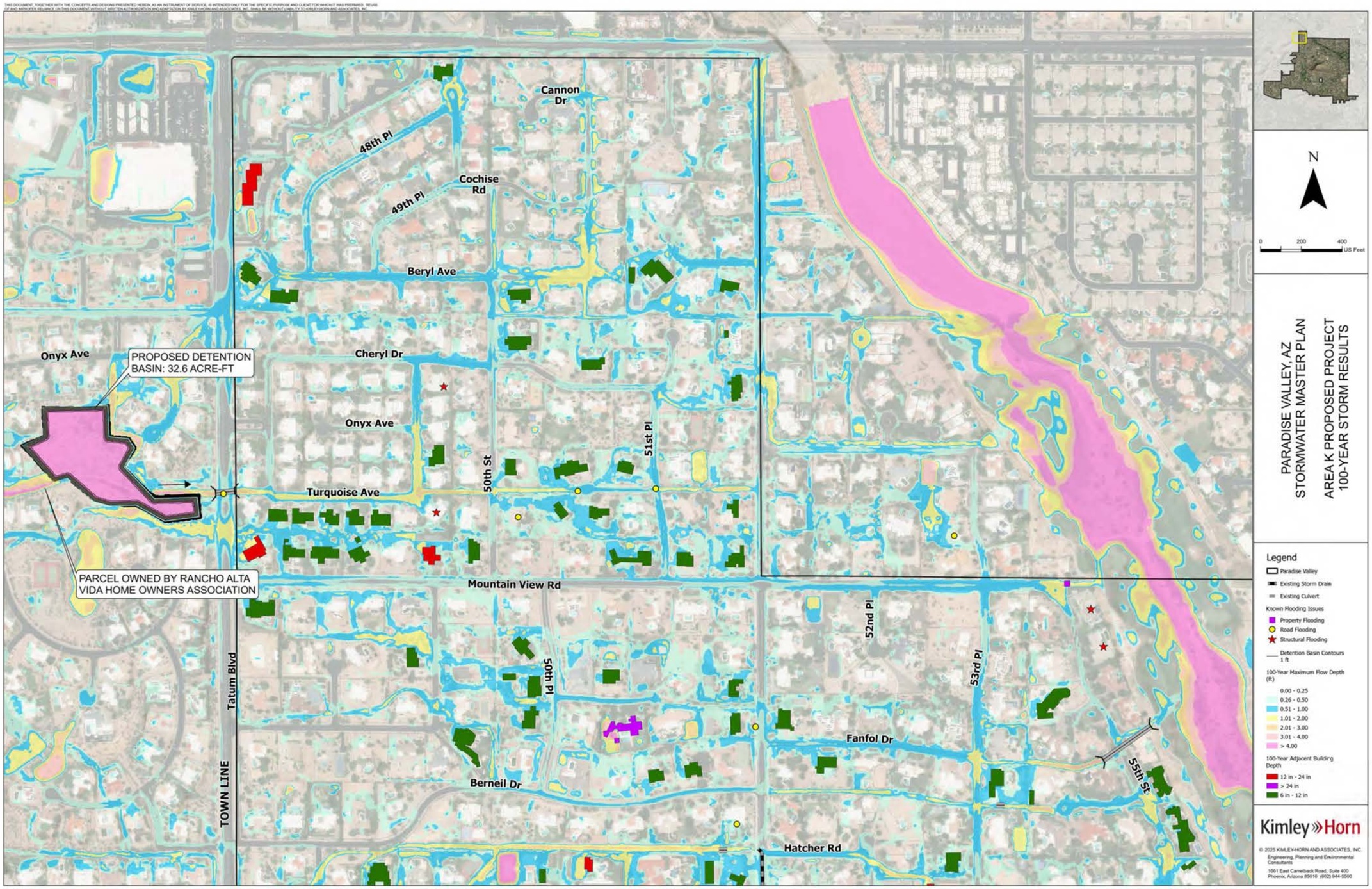
Cannon Dr
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Onyx Ave
PROPOSED DETENTION BASIN: 32.6 ACRE-FT
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Onyx Ave
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51st Pl
Turquoise Ave
PARCEL OWNED BY RANCHO ALTA VIDA HOME OWNERS ASSOCIATION
Mountain View Rd
Tatum Blvd
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Fanfol Dr
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Berneil Dr
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100-Year Maximum Flow Depth (ft)
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1.01 - 2.00
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3.01 - 4.00
> 4.00
100-Year Adjacent Building Depth
12 in - 24 in
> 24 in
6 in - 12 in
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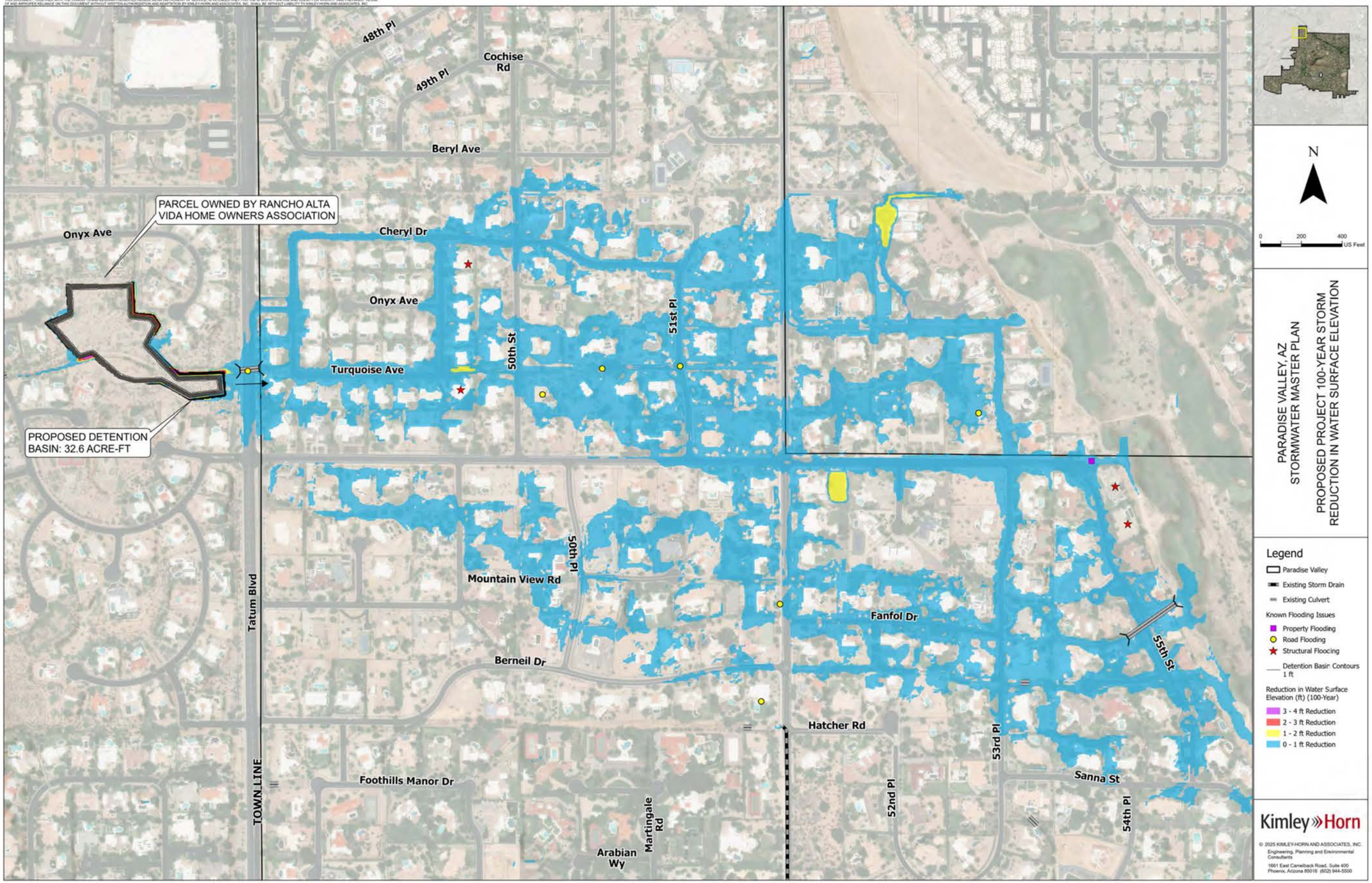
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TOWN LINE
Foothills Manor Dr
Martingale Rd
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0 200 400 US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
PROPOSED PROJECT 100-YEAR STORM
REDUCTION IN WATER SURFACE ELEVATION
Legend
Paradise Valley
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Existing Culvert
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Property Flooding
Road Flooding
Structural Flooding
Detention Basin Contours 1 ft
Reduction in Water Surface Elevation (ft) (100-Year)
3 - 4 ft Reduction
2 - 3 ft Reduction
1 - 2 ft Reduction
0 - 1 ft Reduction
Kimley»Horn
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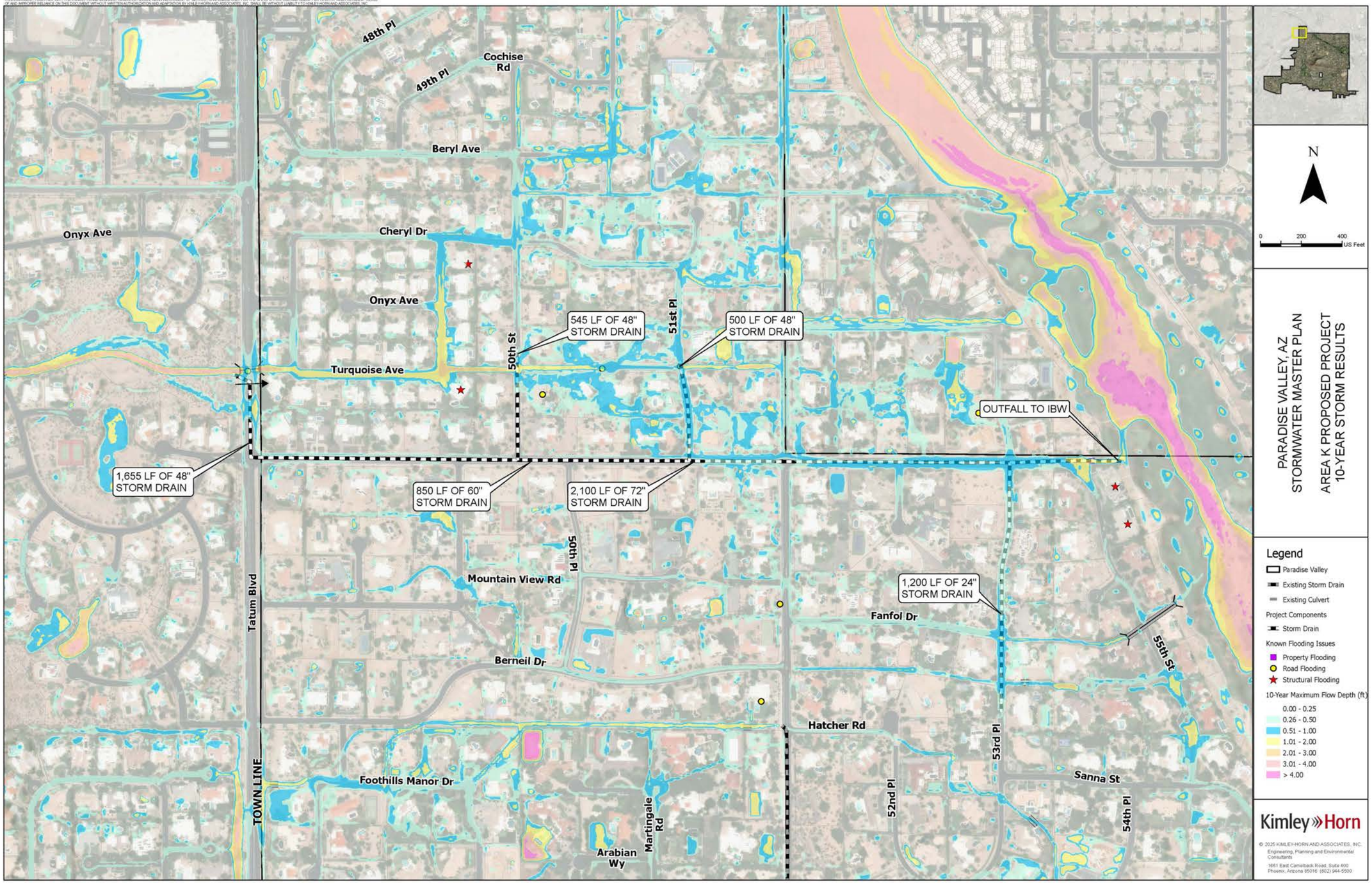

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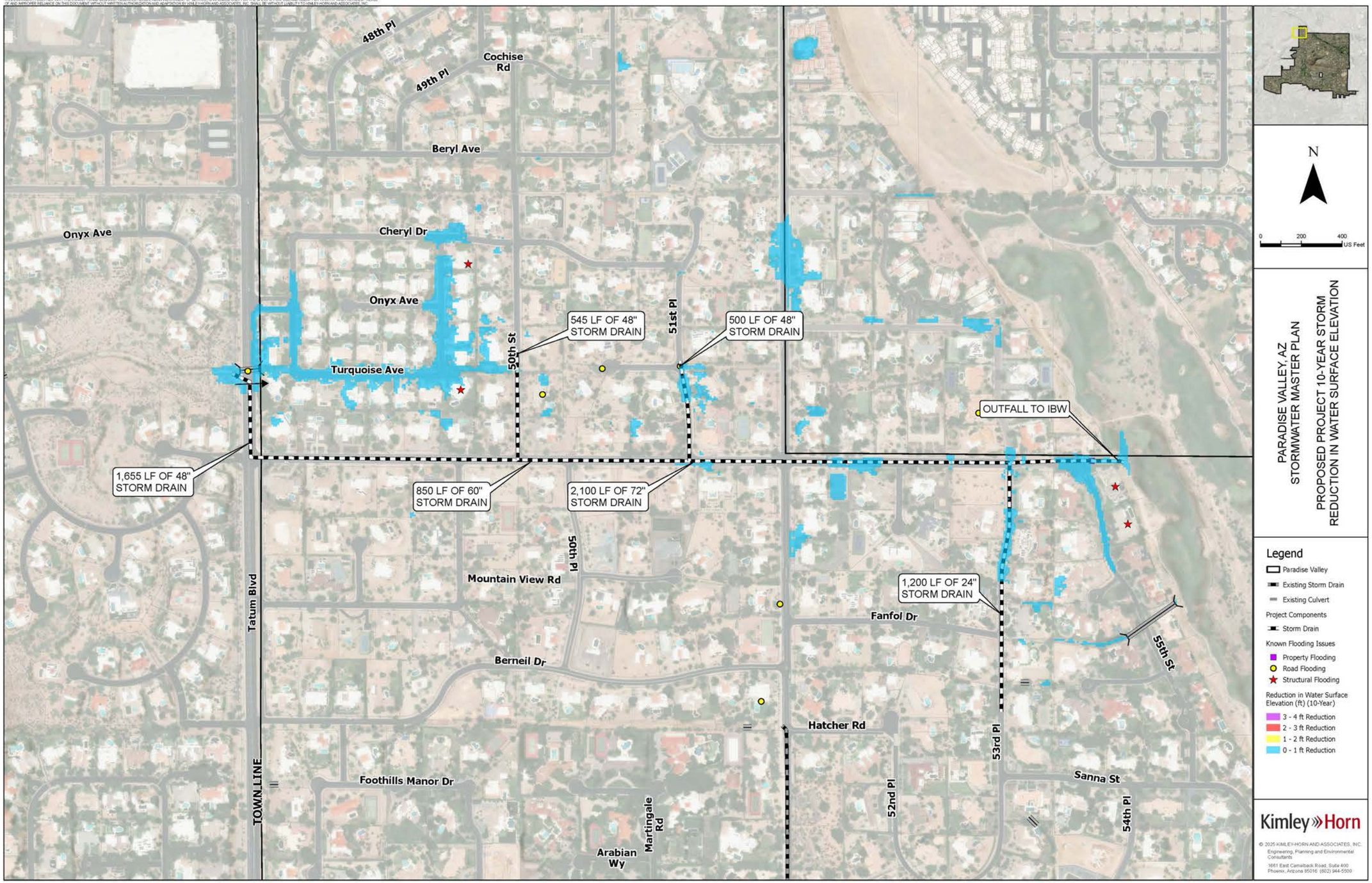

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FLOOD HAZARD AREA L

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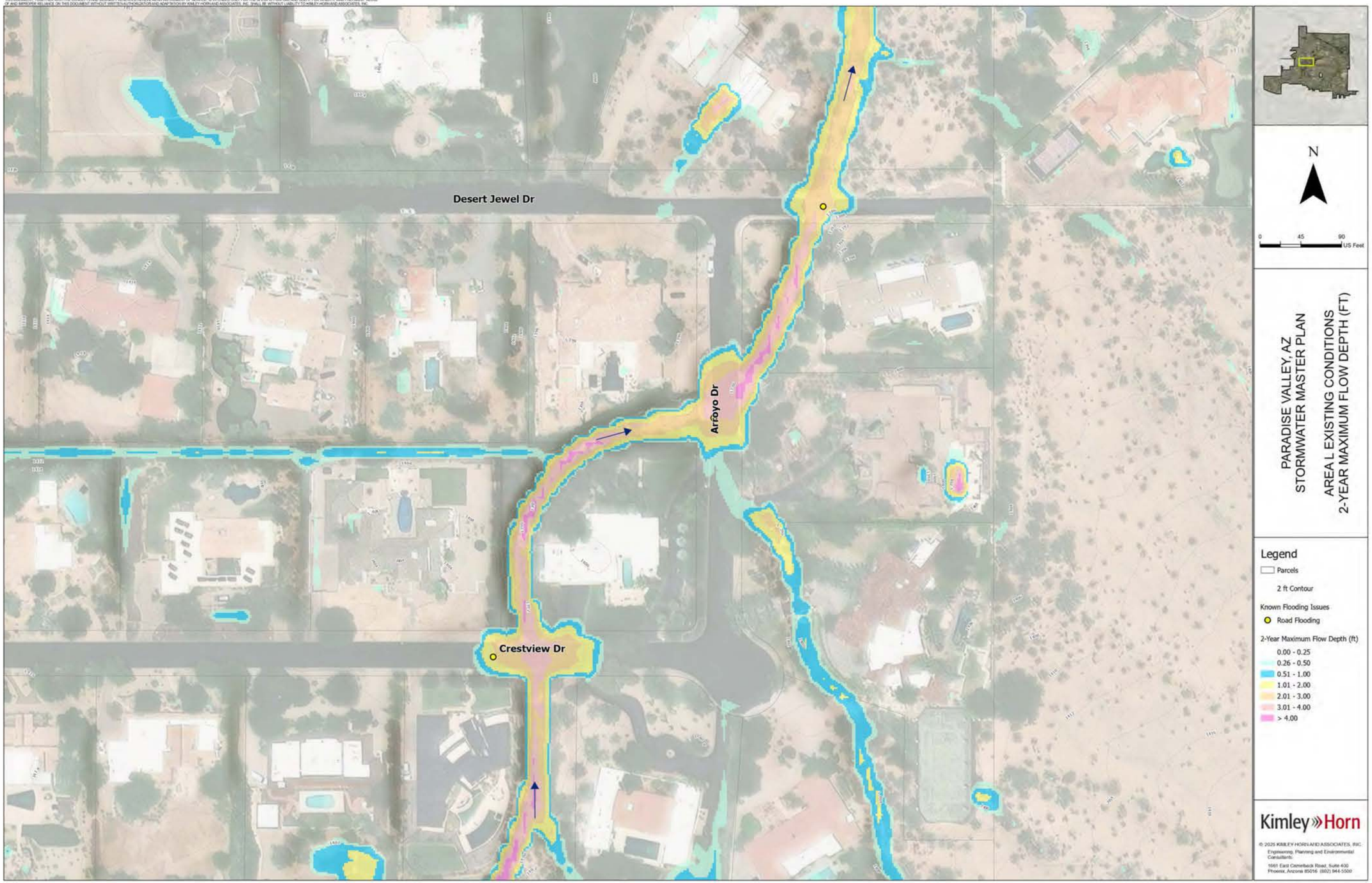

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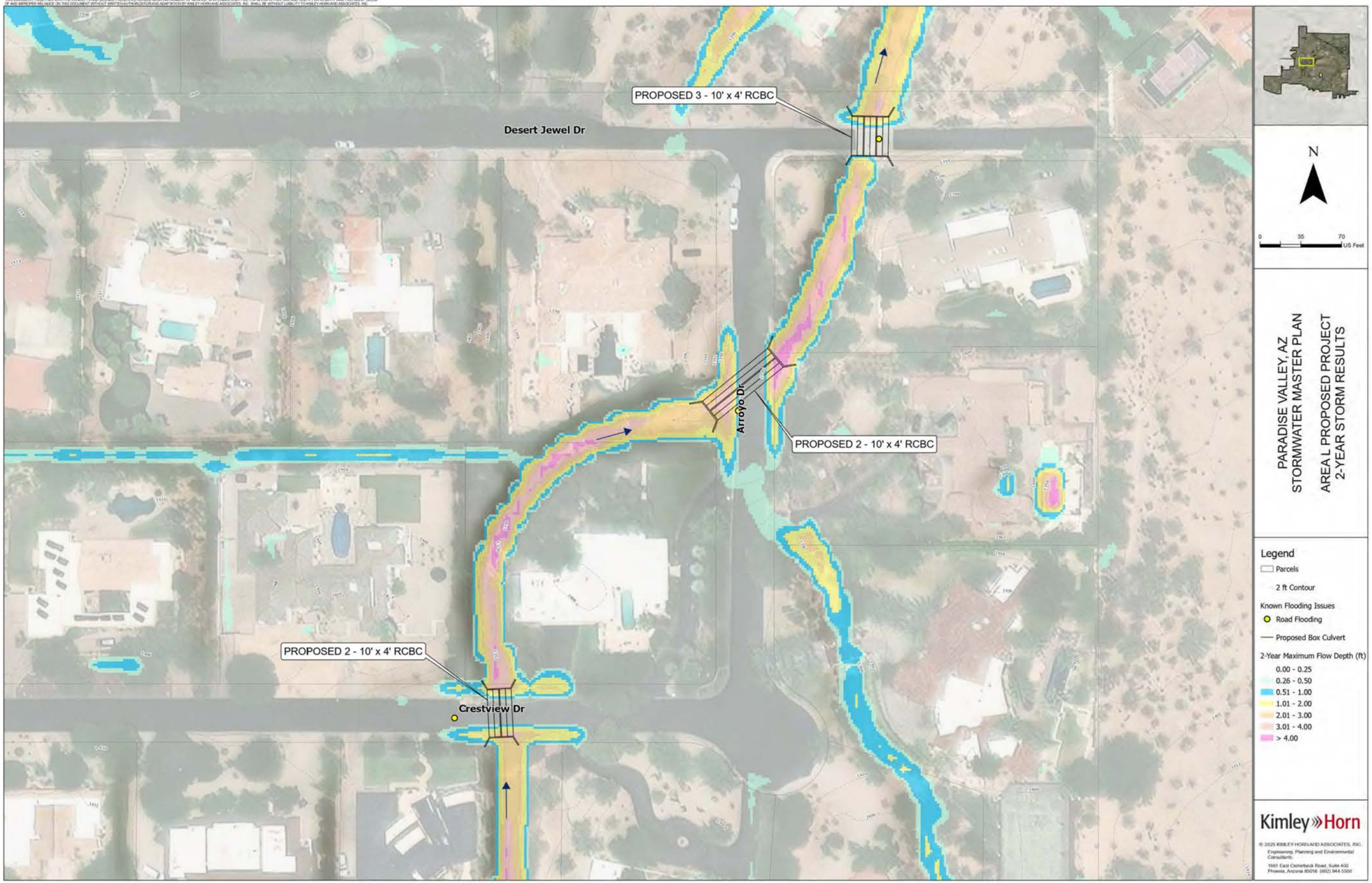

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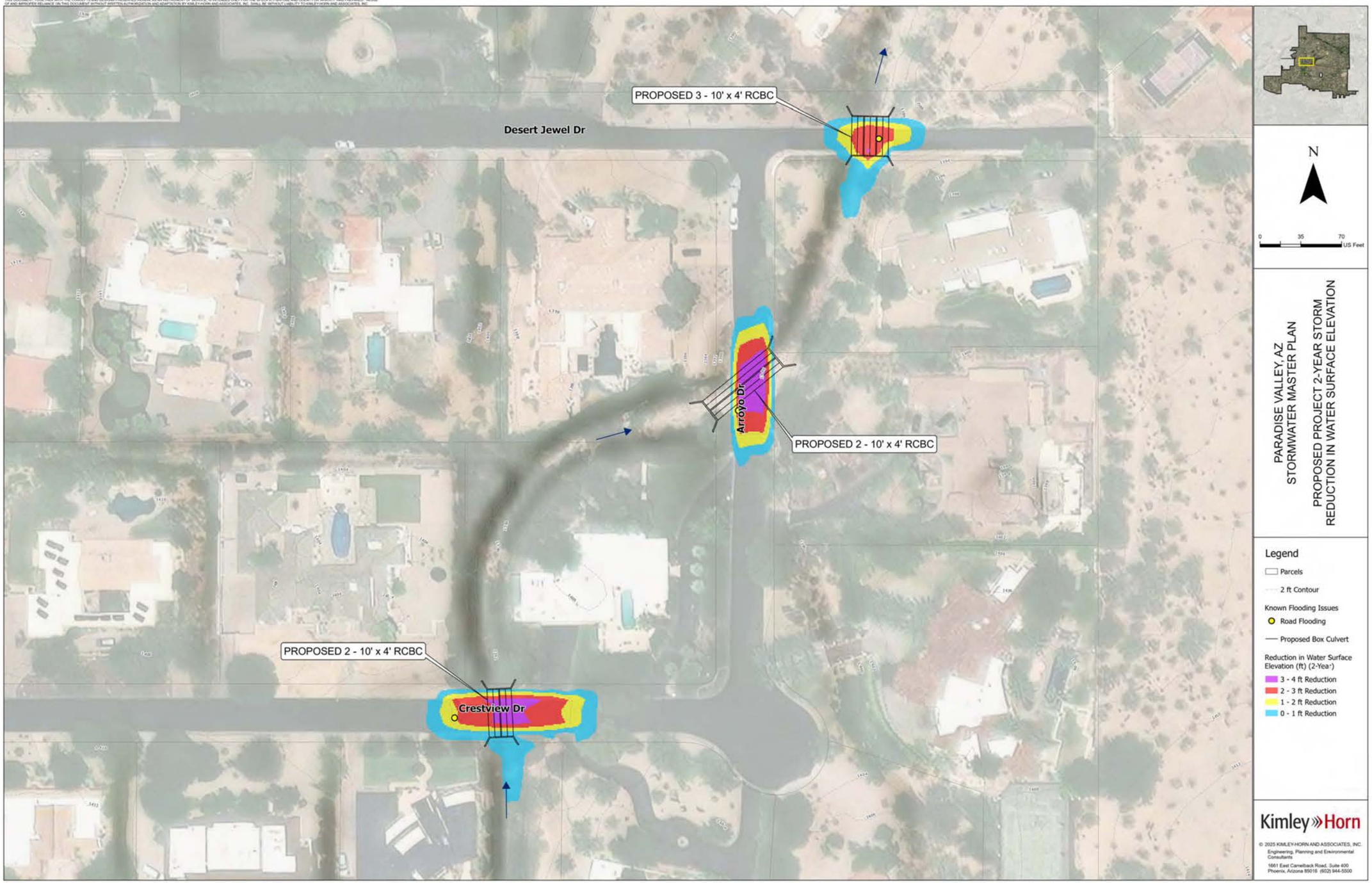

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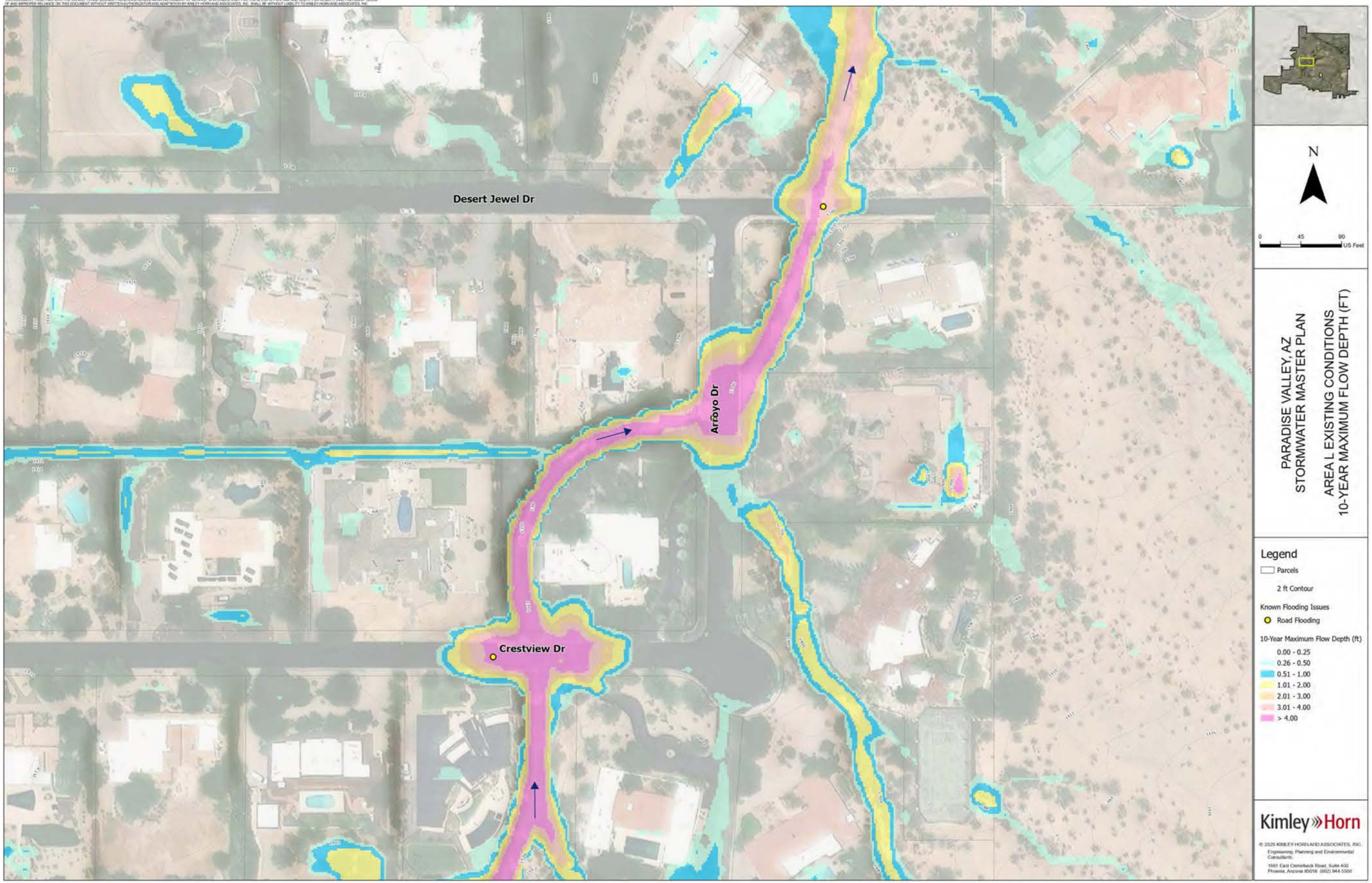

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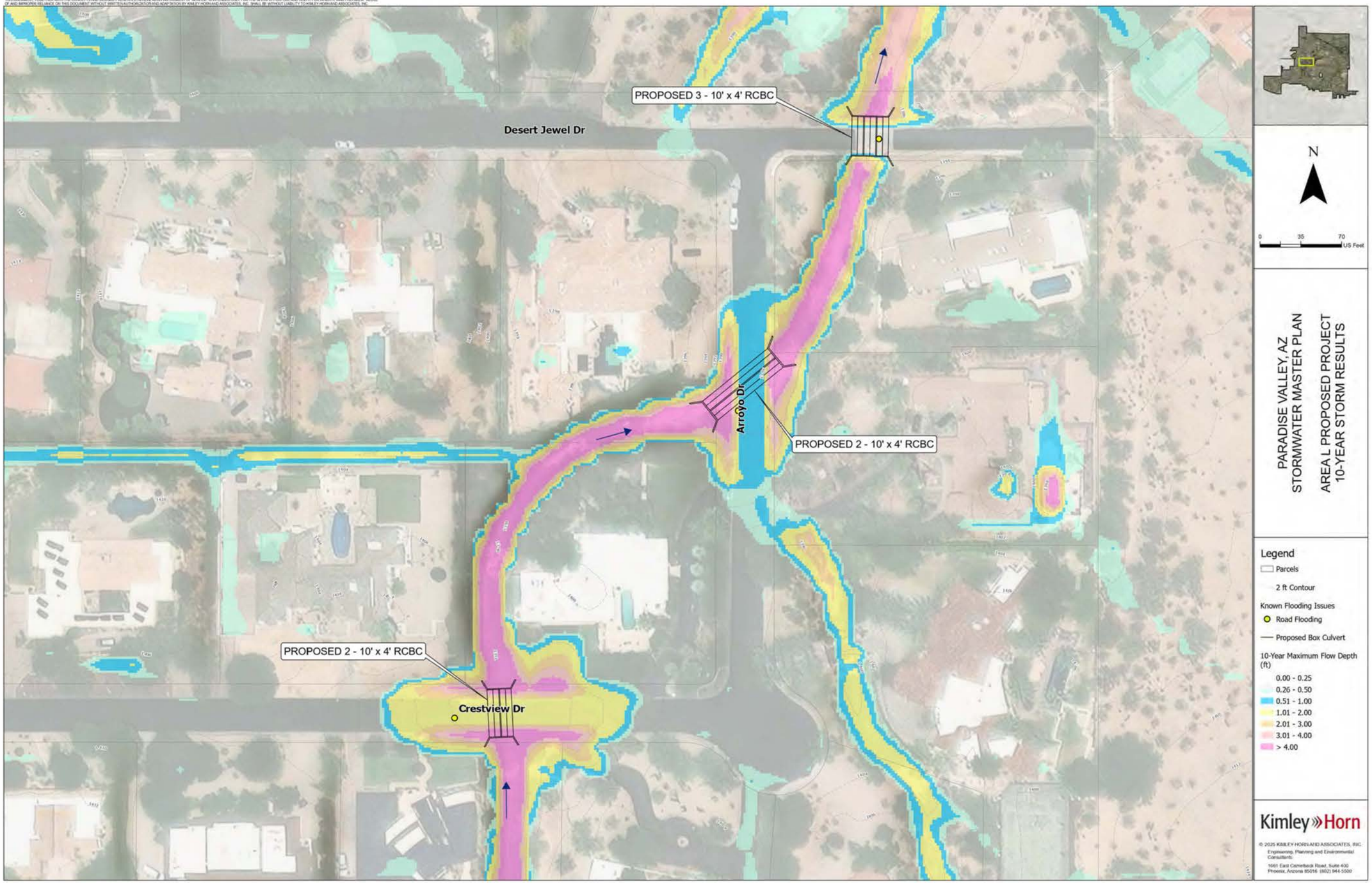

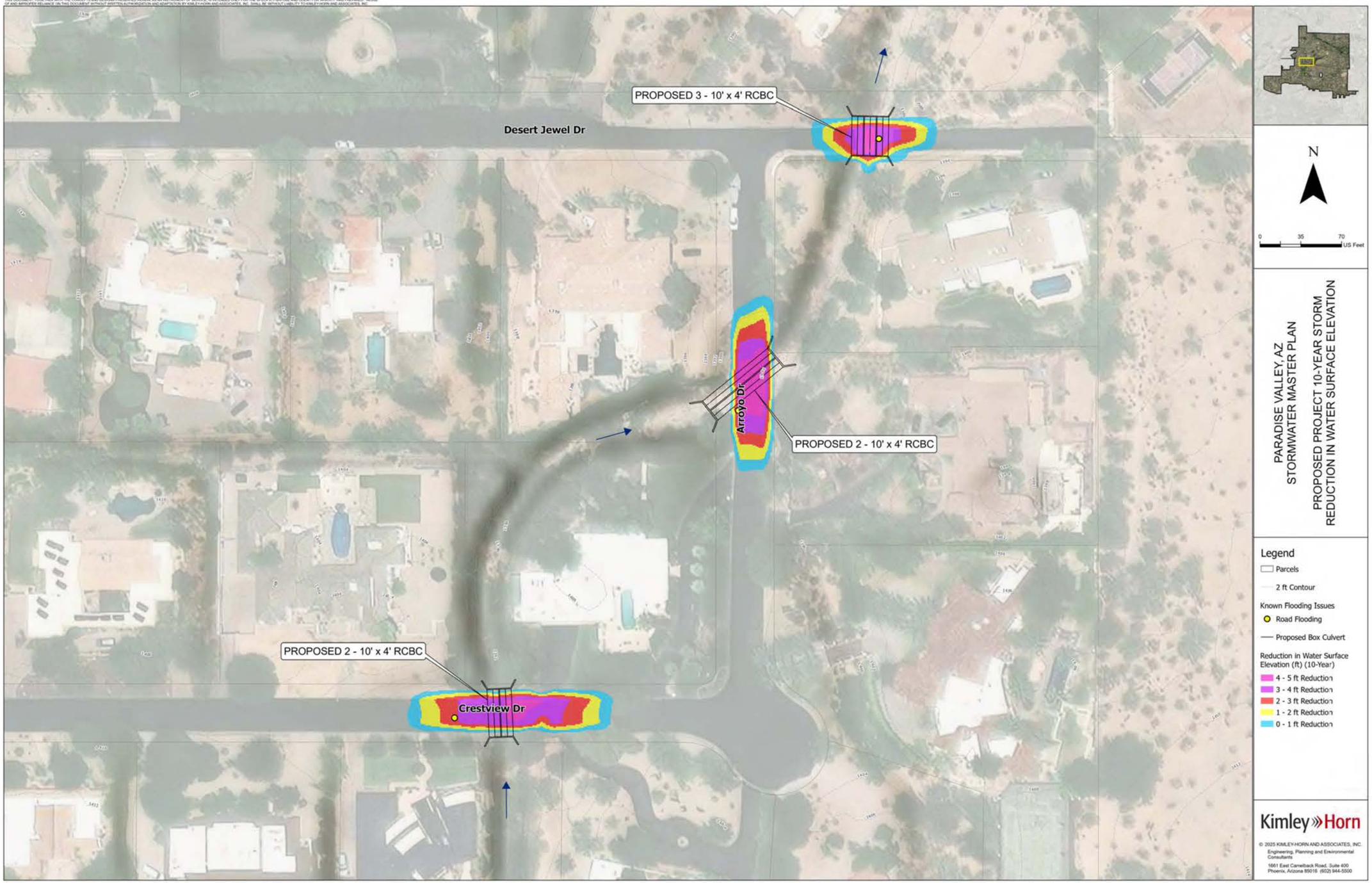
PROPOSED 3 - 10' x 4' RCBC
Desert Jewel Dr
Arroyo Dr
PROPOSED 2 - 10' x 4' RCBC
PROPOSED 2 - 10' x 4' RCBC
Crestview Dr
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US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
PROPOSED PROJECT 10-YEAR STORM
REDUCTION IN WATER SURFACE ELEVATION
Legend
Parcels
2 ft Contour
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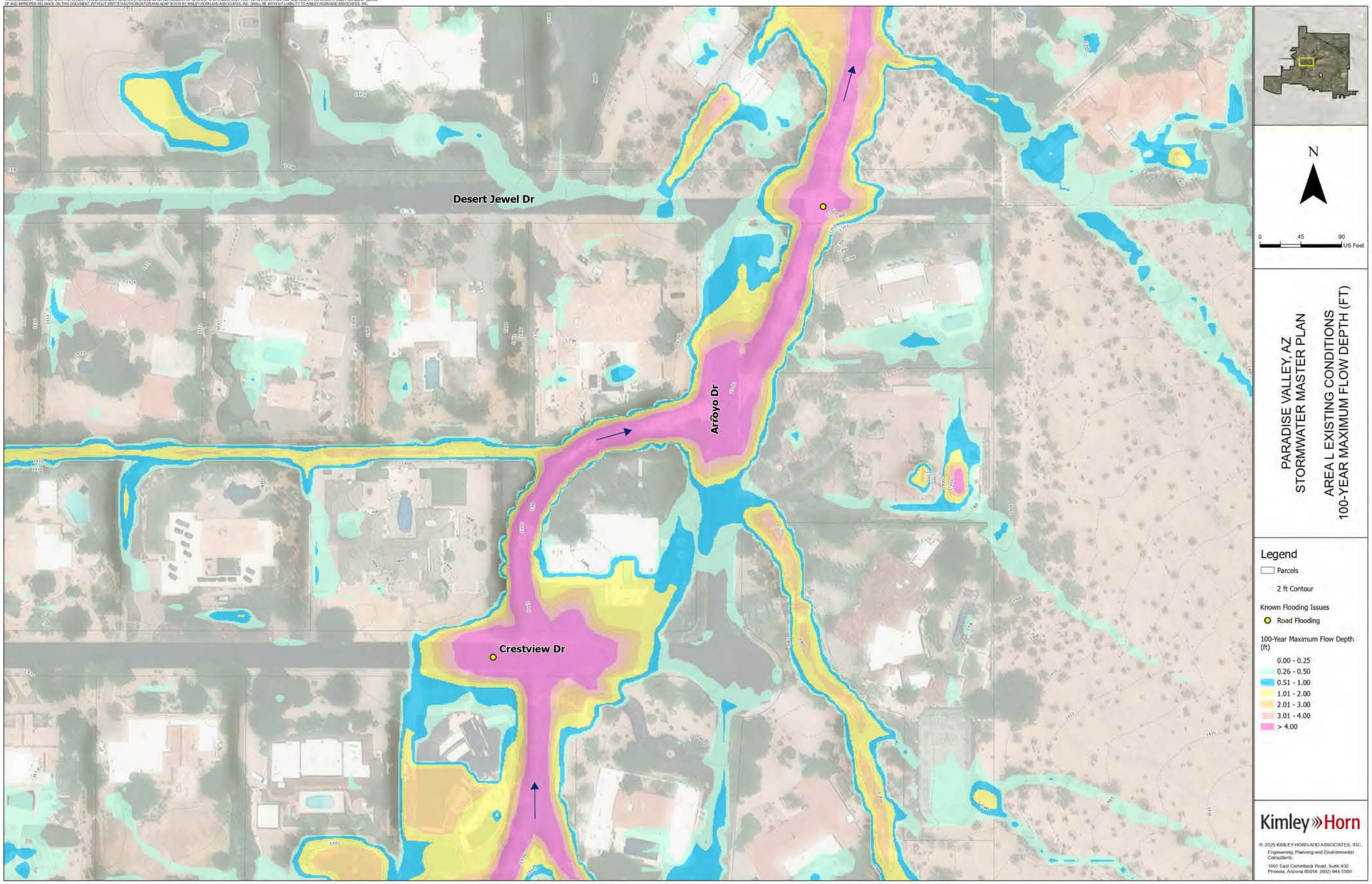

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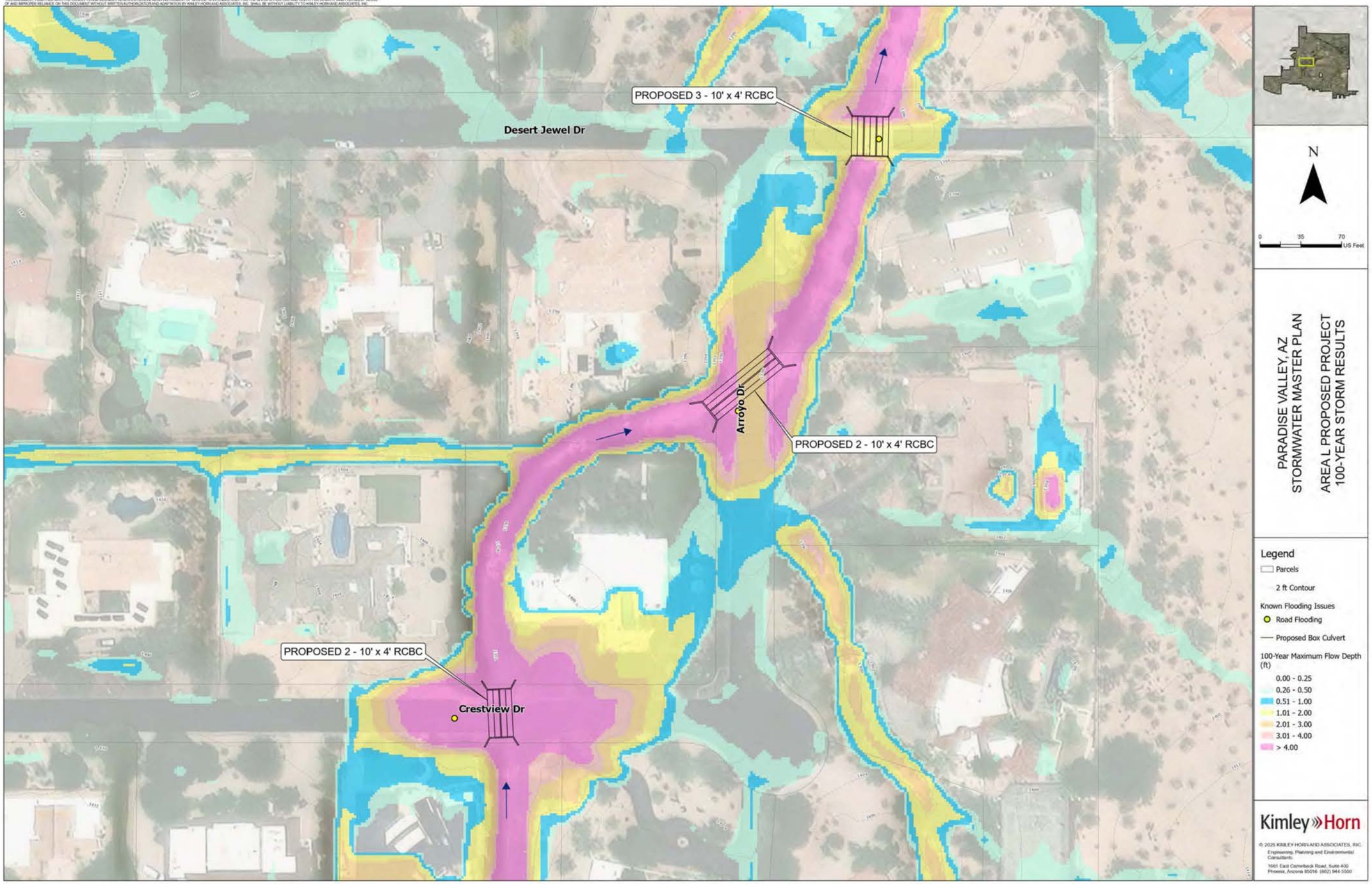

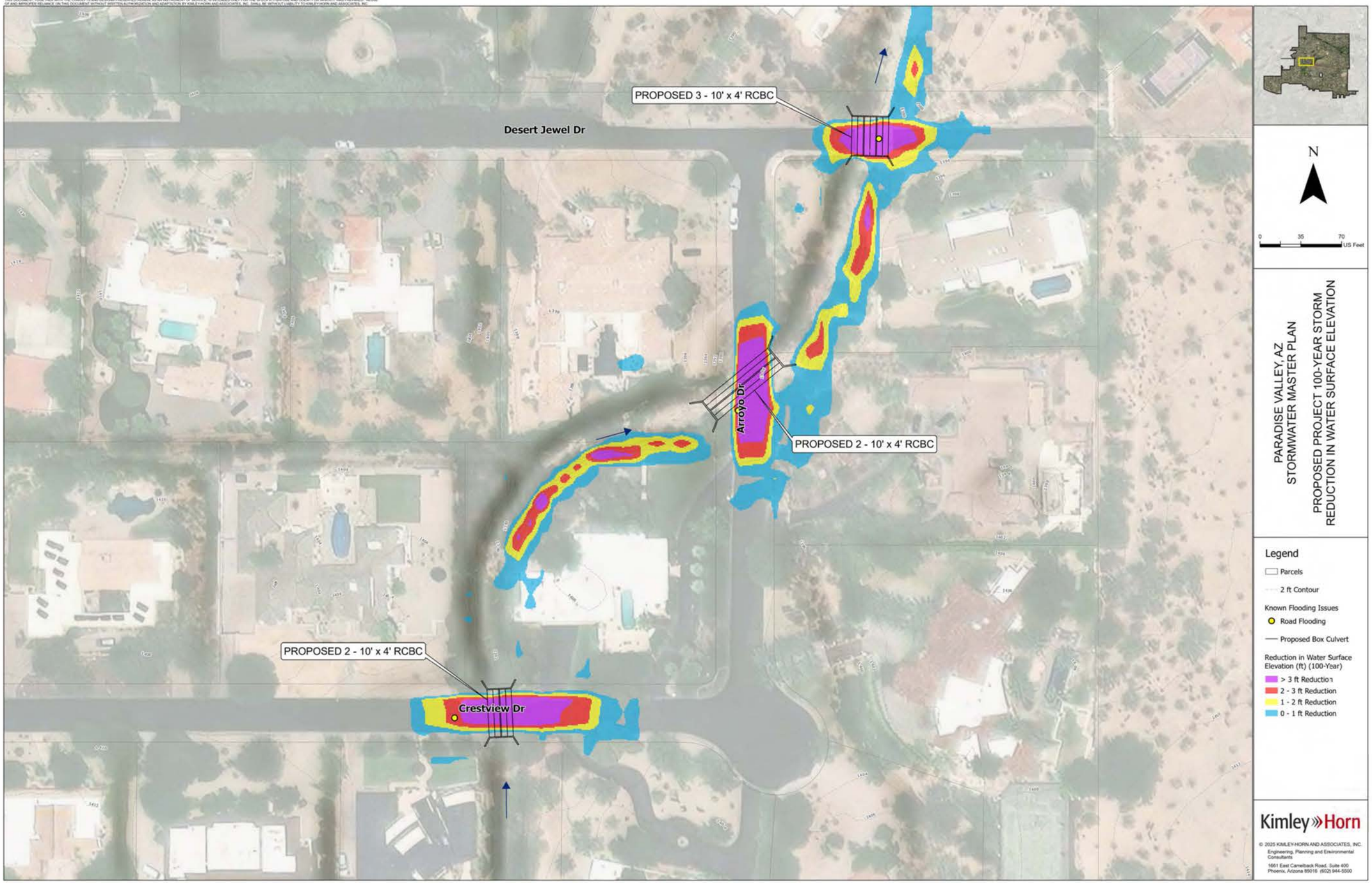
PROPOSED 3 - 10' x 4' RCBC
Desert Jewel Dr
Arroyo Dr
PROPOSED 2 - 10' x 4' RCBC
PROPOSED 2 - 10' x 4' RCBC
Crestview Dr
N
0
35
70
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
PROPOSED PROJECT 100-YEAR STORM
REDUCTION IN WATER SURFACE ELEVATION
Legend
Parcels
2 ft Contour
Known Flooding Issues
Road Flooding
Proposed Box Culvert
Reduction in Water Surface Elevation (ft) (100-Year)
> 3 ft Reduction
2 - 3 ft Reduction
1 - 2 ft Reduction
0 - 1 ft Reduction
Kimley»Horn
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Engineering, Planning and Environmental Consultants
1661 East Camelback Road, Suite 400
Phoenix, Arizona 85016 (602) 944-5500

XVIII. APPENDIX F – HIGHEST PRIORITY PROJECTS ANTICIPATED PERFORMANCE

FLOOD HAZARD AREA N

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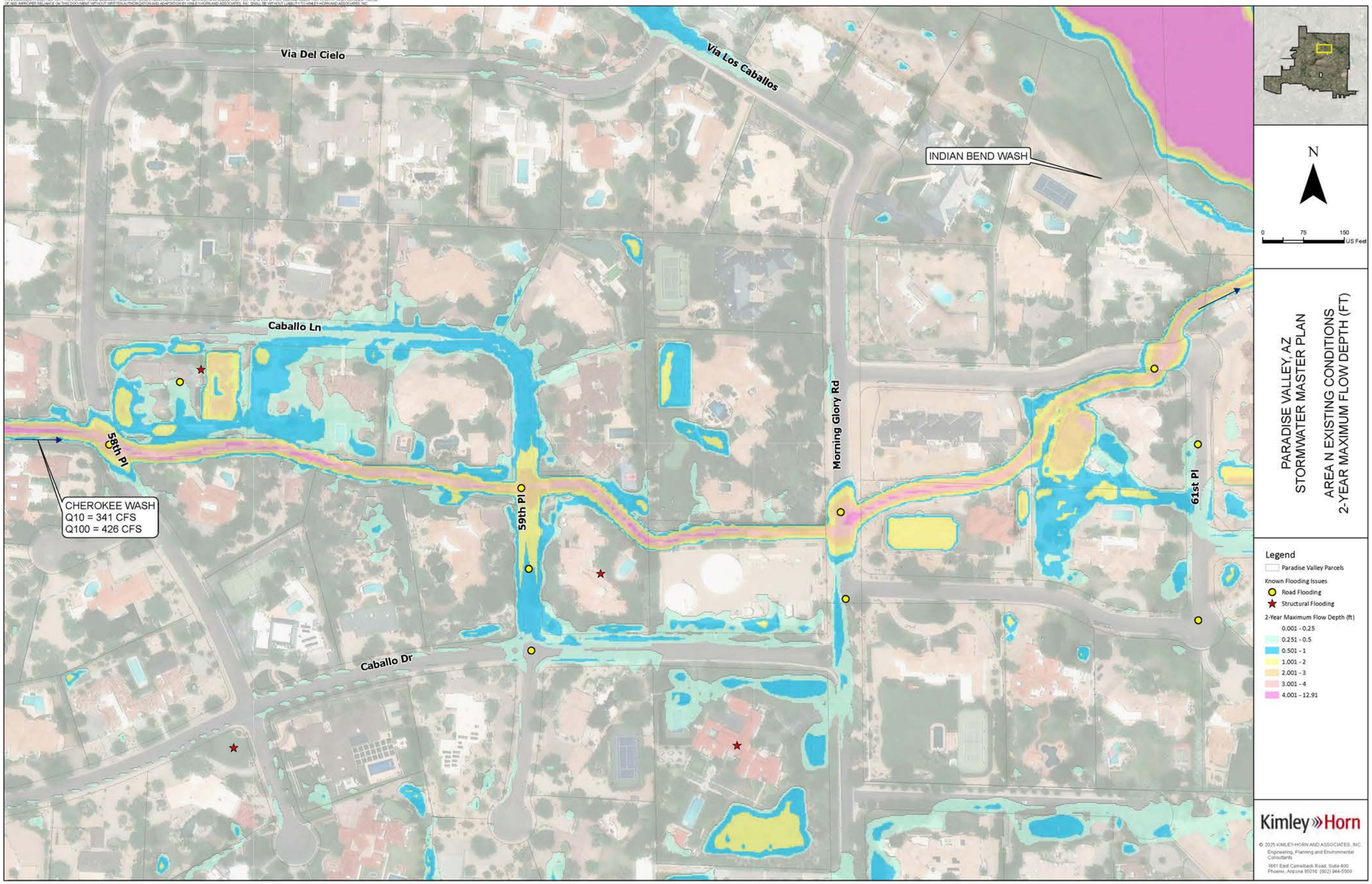

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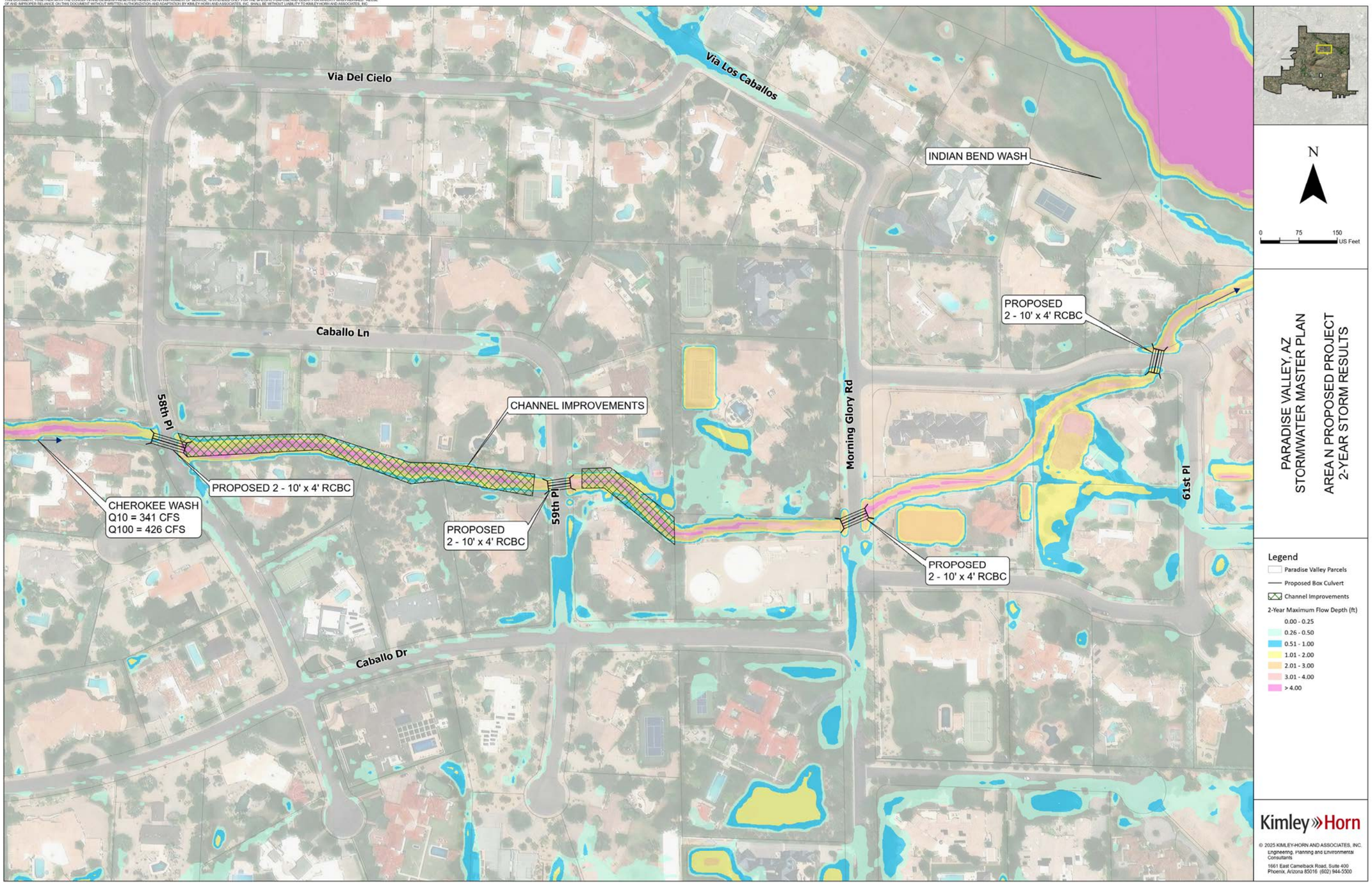

Via Del Cielo
Via Los Caballos
INDIAN BEND WASH
Caballo Ln
PROPOSED 2 - 10' x 4' RCBC
59th Pl
CHEROKEE WASH
Q10 = 341 CFS
Q100 = 426 CFS
PROPOSED
2 - 10' x 4' RCBC
59th Pl
Morning Glory Rd
PROPOSED
2 - 10' x 4' RCBC
61st Pl
Caballo Dr
N
0 75 150
US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
PROPOSED PROJECT 2-YEAR STORM
REDUCTION IN WATER SURFACE ELEVATION
Legend
Paradise Valley Parcels
Proposed Box Culvert
Known Flooding Issues
Road Flooding
Structural Flooding
Reduction in Water Sur'ace Elevation (ft) (2-Year)
3 - 4 ft Reduction
2 - 3 ft Reduction
1 - 2 ft Reduction
0 - 1 ft Reduction
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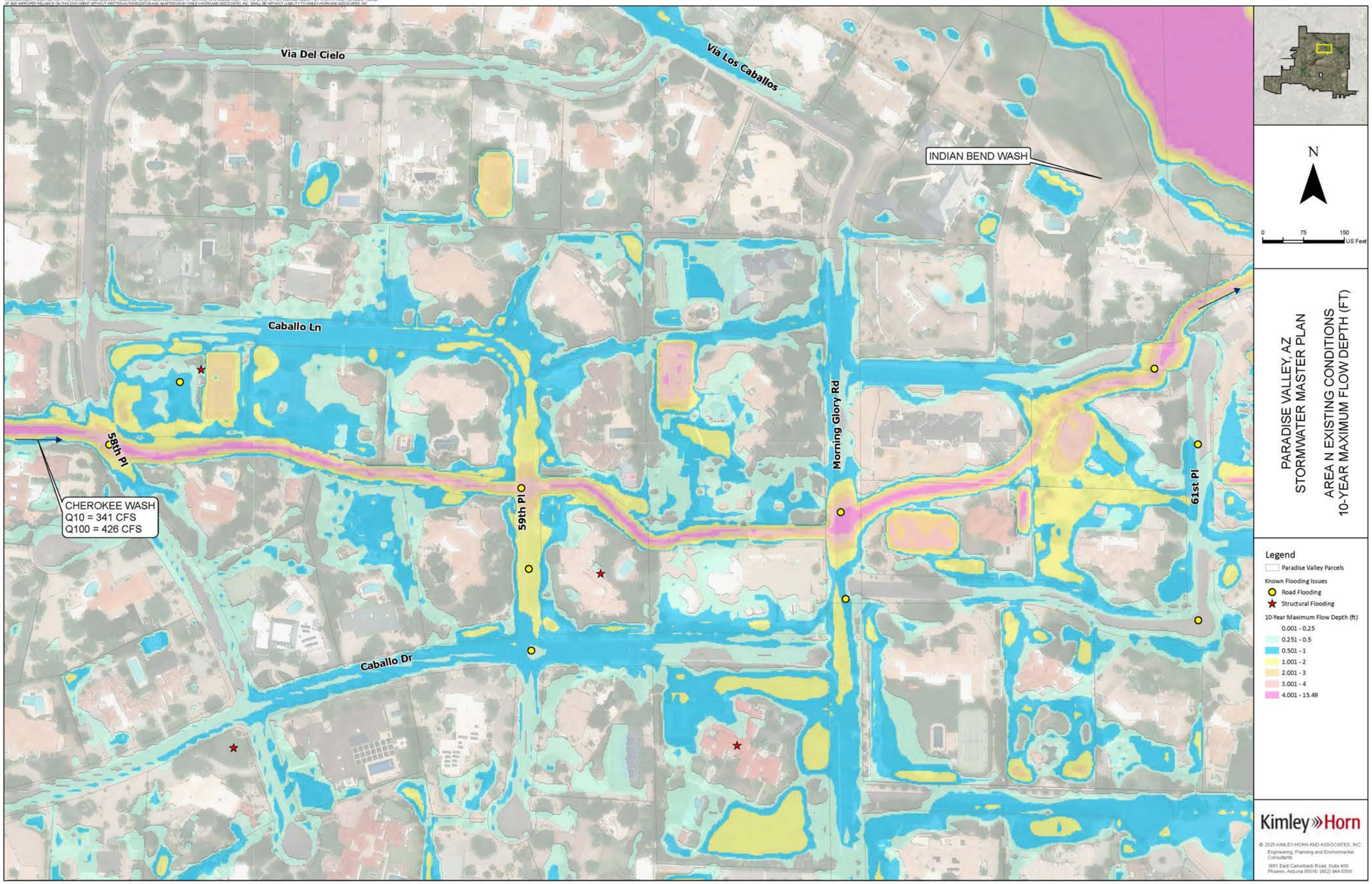

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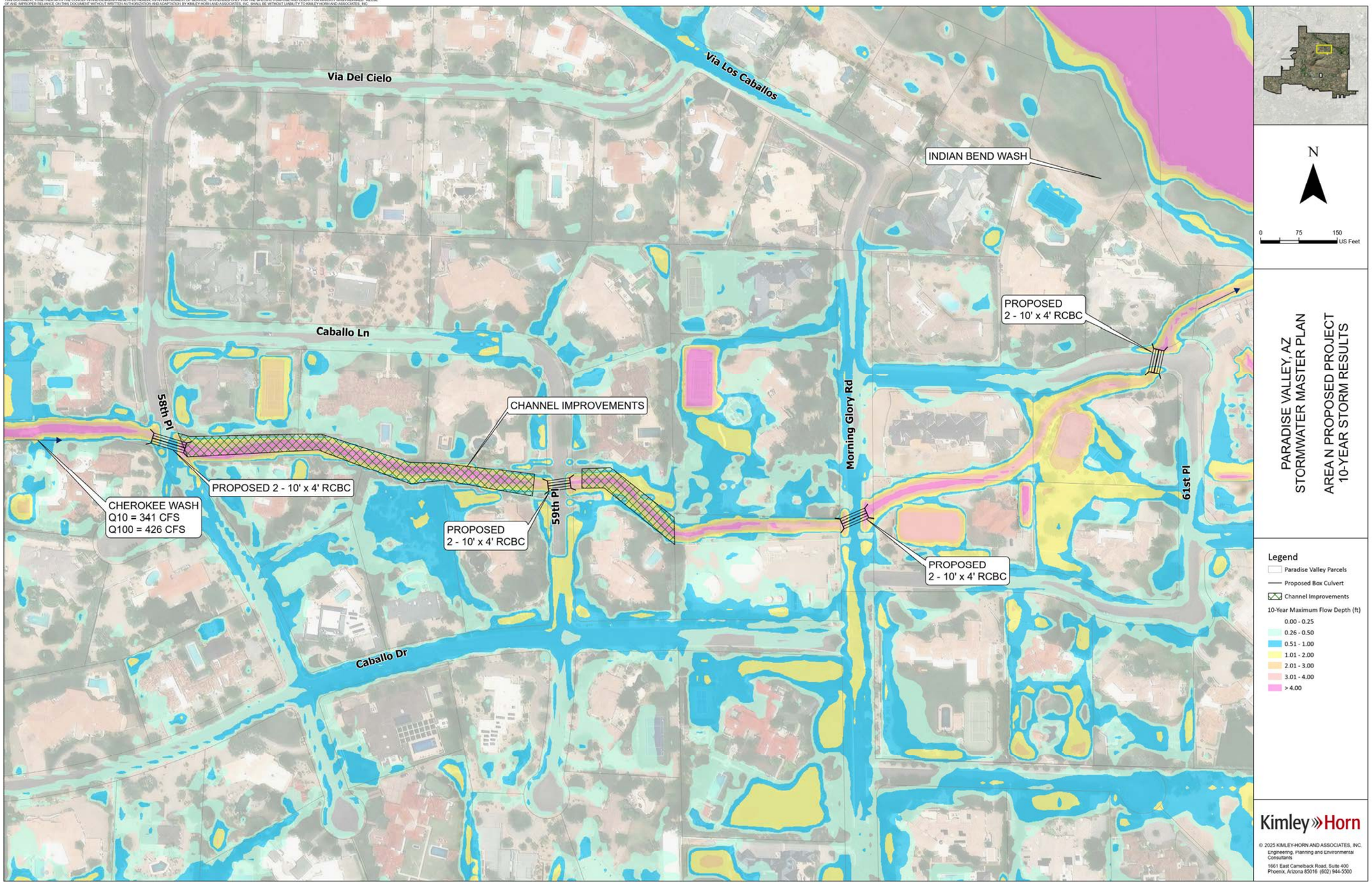

Via Del Cielo
Via Los Caballos
Caballo Ln
Caballo Dr
Morning Glory Rd
59th Pl
61st Pl
INDIAN BEND WASH
PROPOSED
2 - 10' x 4' RCBC
PROPOSED 2 - 10' x 4' RCBC
PROPOSED
2 - 10' x 4' RCBC
PROPOSED
2 - 10' x 4' RCBC
CHEROKEE WASH
Q10 = 341 CFS
Q100 = 426 CFS
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US Feet
PARADISE VALLEY, AZ
STORMWATER MASTER PLAN
PROPOSED PROJECT 10-YEAR STORM
REDUCTION IN WATER SURFACE ELEVATION
Legend
Paradise Valley Parcels
Proposed Box Culvert
Known Flooding Issues
Road Flooding
Structural Flooding
Reduction in Water Sur'ace Elevation (ft) (10-Year)
4 - 5 ft Reduction
3 - 4 ft Reduction
2 - 3 ft Reduction
1 - 2 ft Reduction
0 - 1 ft Reduction
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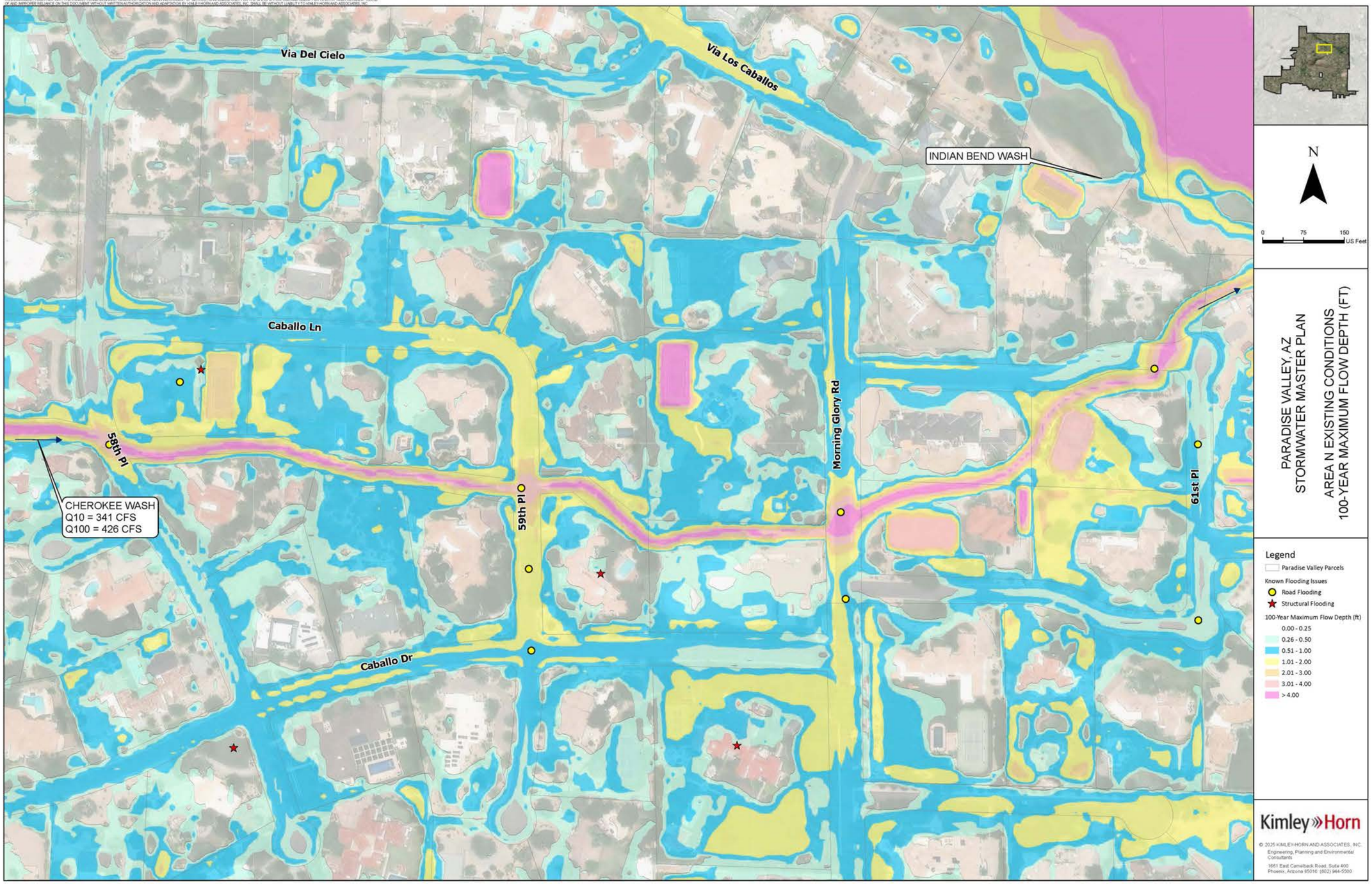

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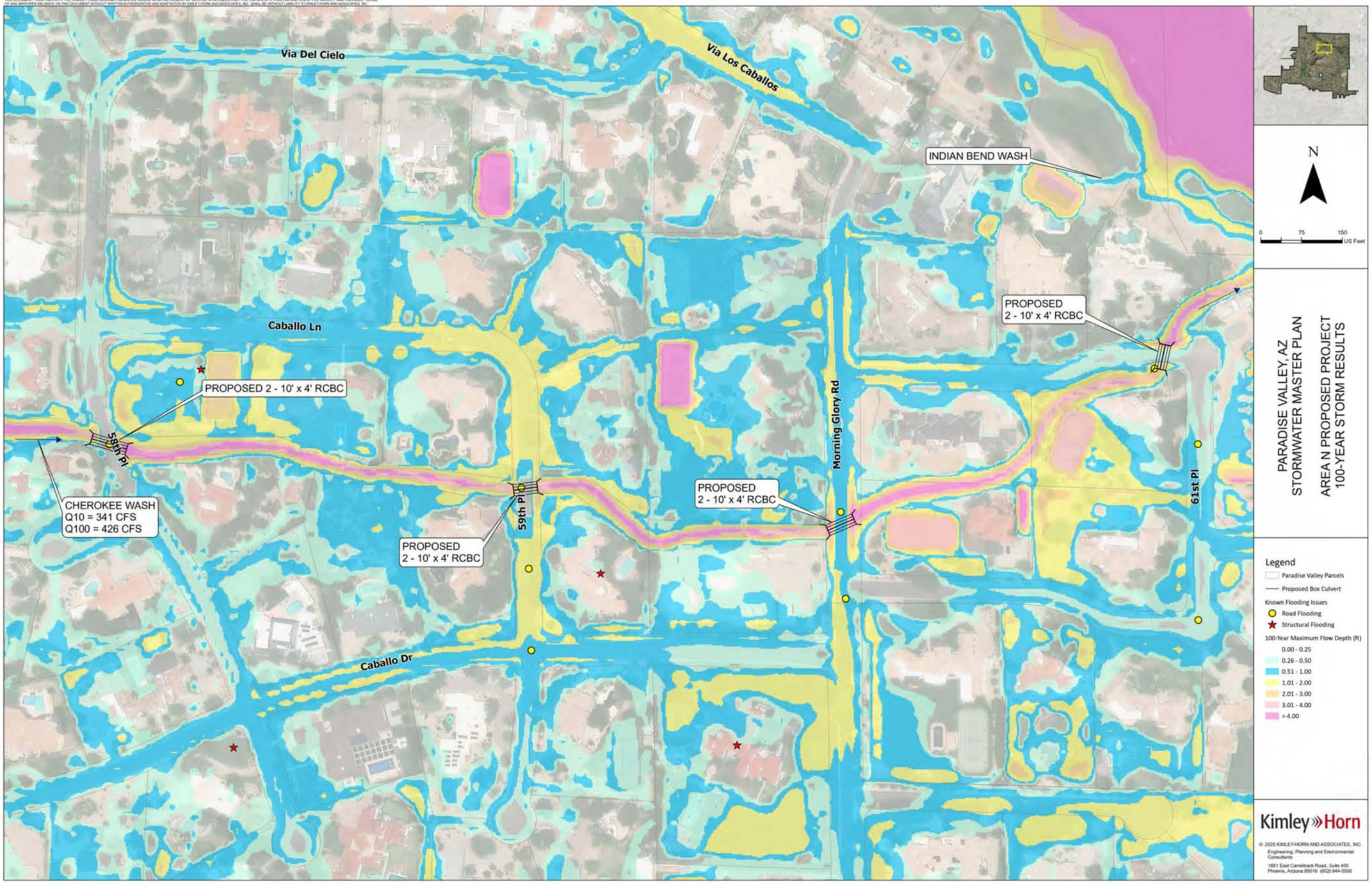

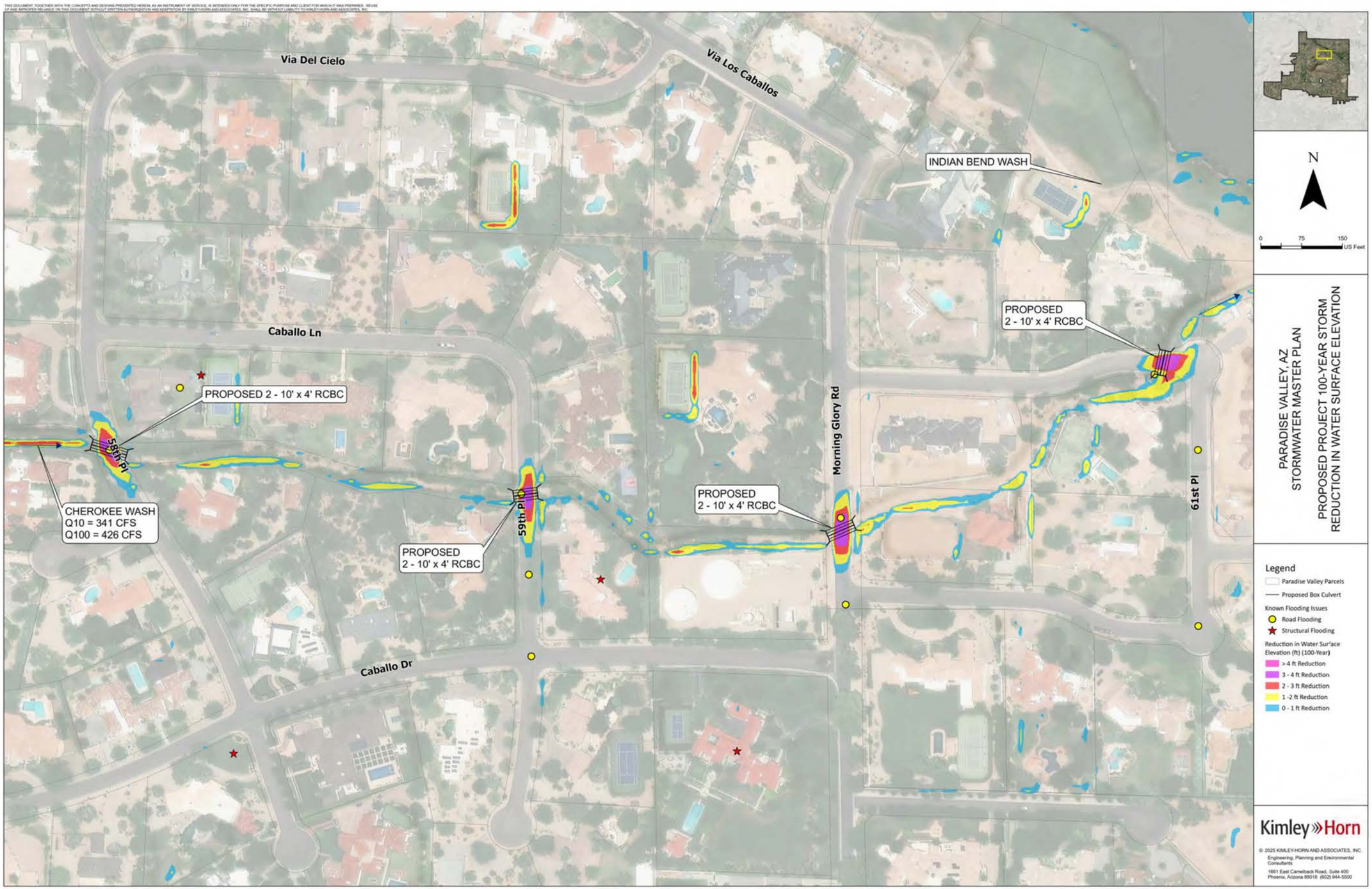
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XVIII. APPENDIX F – HIGHEST PRIORITY PROJECTS ANTICIPATED PERFORMANCE

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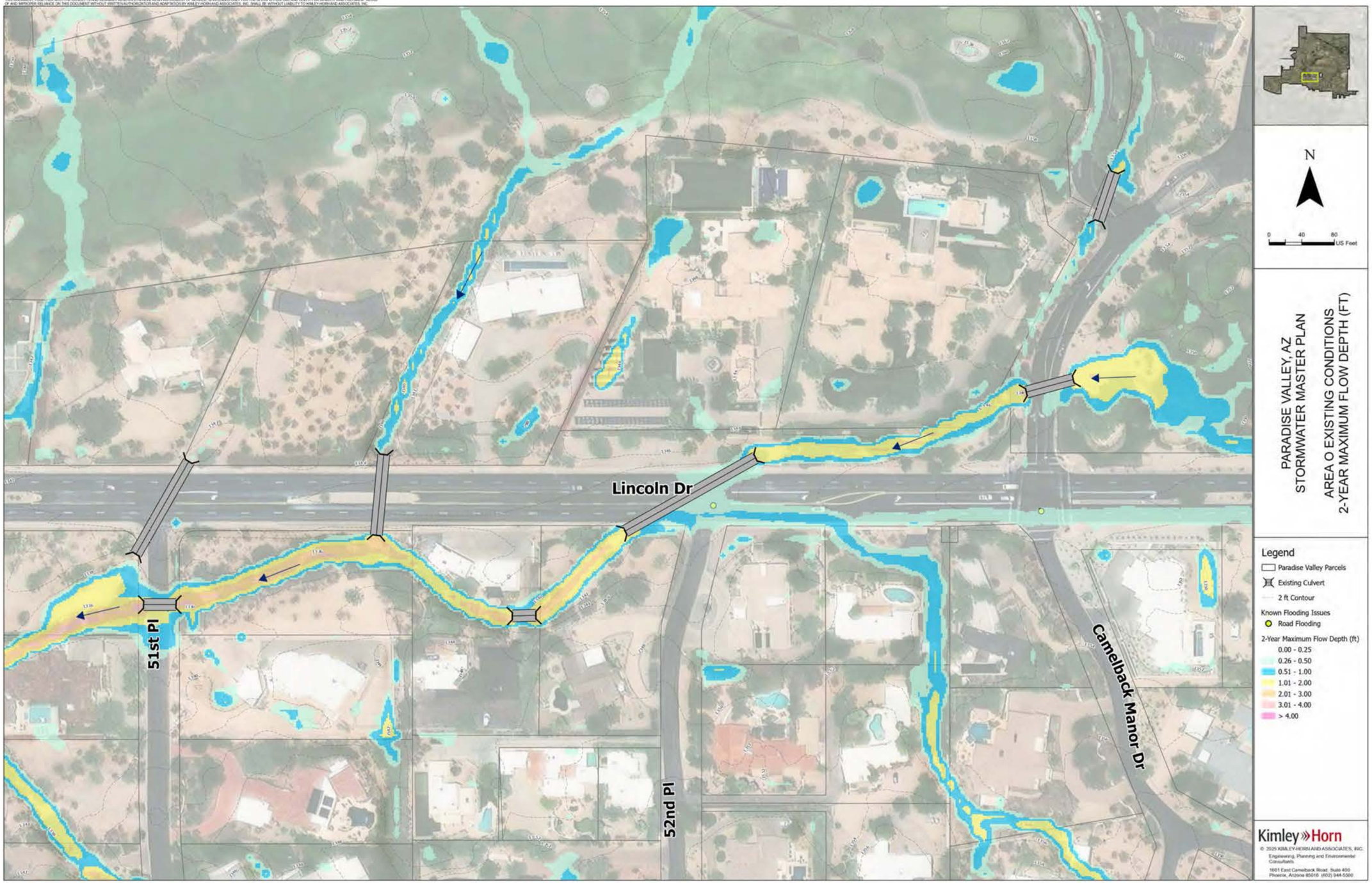

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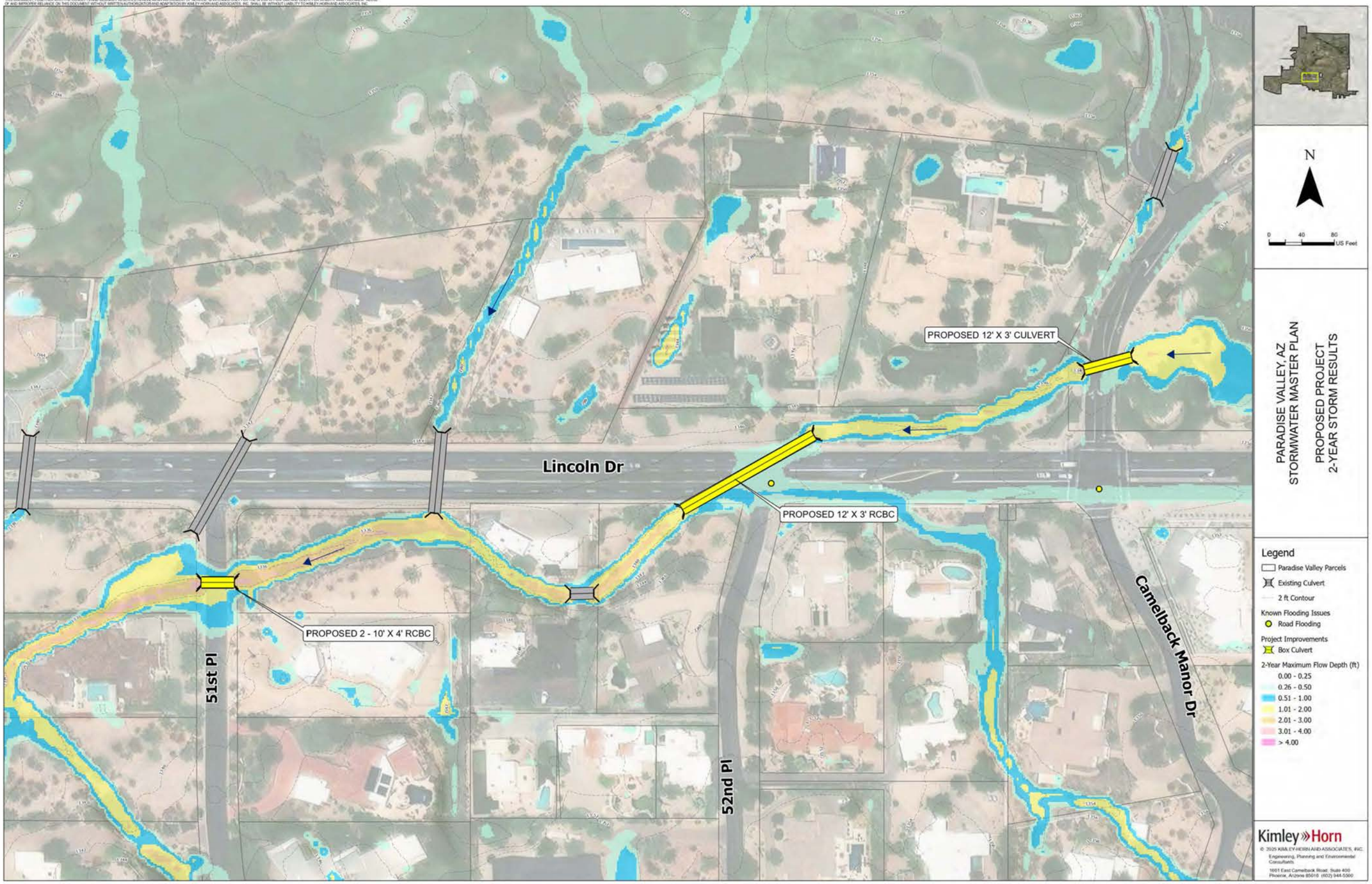

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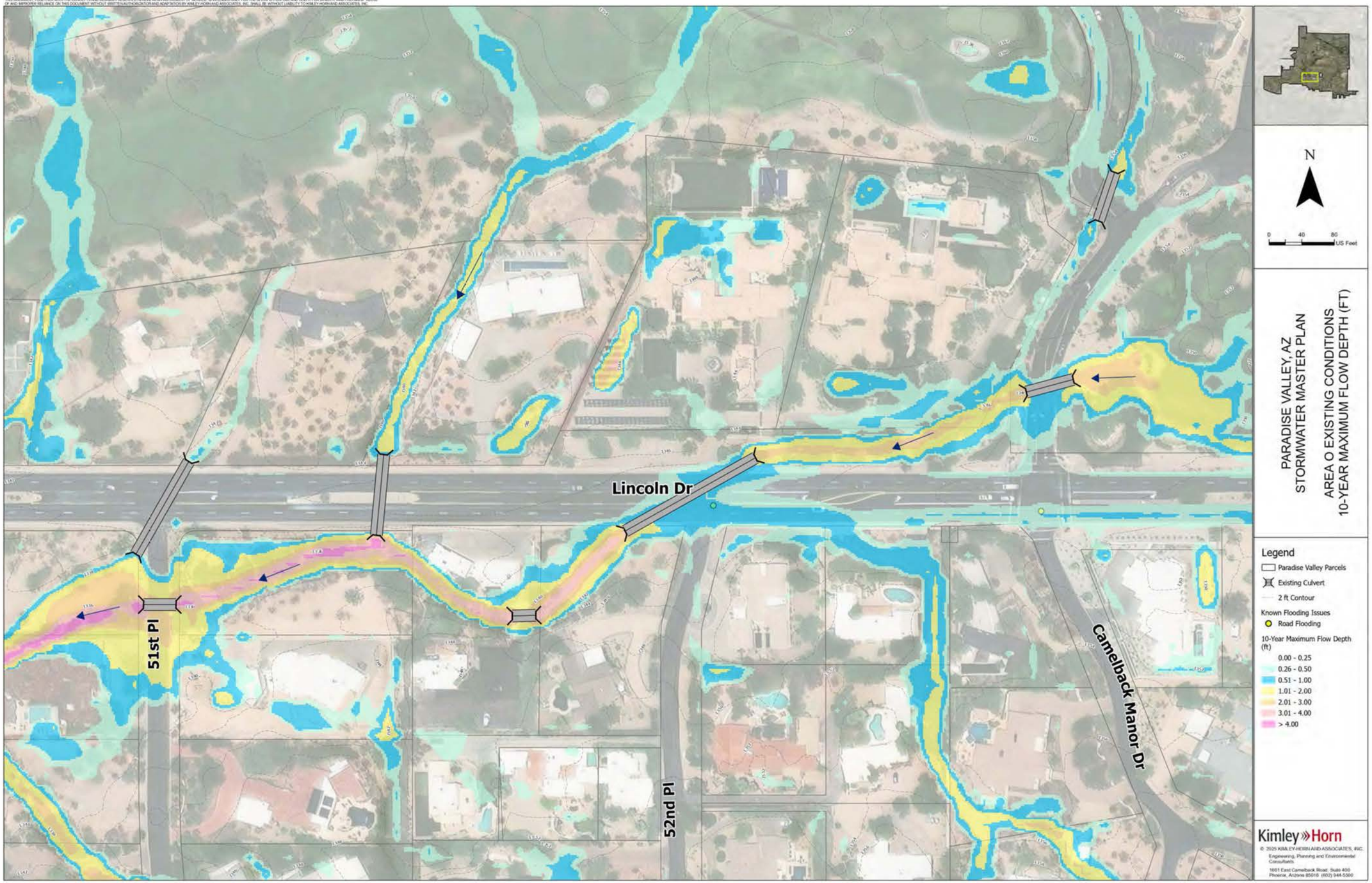

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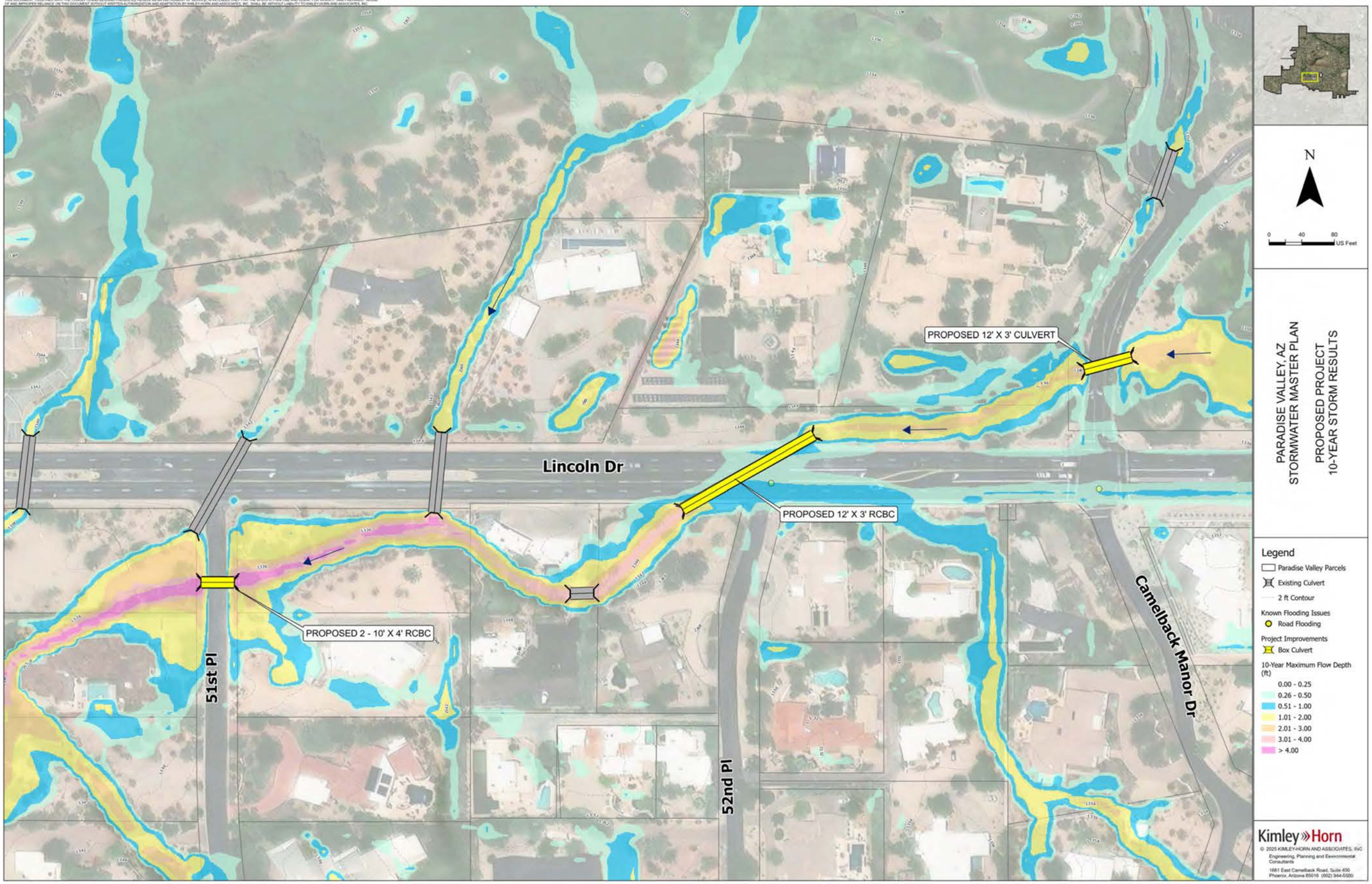

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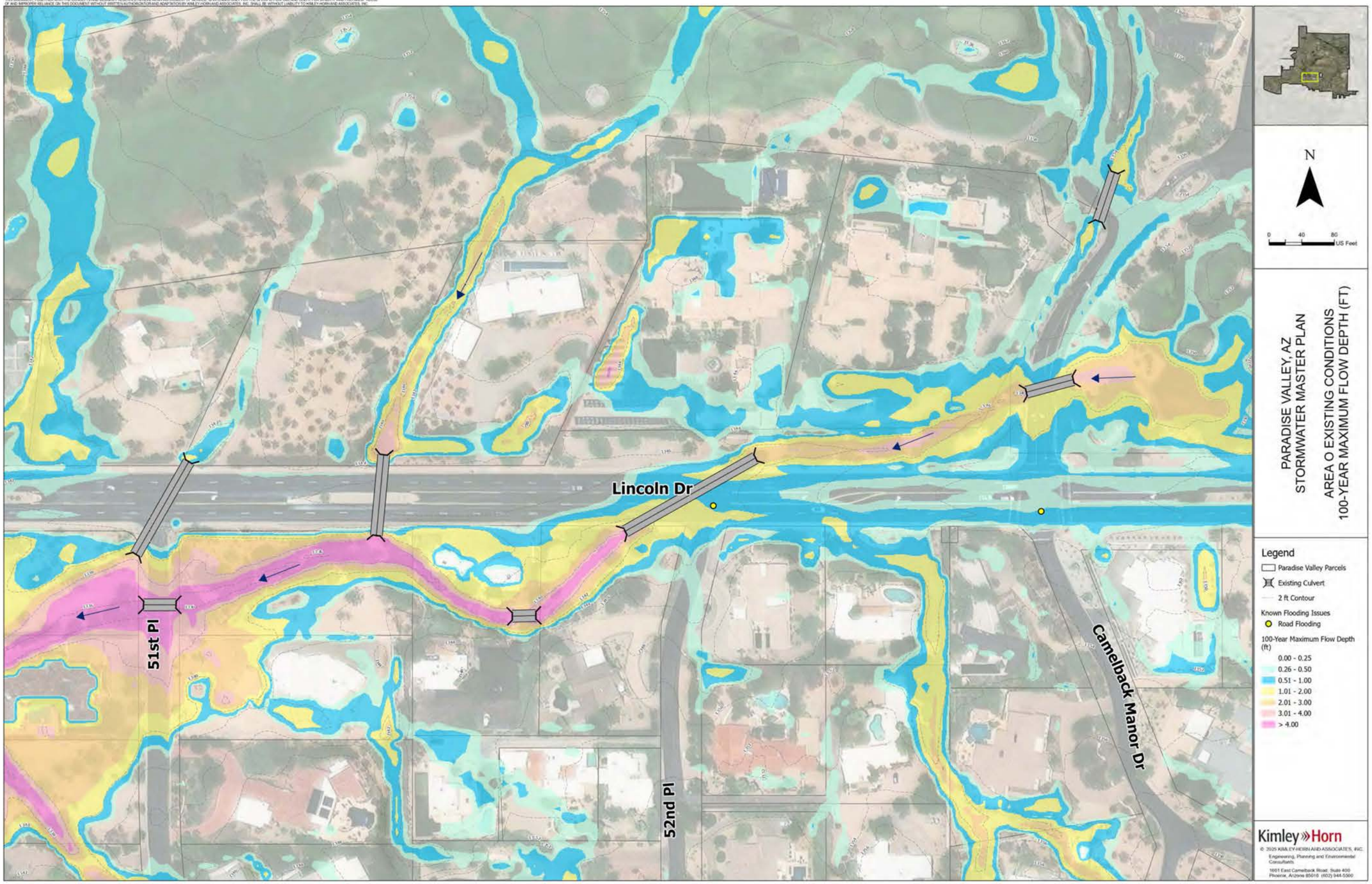

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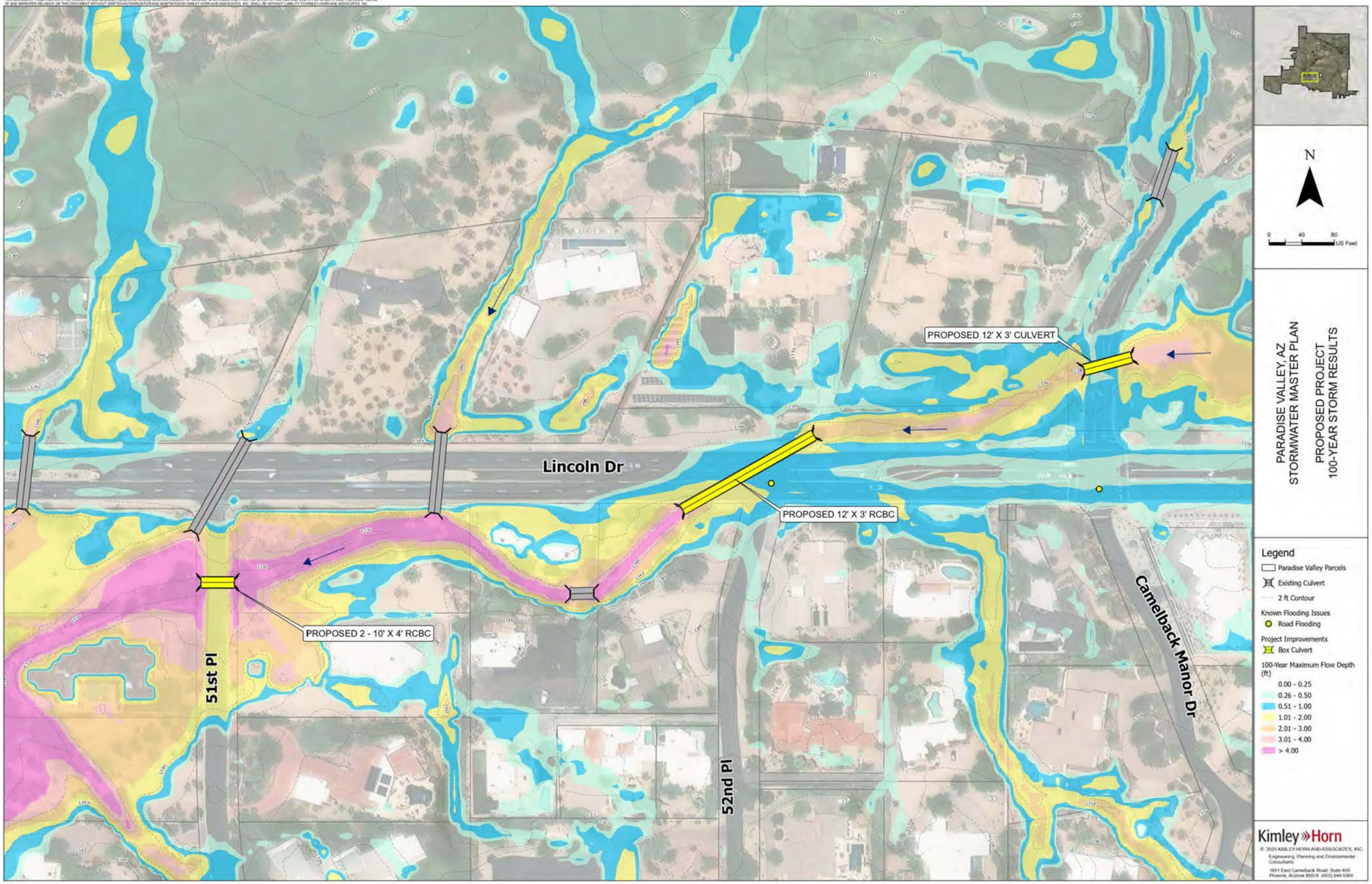

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XIX. APPENDIX G – HIGHEST PRIORITY PROJECTS COST ESTIMATES

Area A - Engineer's Opinion of Probable Cost

Item	Description	Unit	Quantity	Unit Price	Cost
	Construction Estimate				
1	12' x 3' RCBC	LF	900	$1,800	$1,620,000
2	2 - 30" RCP Storm Drain	LF	1,500	$750	$1,125,000
3	54" RCP Storm Drain	LF	1,200	$525	$630,000
4	42" RCP Storm Drain	LF	500	$415	$207,500
5	36" RCP Storm Drain	LF	450	$320	$144,000
6	Storm Drain Connection	EA	1	$3,500	$3,500
7	Catch Basin	EA	5	$25,000	$125,000
8	Manhole	EA	15	$12,000	$180,000
9	Pavement Removal	LF	4,210	$35	$147,350
10	Median Curb Replacement	LF	1,800	$55	$99,000
11	New Pavement/Regrading	SY	11,000	$85	$935,000
12	Concrete Curb and Gutter	LF	3,200	$55	$176,000
13	Clearing and Grubbing	LF	4,210	$50	$210,500
14	Inlet Structure	EA	3	$25,000	$75,000
15	Pavers to Match Existing Conditions	SF	4,210	$40	$168,400
16	Landscaping and Irrigation Restoration	SF	12,630	$60	$757,800
				Subtotal	6,604,050
	General Costs				
17	SWPPP (2%)	LS	1	$132,081	$132,081
18	Mobilization/Demobilization (10%)	LS	1	$660,405	$660,405
19	Design (15%)	LS	1	$990,608	$990,608
20	Construction Management (12%)	LS	1	$792,486	$792,486
21	Utilities (10%)	LS	1	$660,405	$660,405
22	Traffic Control (3%)	LS	1	$198,122	$198,122
				Subtotal	$10,038,156
				Contingency (15%)	$1,505,723
				Total Project Cost	$11,543,879

Area 1 – Engineer's Opinion of Probable Cost

Item	Description	Unit	Quantity	Unit Price	Cost
	Construction Estimate				
1	Storm Drain Outlet	EA	1	$2,500	$2,500
2	Storm Drain Pipe 24"	LF	110	$410	$45,100
3	Manhole	EA	1	$10,000	$10,000
4	Staff Gage	EA	1	$210	$210
5	Flood Warning Sign	EA	1	$275	$275
6	Protective Railing	LF	75	$180	$13,500
7	Removal of Curb and Gutter	LF	3	$250	$750
8	Curb & Gutter	LF	3	$100	$300
9	Concrete Sidewalk	SF	10	$35	$350
10	Storm Drain Pipe 36"	SF	15	$375	$5,625
11	Remove Bollards	EA	6	$260	$1,560
12	Removal of Pipe	LF	15	$75	$1,125
13	Riprap	CY	15	$120	$1,800
14	Channel Excavation	CY	1,200	$28	$33,600
15	Diversion Structure	LS	1	$55,000	$55,000
16	Basin Excavation	CY	2,600	$25	$65,000
17	Landscaping	LS	1	$15,000	$15,000
				Sub Total	$251,695
	General Costs				
18	SWPPP (10%)	LS	1	$25,170	$25,170
19	Mobilization/Demobilization (50%)	LS	1	$125,848	$125,848
20	Design (50%)	LS	1	$125,848	$125,848
21	Construction Management (45%)	LS	1	$113,263	$113,263
22	Utilities (20%)	LS	1	$50,339	$50,339
23	Traffic Control (20%)	LS	1	$50,339	$50,339
				Subtotal	$742,500
				Contingency (40%)	$297,000
				Total	$1,039,500

Area K - Engineer's Opinion of Probable Cost

Item	Description	Unit	Quantity	Unit Price	Cost
Construction Estimate					
1	Basin Excavation	CY	61,307	$42	$2,574,894
2	Landscaping	SF	174,240	$5	$871,200
3	Clearing and Grubbing	SF	174,240	$2	$348,480
4	Weir Grading and Concrete	LS	1	$10,000	$10,000
5	Riprap	CY	630	$120	$75,600
				Subtotal	$3,880,174
General Costs					
6	SWPPP (2%)	LS	1	$77,603	$77,603
7	Mobilization/Demobilization (12%)	LS	1	$465,621	$465,621
8	Design (10%)	LS	1	$388,017	$388,017
9	Construction Management (10%)	LS	1	$388,017	$388,017
10	Utilities (2%)	LS	1	$77,603	$77,603
11	Traffic Control (1%)	LS	1	$38,802	$38,802
				Subtotal	$5,315,838
				Contingency (15%)	$797,376
				Total	$6,113,214

Area L - Engineer's Opinion of Probable Costs

Item	Description	Unit	Quantity	Unit Price	Cost
Construction Estimate					
1	2 - 10' x 4' RCBC	LF	125	$2,600	$325,000
2	3 - 10' x 4' RCBC	LF	45	$3,400	$153,000
3	Headwalls	EA	6	$15,000	$90,000
4	Grouted Riprap	CY	30	$470	$14,100
5	Safety Rail	LF	240	$150	$36,000
6	Earthwork/Sediment Basin	CY	780	$45	$35,100
7	Landscaping	LS	1	$20,000	$20,000
8	Pavement Replacement	TON	165	$475	$78,375
				Sub Total	$751,575
General Costs					
9	SWPPP (5%)	LS	1	$37,579	$37,579
10	Mobilization/Demobilization (20%)	LS	1	$150,315	$150,315
11	Design (20%)	LS	1	$150,315	$150,315
12	Construction Management (15%)	LS	1	$112,736	$112,736
13	Utilities (8%)	LS	1	$60,126	$60,126
14	Traffic Control (5%)	LS	1	$37,579	$37,579
				Subtotal	$1,300,225
				Contingency (20%)	$260,045
				Total	$1,560,270

Area N - Engineer's Opinion of Probable Cost

Item	Description	Unit	Quantity	Unit Price	Cost
	Construction Estimate				
1	2 - 10' x 4' RCBC	LF	255	$2,600	$663,000
2	Headwall	EA	8	$15,000	$120,000
3	Grouted Riprap	CY	32	$480	$15,360
4	Pavement Removal and Replacement	LF	670	$150	$100,500
5	Landscaping	LS	1	$25,000	$25,000
6	Safety Rail	LF	200	$150	$30,000
7	Clearing and Grubbing	AC	1	$25,000	$25,000
8	Channel Grading and Excavation	LS	1	$20,000	$20,000
				Subtotal	$998,860
	General Costs				
9	SWPPP (3%)	LS	1	$29,966	$29,966
10	Mobilization/Demobilization (15%)	LS	1	$149,829	$149,829
11	Design (15%)	LS	1	$149,829	$149,829
12	Construction Management (15%)	LS	1	$149,829	$149,829
13	Utilities (10%)	LS	1	$99,886	$99,886
14	Traffic Control (8%)	LS	1	$79,909	$79,909
				Subtotal	$1,658,108
				Contingency (20%)	$331,622
				Total	$1,989,729

Area O - Engineer's Opinion of Probable Cost

Item	Description	Unit	Quantity	Unit Price	Cost
	Construction Estimate				
1	2 - 10' x 4' RCBC	LF	55	$2,400	$132,000
2	12' x 3' RCBC	LF	190	$1,800	$342,000
3	Drop Inlet	EA	1	$20,000	$20,000
4	Headwalls	EA	6	$12,000	$72,000
5	Grouted Riprap	CY	40	$470	$18,800
6	Excavation	CY	1,050	$65	$68,250
7	Channel Grading and Landscaping	LS	1	$50,000	$50,000
8	Remove and Replace Pavement	LF	315	$220	$69,300
				Subtotal	$772,350
	General Costs				
9	SWPPP (5%)	LS	1	$38,618	$38,618
10	Mobilization/Demobilization (20%)	LS	1	$154,470	$154,470
11	Design (20%)	LS	1	$154,470	$154,470
12	Construction Management (20%)	LS	1	$154,470	$154,470
13	Utilities (15%)	LS	1	$115,853	$115,853
14	Traffic Control (25%)	LS	1	$193,088	$193,088
				Subtotal	$1,583,318
				Contingency (25%)	$395,829
				Total	$1,979,147

XX. APPENDIX H – BENEFIT COST ANALYSIS DOCUMENTAION

FEMA | Benefit-Cost Calculator

V.6.0 (Build 20250108.0114 | Release Notes)

Benefit-Cost Analysis

Project Name: Invergordon Storm Drain

Map Marker ▲	Mitigation Title	Property Type	Hazard	Discount Rate (%)	Benefits (B)	Costs (C)	BCR (B/C)
1	Floodwater Diversion and Storage @ 33.5770080; -111.9800110		DFA - Riverine Flood	3.1	$ 18,722,793	$ 6,072,476	3.08
2	Drainage Improvement @ 33.5584120; -111.9433950		DFA - Riverine Flood	3.1	$ 23,293,796	$ 11,616,355	2.01
TOTAL (SELECTED)					**$ 42,016,589**	**$ 17,688,831**	**2.38**
TOTAL					**$ 42,016,589**	**$ 17,688,831**	**2.38**

Property Configuration

Property Title:	Floodwater Diversion and Storage @ 33.5770080; -111.9800110
Property Location:	85028, Maricopa, Arizona
Property Coordinates:	33.577008, -111.980011
Is this a tribal project?:	No
Hazard Type:	Riverine Flood
Mitigation Action Type:	Floodwater Diversion and Storage
Property Type:	Residential Building
Analysis Method Type:	Professional Expected Damages

Cost Estimation

Floodwater Diversion and Storage @ 33.5770080; -111.9800110

Discount Rate (%):	3.1% Use Default:Yes
Project Useful Life (years):	75
Project Cost:	$6,000,000
Number of Maintenance Years:	75 Use Default:Yes
Annual Maintenance Cost:	$2,500

Damage Analysis Parameters - Damage Frequency Assessment

Floodwater Diversion and Storage @ 33.5770080; -111.9800110

Year of Analysis was Conducted:	2025
Year Property was Built:	0
Analysis Duration:	10 Use Default:Yes

Professional Expected Damages Before Mitigation

Floodwater Diversion and Storage @ 33.5770080; -111.9800110

	OTHER	OPTIONAL DAMAGES			VOLUNTEER COSTS		TOTAL
Recurrence Interval (years)	Damages ($)	Category 1 ($)	Category 2 ($)	Category 3 ($)	Number of Volunteers	Number of Days	Damages ($)
100	68,424,130	0	0	0	0	0	68,424,130
10	51,107,020	0	0	0	0	0	51,107,020

Annualized Damages Before Mitigation

Floodwater Diversion and Storage @ 33.5770080; -111.9800110

Annualized Recurrence Interval (years)	Damages and Losses ($)	Annualized Damages and Losses ($)
10	51,107,020	5,322,154
100	68,424,130	684,234
	Sum Damages and Losses ($)	Sum Annualized Damages and Losses ($)
	119,531,150	6,006,388

Professional Expected Damages After Mitigation

Floodwater Diversion and Storage @ 33.5770080; -111.9800110

	OTHER	OPTIONAL DAMAGES			VOLUNTEER COSTS		TOTAL
Recurrence Interval (years)	Damages ($)	Category 1 ($)	Category 2 ($)	Category 3 ($)	Number of Volunteers	Number of Days	Damages ($)
100	60,716,150	0	0	0	0	0	60,716,150
10	51,009,466	0	0	0	0	0	51,009,466

Annualized Damages After Mitigation

Floodwater Diversion and Storage @ 33.5770080; -111.9800110

Annualized Recurrence Interval (years)	Damages and Losses ($)	Annualized Damages and Losses ($)
10	51,009,466	5,008,642
100	60,716,150	607,155
	Sum Damages and Losses ($)	Sum Annualized Damages and Losses ($)
	111,725,616	5,615,797

Standard Benefits - Ecosystem Services

Floodwater Diversion and Storage @ 33.5770080; -111.9800110

Total Project Area (sq.ft):	174,240
Percentage of Urban Green Open Space:	100.00%
Percentage of Rural Green Open Space:	0.00%
Percentage of Riparian:	0.00%
Percentage of Coastal Wetlands:	0.00%
Percentage of Inland Wetlands:	0.00%
Percentage of Forests:	0.00%
Percentage of Coral Reefs:	0.00%
Percentage of Shellfish Reefs:	0.00%
Percentage of Beaches and Dunes:	0.00%
Expected Annual Ecosystem Services Benefits:	$62,164

Additional Benefits - Social

Floodwater Diversion and Storage @ 33.5770080; -111.9800110

Number of Workers:	410
Expected Annual Social Benefits:	$5,597,235

Benefits-Costs Summary

Floodwater Diversion and Storage @ 33.5770080; -111.9800110

Discount Rate (%):	3.1% Use Default:Yes
Total Standard Mitigation Benefits:	$13,125,558
Total Social Benefits:	$5,597,235
Total Mitigation Project Benefits:	$18,722,793
Total Mitigation Project Cost:	$6,072,476
Benefit Cost Ratio - Standard:	2.16
Benefit Cost Ratio - Standard + Social:	3.08

Property Configuration

Property Title:	Drainage Improvement @ 33.5584120; -111.9433950
Property Location:	85253, Maricopa, Arizona
Property Coordinates:	33.558412, -111.943395
Is this a tribal project?:	No
Hazard Type:	Riverine Flood
Mitigation Action Type:	Drainage Improvement
Property Type:	Residential Building
Analysis Method Type:	Professional Expected Damages

Cost Estimation
Drainage Improvement @ 33.5584120; -111.9433950

Discount Rate (%):	3.1% Use Default:Yes
Project Useful Life (years):	75
Project Cost:	$11,543,879
Number of Maintenance Years:	75 Use Default:Yes
Annual Maintenance Cost:	$2,500

Damage Analysis Parameters - Damage Frequency Assessment
Drainage Improvement @ 33.5584120; -111.9433950

Year of Analysis was Conducted:	2025
Year Property was Built:	0
Analysis Duration:	10 Use Default:Yes

Professional Expected Damages Before Mitigation
Drainage Improvement @ 33.5584120; -111.9433950

	OTHER	OPTIONAL DAMAGES			VOLUNTEER COSTS		TOTAL
Recurrence Interval (years)	Damages ($)	Category 1 ($)	Category 2 ($)	Category 3 ($)	Number of Volunteers	Number of Days	Damages ($)
100	74,057,157	0	0	0	0	0	74,057,157
10	34,557,678	0	0	0	0	0	34,557,678

Annualized Damages Before Mitigation
Drainage Improvement @ 33.5584120; -111.9433950

Annualized Recurrence Interval (years)	Damages and Losses ($)	Annualized Damages and Losses ($)
10	34,557,678	4,553,007
100	74,057,157	740,564
	Sum Damages and Losses ($)	Sum Annualized Damages and Losses ($)
	108,614,835	5,293,571

Professional Expected Damages After Mitigation
Drainage Improvement @ 33.5584120; -111.9433950

	OTHER	OPTIONAL DAMAGES			VOLUNTEER COSTS		TOTAL
Recurrence Interval (years)	Damages ($)	Category 1 ($)	Category 2 ($)	Category 3 ($)	Number of Volunteers	Number of Days	Damages ($)
100	69,521,281	0	0	0	0	0	69,521,281
10	32,335,631	0	0	0	0	0	32,335,631

Annualized Damages After Mitigation
Drainage Improvement @ 33.5584120; -111.9433950

Annualized Recurrence Interval (years)	Damages and Losses ($)	Annualized Damages and Losses ($)
10	32,335,631	4,267,191
100	69,521,281	695,206
	Sum Damages and Losses ($)	Sum Annualized Damages and Losses ($)
	101,856,912	4,962,397

Standard Benefits - Ecosystem Services
Drainage Improvement @ 33.5584120; -111.9433950

Total Project Area (acres):	26
Percentage of Urban Green Open Space:	100.00%
Percentage of Rural Green Open Space:	0.00%
Percentage of Riparian:	0.00%
Percentage of Coastal Wetlands:	0.00%
Percentage of Inland Wetlands:	0.00%
Percentage of Forests:	0.00%
Percentage of Coral Reefs:	0.00%
Percentage of Shellfish Reefs:	0.00%
Percentage of Beaches and Dunes:	0.00%
Expected Annual Ecosystem Services Benefits:	$404,066

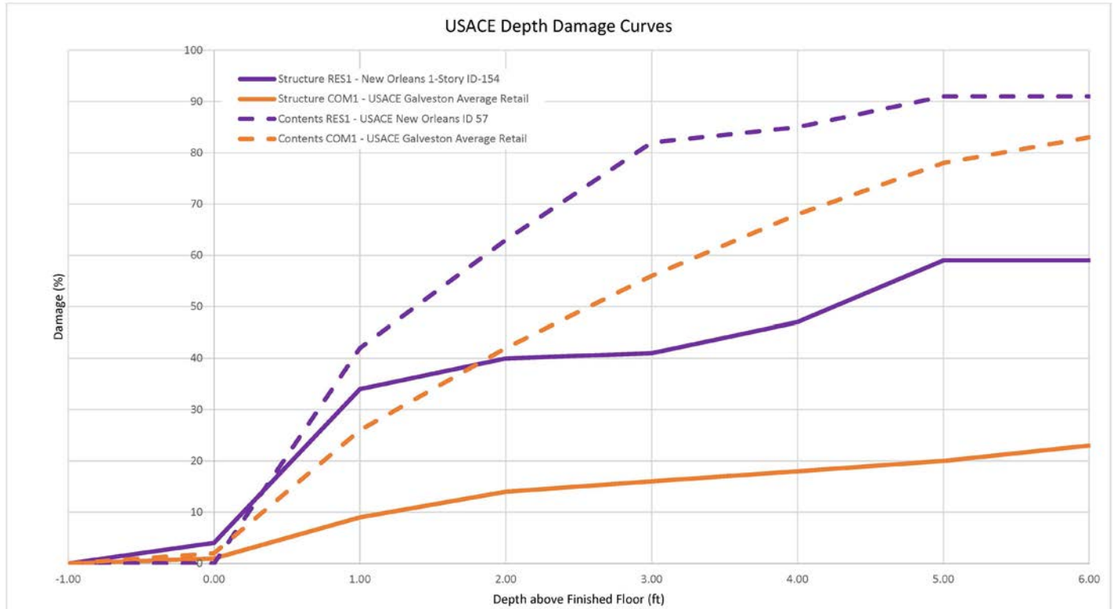
Additional Benefits - Social
Drainage Improvement @ 33.5584120; -111.9433950

Number of Workers:	165
Expected Annual Social Benefits:	$1,978,900

Benefits-Costs Summary

Drainage Improvement @ 33.5584120; -111.9433950

Discount Rate (%):	3.1%	Use Default:Yes
Total Standard Mitigation Benefits:	$21,314,896	
Total Social Benefits:	$1,978,900	
Total Mitigation Project Benefits:	$23,293,796	
Total Mitigation Project Cost:	$11,616,355	
Benefit Cost Ratio - Standard:	1.83	
Benefit Cost Ratio - Standard + Social:	2.01	



10-Year and 100-Year Existing Building Damages in Area K

															Existing								
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
0	1372.7792	1373.029175	Residential	5062.750061	$ 3,675,557	$ 1,837,778	1372.830444	-0.20	1372.829956	-0.20	1372.834351	-0.19	1372.834229	-0.19	3.205076	$ 117,804	0	$ -	$ 117,804.38	3.220216	$ 118,361	0	$ -	$ 118,360.86
1	1371.6405	1371.890503	Residential	5114.190857	$ 3,712,903	$ 1,856,451	1371.667114	-0.22	1371.670532	-0.22	1371.717651	-0.17	1371.717651	-0.17	3.106444	$ 115,339	0	$ -	$ 115,339.24	3.308592	$ 122,845	0	$ -	$ 122,844.80
2	1367.0981	1367.348145	Residential	7006.825439	$ 5,086,955	$ 2,543,478	1367.262939	-0.09	1367.262573	-0.09	1367.392334	0.04	1367.224731	-0.12	3.659176	$ 186,141	0	$ -	$ 186,140.65	3.506344	$ 178,366	0	$ -	$ 178,366.15
3	1374.369	1374.619019	Residential	5893.124573	$ 4,278,408	$ 2,139,204	1374.525391	-0.09	1374.530029	-0.09	1374.701172	0.08	1374.527344	-0.09	3.63	$ 155,113	0.00	$ -	$ 155,113.18	3.63	$ 155,447	23.90	$ 511,310	$ 666,756.92
4	1380.3344	1380.584351	Residential	14318.15601	$ 10,394,981	$ 5,197,491	1380.388672	-0.20	1380.390015	-0.19	1380.391846	-0.19	1380.391846	-0.19	3.217284	$ 334,436	0	$ -	$ 334,436.07	3.22998	$ 335,756	0	$ -	$ 335,755.82
5	1381.6091	1381.859131	Residential	8338.503479	$ 6,053,754	$ 3,026,877	1381.669556	-0.19	1381.670044	-0.19	1381.842529	-0.02	1382.071655	0.21	3.24	$ 196,245	0.00	$ -	$ 196,244.53	10.38	$ 628,121	0.00	$ -	$ 628,120.52
6	1365.7844	1366.034424	Residential	5481.086914	$ 3,979,269	$ 1,989,635	1366.240723	0.21	1366.241211	0.21	1366.375732	0.34	1366.19458	0.16	10.19	$ 405,447	8.66	$ 172,393	$ 577,839.57	8.80	$ 350,362	11.48	$ 228,395	$ 578,757.00
7	1361.3544	1361.60437	Residential	6888.243347	$ 5,000,865	$ 2,500,432	1361.438843	-0.17	1361.439941	-0.16	1361.44165	-0.16	1361.441772	-0.16	3.34	$ 166,923	0.00	$ -	$ 166,923.46	3.35	$ 167,509	35.35	$ 883,911	$ 1,051,420.75
8	1373.5814	1373.831421	Residential	6063.259277	$ 4,401,926	$ 2,200,963	1373.639404	-0.19	1373.638428	-0.19	1373.656982	-0.17	1373.656982	-0.17	3.23	$ 142,267	0.00	$ -	$ 142,267.26	3.30	$ 145,362	35.21	$ 774,888	$ 920,250.74
9	1369.5145	1369.764526	Residential	4737.382507	$ 3,439,340	$ 1,719,670	1369.589478	-0.18	1369.589966	-0.17	1369.974854	0.21	1369.854858	0.09	3.30	$ 113,492	0.00	$ -	$ 113,491.61	6.71	$ 230,778	40.52	$ 696,869	$ 927,647.66
10	1375.5907	1375.840698	Residential	6107.704834	$ 4,434,194	$ 2,217,097	1375.984009	0.14	1375.97998	0.14	1375.985352	0.14	1375.985352	0.14	8.29933	$ 368,008	6.019062	$ 133,448	$ 501,456.80	8.33962	$ 369,795	0	$ -	$ 369,794.91
11	1359.4811	1359.731079	Residential	7633.545288	$ 5,541,954	$ 2,770,977	1359.544067	-0.19	1359.540039	-0.19	1359.545654	-0.19	1359.545654	-0.19	3.25	$ 180,222	0.00	$ -	$ 180,221.68	3.26	$ 180,573	0.00	$ -	$ 180,573.48
12	1349.402	1349.651978	Residential	12252.54138	$ 8,895,345	$ 4,447,673	1349.465942	-0.19	1349.469971	-0.18	1349.508179	-0.14	1349.468506	-0.18	3.26	$ 289,620	0.00	$ -	$ 289,619.63	3.27	$ 290,532	27.88	$ 1,240,028	$ 1,530,559.54
13	1361.3274	1361.577393	Residential	670.759644	$ 486,972	$ 243,486	1361.39917	-0.18	1361.403442	-0.17	1361.462036	-0.12	1361.462036	-0.12	3.287108	$ 16,007	0	$ -	$ 16,007.28	3.538572	$ 17,232	0	$ -	$ 17,231.84
14	1371.7996	1372.049561	Residential	6368.654053	$ 4,623,643	$ 2,311,821	1371.908325	-0.14	1371.910034	-0.14	1371.910645	-0.14	1371.910645	-0.14	3.435056	$ 158,825	0	$ -	$ 158,824.72	3.444336	$ 159,254	0	$ -	$ 159,253.79
15	1378.1814	1378.431396	Residential	5794.169983	$ 4,206,567	$ 2,103,284	1378.244873	-0.19	1378.24231	-0.19	1378.333862	-0.10	1378.259766	-0.17	3.253908	$ 136,878	0	$ -	$ 136,877.83	3.31348	$ 139,384	0	$ -	$ 139,383.77
16	1358.1885	1358.438477	Residential	7644.869263	$ 5,550,175	$ 2,775,088	1358.328003	-0.11	1358.329224	-0.11	1358.330688	-0.11	1358.330688	-0.11	3.558104	$ 197,481	0	$ -	$ 197,481.00	3.568844	$ 198,077	13.00707996	$ 360,958	$ 559,034.95
17	1365.3146	1365.564575	Residential	6809.630554	$ 4,943,792	$ 2,471,896	1365.397461	-0.17	1365.400024	-0.16	1365.399536	-0.17	1365.399658	-0.16	3.331544	$ 164,705	0	$ -	$ 164,704.60	3.340332	$ 165,139	0	$ -	$ 165,139.06
18	1379.1108	1379.36084	Residential	5093.971191	$ 3,698,223	$ 1,849,112	1379.271729	-0.09	1379.27478	-0.09	1379.274902	-0.09	1379.274902	-0.09	3.643556	$ 134,747	0	$ -	$ 134,746.83	3.656248	$ 135,216	0	$ -	$ 135,216.21
19	1378.9204	1379.17041	Residential	2066.832153	$ 1,500,520	$ 750,260	1378.949951	-0.22	1378.947754	-0.22	1378.994751	-0.18	1378.994751	-0.18	3.118164	$ 46,789	0	$ -	$ 46,788.68	3.297364	$ 49,478	0	$ -	$ 49,477.61
20	1363.8187	1364.068726	Residential	9950.357239	$ 7,223,959	$ 3,611,980	1363.894775	-0.17	1363.890015	-0.18	1363.896851	-0.17	1363.896851	-0.17	3.304196	$ 238,694	0	$ -	$ 238,693.78	3.3125	$ 239,294	0	$ -	$ 239,293.65
21	1359.7377	1359.987671	Residential	98.510803	$ 71,519	$ 35,759	1359.800293	-0.19	1359.802612	-0.19	1360.027832	0.04	1359.882813	-0.10	3.250488	$ 2,325	0	$ -	$ 2,324.71	3.580568	$ 2,561	0	$ -	$ 2,560.78
22	1353.2081	1353.45813	Residential	1837.229675	$ 1,333,829	$ 666,914	1353.245239	-0.21	1353.25	-0.21	1353.318115	-0.14	1353.247559	-0.21	3.148436	$ 41,995	0	$ -	$ 41,994.74	3.157716	$ 42,119	24.1428222	$ 161,012	$ 203,130.47
23	1353.9991	1354.249146	Residential	2561.5896	$ 1,859,714	$ 929,857	1354.064209	-0.18	1354.060059	-0.19	1354.065796	-0.18	1354.065918	-0.18	3.260252	$ 60,631	0	$ -	$ 60,631.36	3.267088	$ 60,758	0	$ -	$ 60,758.49
24	1376.0033	1376.253296	Residential	5004.554688	$ 3,633,307	$ 1,816,653	1376.087891	-0.17	1376.089478	-0.16	1376.089844	-0.16	1376.089844	-0.16	3.33838	$ 121,294	0	$ -	$ 121,293.58	3.346192	$ 121,577	0	$ -	$ 121,577.42
25	1366.6973	1366.947266	Residential	956.661987	$ 694,537	$ 347,268	1366.791504	-0.16	1366.790039	-0.16	1366.90979	-0.04	1366.796265	-0.15	3.38	$ 23,454	0.00	$ -	$ 23,454.17	3.40	$ 23,586	0.00	$ -	$ 23,586.44
26	1377.9141	1378.164063	Residential	272.638306	$ 197,935	$ 98,968	1377.926147	-0.24	1377.927246	-0.24	1377.952148	-0.21	1377.965576	-0.20	3.048336	$ 6,034	0	$ -	$ 6,033.74	3.206052	$ 6,346	0	$ -	$ 6,345.91
27	1359.7202	1359.970215	Residential	416.830383	$ 302,619	$ 151,309	1359.942627	-0.03	1359.942261	-0.03	1360.080933	0.11	1359.883057	-0.09	3.89	$ 11,771	0.00	$ -	$ 11,770.81	3.65	$ 11,050	0.00	$ -	$ 11,049.73
28	1373.551	1373.801025	Residential	6621.999878	$ 4,807,572	$ 2,403,786	1373.600098	-0.20	1373.599976	-0.20	1373.670898	-0.13	1373.695068	-0.11	3.20	$ 153,664	0.00	$ -	$ 153,664.04	3.58	$ 171,927	10.77	$ 258,929	$ 430,856.33
29	1376.4547	1376.704712	Residential	5605.584473	$ 4,069,654	$ 2,034,827	1376.563599	-0.14	1376.560181	-0.14	1376.62085	-0.08	1376.62085	-0.08	3.435548	$ 139,815	0	$ -	$ 139,814.93	3.664552	$ 149,135	0	$ -	$ 149,134.60
30	1350.1412	1350.391235	Residential	7004.17749	$ 5,085,033	$ 2,542,516	1350.164063	-0.23	1350.166504	-0.22	1350.671387	0.28	1350.452393	0.06	3.09	$ 157,194	0.00	$ -	$ 157,194.23	5.83	$ 296,698	8.25	$ 209,739	$ 506,437.43
31	1349.6879	1349.937866	Residential	1574.908997	$ 1,143,384	$ 571,692	1349.755249	-0.18	1349.76001	-0.18	1349.999878	0.06	1349.757446	-0.18	3.269532	$ 37,383	0	$ -	$ 37,383.30	3.27832	$ 37,484	12.57641574	$ 71,898	$ 109,382.14
32	1351.7725	1352.022461	Residential	7068.87146	$ 5,132,001	$ 2,566,000	1352.024414	0.00	1352.02002	0.00	1352.026245	0.00	1352.026245	0.00	4.06	$ 208,287	0.08	$ 2,105	$ 210,391.65	4.11	$ 211,106	0.00	$ -	$ 211,105.87
33	1361.1578	1361.407837	Residential	4317.881287	$ 3,134,782	$ 1,567,391	1361.28894	-0.12	1361.291138	-0.12	1361.297729	-0.11	1361.293701	-0.11	3.52	$ 110,483	0.00	$ -	$ 110,482.63	3.54	$ 111,080	0.00	$ -	$ 111,079.61
34	1380.4657	1380.715698	Residential	6718.879456	$ 4,877,906	$ 2,438,953	1380.545654	-0.17	1380.550049	-0.17	1380.547852	-0.17	1380.675903	-0.04	3.319824	$ 161,938	0	$ -	$ 161,937.91	3.84082	$ 187,352	0	$ -	$ 187,351.61
35	1352.3629	1352.612915	Residential	6026.699036	$ 4,375,384	$ 2,187,692	1352.395142	-0.22	1352.400024	-0.21	1352.397217	-0.22	1352.397339	-0.22	3.13	$ 136,902	0.00	$ -	$ 136,901.72	3.14	$ 137,286	0.00	$ -	$ 137,286.23
36	1364.9492	1365.199219	Residential	1969.893005	$ 1,430,142	$ 715,071	1365.000244	-0.20	1365	-0.20	1365.01001	-0.19	1365.003052	-0.20	3.2041	$ 45,823	0	$ -	$ 45,823.19	3.215332	$ 45,984	0	$ -	$ 45,983.82
37	1382.2072	1382.457153	Residential	12305.99646	$ 8,934,153	$ 4,467,077	1382.286987	-0.17	1382.290039	-0.17	1382.28894	-0.17	1382.289063	-0.17	3.319336	$ 296,555	0	$ -	$ 296,554.57	3.32764	$ 297,296	0	$ -	$ 297,296.46
38	1377.7423	1377.99231	Residential	5902.526306	$ 4,285,234	$ 2,142,617	1377.985107	-0.01	1377.98999	0.00	1377.98645	-0.01	1377.98645	-0.01	3.971188	$ 170,175	0	$ -	$ 170,174.70	3.97656	$ 170,405	0	$ -	$ 170,404.91
39	1368.6111	1368.861084	Residential	5975.38501	$ 4,338,130	$ 2,169,065	1368.935913	0.07	1368.930054	0.07	1369.276367	0.42	1369.043823	0.18	6.24487	$ 270,911	3.142818	$ 68,170	$ 339,080.31	9.48217	$ 411,349	0	$ -	$ 411,348.82
40	1358.2589	1358.508911	Residential	758.56012	$ 550,715	$ 275,357	1358.344971	-0.16	1358.339966	-0.17	1358.346558	-0.16	1358.346558	-0.16	3.34	$ 18,417	0.00	$ -	$ 18,417.22	3.35	$ 18,452	0.00	$ -	$ 18,452.18
41	1365.7938	1366.043823	Residential	5147.26416	$ 3,736,914	$ 1,868,457	1365.838989	-0.20	1365.839966	-0.20	1365.861206	-0.18	1365.849609	-0.19	3.18	$ 118,859	0.00	$ -	$ 118,858.67	3.22	$ 120,446	5.05	$ 94,358	$ 214,804.10
42	1362.7766	1363.026611	Residential	8623.175049	$ 6,260,425	$ 3,130,213	1362.801392	-0.23	1362.800049	-0.23	1362.804321	-0.22	1362.804443	-0.22	3.10	$ 194,018	0.00	$ -	$ 194,018.34	3.11	$ 194,782	0.00	$ -	$ 194,782.36
43	1362.8351	1363.085083	Residential	5379.317261	$ 3,905,384	$ 1,952,692	1362.961548	-0.12	1362.95874	-0.13	1363.098022	0.01	1362.971558	-0.11	3.50586	$ 136,917	0	$ -	$ 136,917.31	3.5459	$ 138,481	0	$ -	$ 138,481.02
44	1373.3346	1373.584595	Residential	437.73584	$ 317,796	$ 158,898	1373.473999	-0.11	1373.469971	-0.11	1373.475342	-0.11	1373.475342	-0.11	3.557616	$ 11,306	0	$ -	$ 11,305.97	3.562988	$ 11,323	3.54785172	$ 5,637	$ 16,960.51
45	1367.9971	1368.24707	Residential	7428.078186	$ 5,392,785	$ 2,696,392	1368.196655	-0.05	1368.199951	-0.05	1368.19873	-0.05	1368.19873	-0.05	3.80	$ 204,836	0.00	$ -	$ 204,836.30	3.81	$ 205,284	0.00	$ -	$ 205,283.90
46	1374.6667	1374.916748	Residential	4881.761841	$ 3,544,159	$ 1,772,080	1374.991455	0.07	1374.98999	0.07	1374.994629	0.08	1374.994507	0.08	6.24121	$ 221,198	3.137694	$ 55,602	$ 276,800.85	6.33277	$ 224,443	0	$ -	$ 224,443.44
47	1378.6304	1378.880371	Residential	5232.306396	$ 3,798,654	$ 1,899,327	1378.724121	-0.16	1378.725098	-0.16	1379.14209	0.26	1378.995605	0.12	3.38	$ 128,205	0.00	$ -	$ 128,204.59	7.46	$ 283,266	0.00	$ -	$ 283,266.42
48	1377.9553	1378.205322	Residential	6055.227417	$ 4,396,095	$ 2,198,048	1378.011475	-0.19	1378.012817	-0.19	1378.015869	-0.19	1378.015869	-0.19	3.224612	$ 141,757	0	$ -	$ 141,757.01	3.242188	$ 142,530	1.7021487	$ 37,414	$ 179,943.71
49	1376.8622	1377.112183	Residential	371.322083	$ 269,580	$ 134,790	1376.894043	-0.22	1376.893188	-0.22	1376.96582	-0.15	1376.980103	-0.13	3.12744	$ 8,431	0	$ -	$ 8,430.95	3.47168	$ 9,359	0	$ -	$ 9,358.95
50	1371.5935	1371.843506	Residential	3883.120056	$ 2,819,145	$ 1,409,573	1371.657227	-0.19	1371.65564	-0.19	1371.91626	0.07	1371.827026	-0.02	3.25	$ 91,760	0.00	$ -	$ 91,759.90	3.93	$ 110,907	32.30	$ 455,289	$ 566,196.62
51	1367.6451	1367.895142	Residential	8502.347534	$ 6,172,704	$ 3,086,352	1367.70874	-0.19	1367.709961	-0.19	1367.711426	-0.18	1367.711426	-0.18	3.25	$ 200,884	0.00	$ -	$ 200,884.00	3.27	$ 201,547	13.27	$ 409,673	$ 611,219.75
52	1360.0182	1360.268188	Residential	11716.17969	$ 8,505,946	$ 4,252,973	1360.080688	-0.19	1360.079956	-0.19	1360.084106	-0.18	1360.083984	-0.18	3.25	$ 276,443	0.00	$ -	$ 276,443.26	3.26	$ 277,565	0.00	$ -	$ 277,564.68
53	1376.1908	1376.440796	Residential	4086.243103	$ 2,966,612	$ 1,483,306	1376.506836	0.07	1376.51001	0.07	1376.508789	0.07	1376.508789	0.07	5.9812	$ 177,439	2.77368	$ 41,142	$ 218,581.20	6.03979	$ 179,177	0	$ -	$ 179,177.16
54	1386.9077	1387.157715	Residential	5026.592773	$ 3,649,306	$ 1,824,653	1387.001099	-0.16	1387.00061	-0.16	1387.004517	-0.15	1387.004517	-0.15	3.373536	$ 123,111	0	$ -	$ 123,110.66	3.387208	$ 123,610	0	$ -	$ 123,609.60
55	1376.2891	1376.539063	Residential	3620.247864	$ 2,628,300	$ 1,314,150	1376.426147	-0.11	1376.426758	-0.11	1376.470703	-0.07	1376.470703	-0.07	3.55	$ 93,261	0.00	$ -	$ 93,260.91	3.73	$ 97,945	0.00	$ -	$ 97,945.17
56	1377.2733	1377.523315	Residential	4993.57019	$ 3,625,332	$ 1,812,666	1377.564087	0.04	1377.560059	0.04	1377.56543	0.04	1377.56543	0.04	5.22	$ 189,357	1.71	$ 31,041	$ 220,397.42	5.26	$ 190,818	12.67	$ 229,641	$ 420,458.77
57	1351.041	1351.291016	Residential	10962.42029	$ 7,958,717	$ 3,979,359	1351.105469	-0.19	1351.109985	-0.18	1351.107666	-0.18	1351.107544	-0.18	3.26	$ 259,280	0.00	$ -	$ 259,280.04	3.27	$ 259,941	0.00	$ -	$ 259,940.62
58	1372.4613	1372.711304	Residential	5823.487061	$ 4,227,852	$ 2,113,926	1372.55835	-0.15	1372.560059	-0.15	1372.716797	0.01	1372.560547	-0.15	3.388184	$ 143,247	0	$ -	$ 143,247.39	3.396972	$ 143,619	0	$ -	$ 143,618.94
59	1377.0377	1377.28772	Residential	6052.135376	$ 4,393,850	$ 2,196,925	1377.146973	-0.14	1377.149902	-0.14	1377.14978	-0.14	1377.149902	-0.14	3.437012	$ 151,017	0	$ -	$ 151,017.16	3.448728	$ 151,532	0	$ -	$ 151,531.94
60	1368.8978	1369.147827	Residential	6837.879822	$ 4,964,301	$ 2,482,150	1368.899658	-0.25	1368.900024	-0.25	1368.906616	-0.24	1369.012573	-0.14	3.007324	$ 149,293	0	$ -	$ 149,292.61	3.458984	$ 171,714	0	$ -	$ 171,714.37
61	1365.9777	1366.227661	Residential	548.647339	$ 398,318	$ 199,159	1366.057861	-0.17	1366.061035	-0.17	1366.203369	-0.02	1366.046509	-0.18	3.3208	$ 13,227	0	$ -	$ 13,227.34	3.275392	$ 13,046	0	$ -	$ 13,046.47
62	1365.65	1365.900024	Residential	6442.914001	$ 4,677,556	$ 2,338,778	1365.738403	-0.16	1365.73999	-0.16	1366.14507	0.24	1365.892334	-0.01	3.35	$ 156,863	0.00	$ -	$ 156,862.57	3.97	$ 185,663	14.43	$ 337,421	$ 523,084.63
63	1348.2711	1348.521118	Residential	624.433289	$ 453,339	$ 226,669	1348.405151	-0.12	1348.409302	-0.11	1349.341187	0.82	1348.980347	0.46	3.536132	$ 16,031	0	$ -	$ 16,030.65	17.77687	$ 80,589	0	$ -	$ 80,589.41
64	1379.9254	1380.175415	Residential	335.501648	$ 243,574	$ 121,787	1379.99353	-0.18	1379.992065	-0.18	1380.040283	-0.14	1380.039917	-0.14	3.27	$ 7,971	0.00	$ -	$ 7,970.87	3.46	$ 8,423	0.00	$ -	$ 8,422.82
65	1380.058	1380.307983	Residential	344.429138	$ 250,056	$ 125,028	1380.170776	-0.14	1380.171509	-0.14	1380.185059	-0.12	1380.184814	-0.12	3.451172	$ 8,630	0.00	$ -	$ 8,629.85	3.507324	$ 8,770	0.00	$ -	$ 8,770.26
66	1357.8719	1358.121948	Residential	1980.532898	$ 1,437,867	$ 718,933	1358.057495	-0.06	1358.060059	-0.06	1358.059692	-0.06	1358.059692	-0.06	3.74	$ 53,808	0.00	$ -	$ 53,807.68	3.75	$ 53,934	0.00	$ -	$ 53,934.04
67	1361.5636	1361.813599	Residential	6199.695374	$ 4,500,979	$ 2,250,489	1361.722046	-0.09	1361.719971	-0.09	1361.726318	-0.09	1361.726196	-0.09	3.633788	$ 163,556	0	$ -	$ 163,556.03	3.650388	$ 164,303	0	$ -	$ 164,303.19
68	1373.7996	1374.049561	Residential	4352.848328	$ 3,160,168	$ 1,580,084	1373.888428	-0.16	1373.890015	-0.16	1373.941406	-0.11	1373.890869	-0.16	3.36	$ 106,038	0.00	$ -	$ 106,038.42	3.37	$ 106,347	0.27	$ 4,213	$ 110,559.51
69	1369.6515	1369.901489	Residential	7681.519775	$ 5,576,783	$ 2,788,392	1369.671997	-0.23	1369.670044	-0.23	1369.675293	-0.23	1369.675293	-0.23	3.082032	$ 171,878	0	$ -	$ 171,878.25	3.095216	$ 172,613	4.28100582	$ 119,371	$ 291,984.70
70	1352.7987	1353.048706	Residential	4176.407654	$ 3,032,072	$ 1,516,036	1352.82373	-0.22	1352.823853	-0.22	1352.83374	-0.21	1352.83374	-0.21	3.100096	$ 93,997	0	$ -	$ 93,997.14	3.140136	$ 95,211	0	$ -	$ 95,211.18
71	1354.4823	1354.7323	Residential	5939.919373	$ 4,312,381	$ 2,156,191	1354.613403	-0.12	1354.609985	-0.12	1355.001953	0.27	1354.824707	0.09	3.52	$ 151,986	0.00	$ -	$ 151,986.09	6.77	$ 292,044	0.00	$ -	$ 292,043.53
72	1358.7681	1359.018066	Residential	5464.610229	$ 3,967,307	$ 1,983,654	1358.818237	-0.20	1358.819946	-0.20	1358.820557	-0.20	1358.820557	-0.20	3.200684	$ 126,981	0	$ -	$ 126,980.96	3.209964	$ 127,349	0	$ -	$ 127,349.13
73	1370.2661	1370.516113	Residential	7295.893555	$ 5,296,819	$ 2,648,409	1370.522339	0.01	1370.521484	0.01	1370.69751	0.18	1370.449707	-0.07	4.19	$ 221,766	0.26	$ 6,925	$ 228,691.53	3.73	$ 197,803	0.00	$ -	$ 197,803.13
74	1380.3362	1380.586182	Residential	4872.422913	$ 3,537,379	$ 1,768,690	1380.464111	-0.12	1380.467407	-0.12	1380.876343	0.29	1380.724731	0.14	3.511716	$ 124,223	0.00	$ -	$ 124,222.71	8.15647	$ 288,525	0.00	$ -	$ 288,525.26
75	1368.1411	1368.391113	Residential	6527.1745	$ 4,738,729	$ 2,369,364	1368.207275	-0.18	1368.209961	-0.18	1368.209473	-0.18	1368.209351	-0.18	3.26	$ 154,703	0.00	$ -	$ 154,702.81	3.27	$ 155,096	16.67	$ 394,919	$ 550,015.43
76	1370.8282	1371.078247	Residential	7341.92395	$ 5,330,237	$ 2,665,118	1370.901245	-0.18	1370.900024	-0.18	1370.904663	-0.17	1370.904663	-0.17	3.291992	$ 175,471	0	$ -	$ 175,470.97	3.305664	$ 176,200	0	$ -	$ 176,199.72
77	1351.1089	1351.358887	Residential	7682.645386	$ 5,577,601	$ 2,788,800	1351.214355	-0.14	1351.209961	-0.15	1351.216187	-0.14	1351.216064	-0.14	3.421872	$ 190,858	0	$ -	$ 190,858.35	3.428708	$ 191,240	0	$ -	$ 191,239.64
78	1352.9404	1353.19043	Residential	359.594421	$ 261,066	$ 130,533	1353.207153	0.02	1353.199951	0.01	1353.580688	0.39	1353.317749	0.13	4.50169	$ 11,752	0.702366	$ 917	$ 12,669.18	7.81957	$ 20,414	6.88549806	$ 8,988	$ 29,402.04
79	1375.2893	1375.539307	Residential	5622.966309	$ 4,082,274	$ 2,041,137	1375.408813	-0.13	1375.410034	-0.13	1375.411865	-0.13	1375.411987	-0.13	3.478024	$ 141,982	0	$ -	$ 141,982.45	3.49072	$ 142,501	0	$ -	$ 142,500.74
80	1361.5787	1361.828735	Residential	4104.051453	$ 2,979,541	$ 1,489,771	1361.64856	-0.18	1361.650024	-0.18	1361.924194	0.10	1361.777954	-0.05	3.28	$ 97,708	0.00	$ -	$ 97,708.10	3.80	$ 113,129	0.00	$ -	$ 113,129.49
81	1372.7191	1372.969116	Residential	5524.363342	$ 4,010,688	$ 2,005,344	1372.777466	-0.19	1372.780029	-0.19	1372.78186	-0.19	1372.78186	-0.19	3.2334	$ 129,682	0	$ -	$ 129,681.58	3.250976	$ 130,386	0	$ -	$ 130,386.50
82	1378.332	1378.582031	Residential	328.372437	$ 238,398	$ 119,199	1378.797852	0.22	1378.800049	0.22	1379.000732	0.42	1379.000732	0.42	10.47	$ 24,971	9.06	$ 10,805	$ 35,776.14	16.56	$ 39,481	5.30	$ 6,319	$ 45,800.30
83	1374.9072	1375.157227	Residential	5100.398376	$ 3,702,889	$ 1,851,445	1375.089478	-0.07	1375.087524	-0.07	1375.173706	0.02	1375.173706	0.02	3.729004	$ 138,081	0	$ -	$ 138,080.89	4.49437	$ 166,422	0	$ -	$ 166,421.54
84	1362.9548	1363.204834	Residential	8479.753967	$ 6,156,301	$ 3,078,151	1363.019775	-0.19	1363.02002	-0.18	1363.022827	-0.18	1363.022827	-0.18	3.26	$ 200,681	0.00	$ -	$ 200,680.90	3.27	$ 201,432	0.00	$ -	$ 201,432.46
85	1366.3226	1366.572632	Residential	2076.678772	$ 1,507,669	$ 753,834	1366.432617	-0.14	1366.435669	-0.14	1366.70752	0.13	1366.435059	-0.14	3.43994	$ 51,863	0	$ -	$ 51,862.90	3.449708	$ 52,010	0	$ -	$ 52,010.17
86	1352.7321	1352.982056	Residential	5563.624268	$ 4,039,191	$ 2,019,596	1352.796631	-0.19	1352.800049	-0.18	1352.940308	-0.04	1352.799561	-0.18	3.2583	$ 131,609	0	$ -	$ 131,608.97	3.27002	$ 132,082	0	$ -	$ 132,082.36

10-Year and 100-Year Existing Building Damages in Area K

															Existing								
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
98	1364.3967	1364.646729	Residential	1845.062622	$ 1,339,515	$ 669,758	1364.488159	-0.16	1364.48999	-0.16	1364.490356	-0.16	1364.490356	-0.16	3.36572	$ 45,084	0	$ -	$ 45,084.34	3.374508	$ 45,202	4.1015625	$ 27,471	$ 72,672.59
99	1366.3516	1366.601563	Residential	4056.541199	$ 2,945,049	$ 1,472,524	1366.543823	-0.06	1366.536987	-0.06	1366.554199	-0.05	1366.554199	-0.05	3.77	$ 111,000	0.00	$ -	$ 111,000.07	3.81	$ 112,222	0.00	$ -	$ 112,222.38
100	1358.9648	1359.214844	Residential	5029.624146	$ 3,651,507	$ 1,825,754	1359.262451	0.05	1359.267212	0.05	1359.26416	0.05	1359.26416	0.05	5.43	$ 198,211	2.00	$ 36,506	$ 234,717.31	5.48	$ 200,084	20.04	$ 365,904	$ 565,987.62
101	1374.8926	1375.142578	Residential	9085.493774	$ 6,596,068	$ 3,298,034	1375.06897	-0.07	1375.073853	-0.07	1375.071899	-0.07	1375.071777	-0.07	3.705568	$ 244,422	0	$ -	$ 244,421.80	3.716796	$ 245,162	0	$ -	$ 245,162.41
102	1371.8109	1372.060913	Residential	4668.850098	$ 3,389,585	$ 1,694,793	1371.834229	-0.23	1371.838379	-0.22	1371.838257	-0.22	1371.838257	-0.22	3.093264	$ 104,849	0	$ -	$ 104,848.82	3.109376	$ 105,395	0	$ -	$ 105,394.95
103	1374.249	1374.499023	Residential	6966.036255	$ 5,057,342	$ 2,528,671	1374.279785	-0.22	1374.280029	-0.22	1374.282715	-0.22	1374.282715	-0.22	3.123048	$ 157,943	0	$ -	$ 157,943.23	3.134768	$ 158,536	0.68701164	$ 17,372	$ 175,908.21
104	1353.7365	1353.98645	Residential	6619.511108	$ 4,805,765	$ 2,402,883	1353.776123	-0.21	1353.780029	-0.21	1353.778442	-0.21	1353.778442	-0.21	3.16	$ 151,799	0.00	$ -	$ 151,799.32	3.17	$ 152,245	0.95	$ 22,914	$ 175,159.31
105	1363.4548	1363.704834	Residential	8842.429199	$ 6,419,604	$ 3,209,802	1364.171265	0.47	1364.170044	0.47	1364.463501	0.76	1364.036011	0.33	17.99293	$ 1,155,075	19.590102	$ 628,803	$ 1,783,878.23	13.93531	$ 894,592	0	$ -	$ 894,591.66
106	1363.5942	1363.844238	Residential	1209.473938	$ 878,078	$ 439,039	1363.675049	-0.17	1363.670044	-0.17	1363.677856	-0.17	1363.677856	-0.17	3.323244	$ 29,181	0.00	$ -	$ 29,180.68	3.334472	$ 29,279	0.00	$ -	$ 29,279.27
107	1364.436	1364.686035	Residential	4979.980835	$ 3,615,466	$ 1,807,733	1364.669312	-0.02	1364.665771	-0.02	1364.670898	-0.02	1364.670898	-0.02	3.93	$ 142,200	0.00	$ -	$ 142,200.19	3.94	$ 142,430	5.54	$ 100,096	$ 242,525.71
108	1352.4829	1352.73291	Residential	5092.605652	$ 3,697,232	$ 1,848,616	1352.545166	-0.19	1352.550049	-0.18	1352.547241	-0.19	1352.547241	-0.19	3.249024	$ 120,124	0.00	$ -	$ 120,123.95	3.257324	$ 120,431	0.00	$ -	$ 120,430.82
109	1349.7738	1350.023804	Residential	10592.73084	$ 7,690,323	$ 3,845,161	1349.815918	-0.21	1349.819946	-0.20	1349.818359	-0.21	1349.818359	-0.21	3.168456	$ 243,664	0	$ -	$ 243,664.49	3.17822	$ 244,415	0	$ -	$ 244,415.37
110	1356.3748	1356.624756	Residential	7430.694946	$ 5,394,685	$ 2,697,342	1356.497437	-0.13	1356.5	-0.12	1356.499512	-0.13	1356.499512	-0.13	3.49	$ 188,314	0.00	$ -	$ 188,313.55	3.50	$ 188,761	17.98	$ 484,988	$ 673,749.51
111	1349.6604	1349.9104	Residential	12568.94641	$ 9,125,055	$ 4,562,528	1349.750366	-0.16	1349.747437	-0.16	1349.757935	-0.15	1349.752686	-0.16	3.36	$ 306,589	0.00	$ -	$ 306,589.44	3.37	$ 307,436	1.35	$ 61,521	$ 368,956.85
112	1369.8452	1370.095215	Residential	474.788452	$ 344,696	$ 172,348	1369.938599	-0.16	1369.93689	-0.16	1369.944946	-0.15	1369.944946	-0.15	3.373536	$ 11,628	0	$ -	$ 11,628.46	3.398924	$ 11,716	0	$ -	$ 11,715.97
113	1380.3524	1380.602417	Residential	6280.325745	$ 4,559,516	$ 2,279,758	1380.448242	-0.15	1380.449951	-0.15	1380.450562	-0.15	1380.450562	-0.15	3.3833	$ 154,262	0	$ -	$ 154,262.12	3.39258	$ 154,685	0	$ -	$ 154,685.24
114	1377.1196	1377.369629	Residential	5297.63031	$ 3,846,080	$ 1,923,040	1377.239258	-0.13	1377.23999	-0.13	1377.242188	-0.13	1377.242188	-0.13	3.478516	$ 133,786	0	$ -	$ 133,786.49	3.490236	$ 134,237	0	$ -	$ 134,237.25
115	1366.8071	1367.057129	Residential	7888.129822	$ 5,726,782	$ 2,863,391	1366.859985	-0.20	1366.859985	-0.20	1366.862915	-0.19	1366.862915	-0.19	3.711424	$ 183,911	0	$ -	$ 183,911.26	3.723144	$ 184,582	0	$ -	$ 184,582.44
116	1360.8243	1361.074341	Residential	7805.948669	$ 5,667,119	$ 2,833,559	1360.955811	-0.12	1360.959961	-0.11	1361.056763	-0.02	1360.95874	-0.12	3.52588	$ 199,816	0	$ -	$ 199,815.81	3.537596	$ 200,480	0	$ -	$ 200,479.77
117	1364.4938	1364.743774	Residential	5855.000854	$ 4,250,731	$ 2,125,365	1364.699463	-0.04	1364.699951	-0.04	1364.702148	-0.04	1364.702148	-0.04	3.822756	$ 162,495	0	$ -	$ 162,495.06	3.833496	$ 162,952	0	$ -	$ 162,951.59
118	1360.4812	1360.731201	Residential	219.949097	$ 159,683	$ 79,842	1360.793945	0.06	1360.790039	0.06	1360.794067	0.06	1360.794189	0.06	5.88232	$ 9,393	2.635248	$ 2,104	$ 11,497.09	5.88964	$ 9,405	0	$ -	$ 9,404.76
119	1351.2076	1351.457642	Residential	5547.851379	$ 4,027,740	$ 2,013,870	1351.428955	-0.03	1351.425171	-0.03	1351.431396	-0.03	1351.431396	-0.03	3.89	$ 156,488	0.00	$ -	$ 156,487.85	3.90	$ 156,881	0.00	$ -	$ 156,881.12
120	1374.8663	1375.116333	Residential	6444.857483	$ 4,678,967	$ 2,339,483	1374.929321	-0.19	1374.930054	-0.19	1374.932129	-0.18	1374.932251	-0.18	3.25	$ 152,158	0.00	$ -	$ 152,157.75	3.26	$ 152,706	7.65	$ 178,957	$ 331,662.88
121	1363.498	1363.748047	Residential	212.195068	$ 154,054	$ 77,027	1363.517334	-0.23	1363.517944	-0.23	1363.666992	-0.08	1363.631226	-0.12	3.077148	$ 4,740	0	$ -	$ 4,740.46	3.532716	$ 5,442	0	$ -	$ 5,442.28
122	1368.4139	1368.66394	Residential	6069.277893	$ 4,406,296	$ 2,203,148	1368.446289	-0.22	1368.445923	-0.22	1368.67981	0.02	1368.450195	-0.21	3.13	$ 137,890	0.00	$ -	$ 137,890.44	3.15	$ 138,579	0.00	$ -	$ 138,578.88
123	1381.0881	1381.338135	Residential	6044.557678	$ 4,388,349	$ 2,194,174	1381.179443	-0.16	1381.180054	-0.16	1381.366333	0.03	1381.182739	-0.16	3.365232	$ 147,678	0	$ -	$ 147,678.12	3.378416	$ 148,257	0	$ -	$ 148,256.68
124	1379.9611	1380.21106	Residential	5559.381653	$ 4,036,111	$ 2,018,056	1380.097168	-0.11	1380.095825	-0.12	1380.099243	-0.11	1380.099243	-0.11	3.54	$ 143,057	0.00	$ -	$ 143,057.21	3.55	$ 143,392	0.00	$ -	$ 143,392.21
125	1361.5222	1361.772217	Residential	5136.399902	$ 3,729,026	$ 1,864,513	1361.562622	-0.21	1361.560059	-0.21	1361.609375	-0.16	1361.608765	-0.16	3.16	$ 117,898	0.00	$ -	$ 117,897.64	3.35	$ 124,780	0.00	$ -	$ 124,780.38
126	1349.9539	1350.203857	Residential	11645.22498	$ 8,454,433	$ 4,227,217	1350.02478	-0.18	1350.02002	-0.18	1350.026855	-0.18	1350.026855	-0.18	3.283692	$ 277,618	0	$ -	$ 277,617.55	3.291992	$ 278,319	0	$ -	$ 278,319.27
127	1357.042	1357.291992	Residential	3812.569763	$ 2,767,926	$ 1,383,963	1357.216553	-0.08	1357.219971	-0.07	1357.218506	-0.07	1357.218506	-0.07	3.70	$ 102,365	0.00	$ -	$ 102,364.64	3.71	$ 102,581	2.73	$ 37,819	$ 140,399.96
128	1363.7706	1364.02063	Residential	246.767029	$ 179,153	$ 89,576	1363.825928	-0.19	1363.829956	-0.19	1363.828491	-0.19	1363.828491	-0.19	3.22	$ 5,771	0.00	$ -	$ 5,770.86	3.23	$ 5,789	19.00	$ 17,015	$ 22,804.59
129	1377.3176	1377.567627	Residential	3762.542786	$ 2,731,606	$ 1,365,803	1377.35437	-0.21	1377.349976	-0.22	1377.857666	0.29	1377.634277	0.07	3.146972	$ 85,963	0	$ -	$ 85,962.88	5.9995	$ 163,883	18.79541034	$ 256,708	$ 420,590.99
130	1362.1476	1362.397583	Residential	5020.589172	$ 3,644,948	$ 1,822,474	1362.411865	0.01	1362.410034	0.01	1362.727783	0.33	1362.316406	-0.08	4.42846	$ 161,415	0.599844	$ 10,932	$ 172,347.05	3.675292	$ 133,962	3.70165992	$ 67,462	$ 201,424.26
131	1376.2094	1376.459351	Residential	5212.982361	$ 3,784,625	$ 1,892,313	1376.260254	-0.20	1376.260864	-0.20	1376.271851	-0.19	1376.271851	-0.19	3.20	$ 121,245	0.00	$ -	$ 121,244.71	3.25	$ 123,000	0.18	$ 3,493	$ 126,492.97
132	1379.1615	1379.411499	Residential	400.356567	$ 290,659	$ 145,329	1379.424072	0.01	1379.421387	0.01	1379.488525	0.08	1379.488281	0.08	4.37719	$ 12,723	0.528066	$ 767	$ 13,490.13	6.30346	$ 18,322	0	$ -	$ 18,321.57
133	1361.2078	1361.457764	Residential	4320.113953	$ 3,136,403	$ 1,568,201	1361.42041	-0.04	1361.420044	-0.04	1361.433716	-0.02	1361.42334	-0.03	3.850584	$ 120,770	0	$ -	$ 120,769.82	3.862304	$ 121,137	0	$ -	$ 121,137.41
134	1362.6445	1362.894531	Residential	3840.690247	$ 2,788,341	$ 1,394,171	1362.80603	-0.09	1362.805054	-0.09	1362.809204	-0.09	1362.809326	-0.09	3.645996	$ 101,663	0	$ -	$ 101,662.81	3.65918	$ 102,030	18.995361	$ 264,828	$ 366,858.15
135	1378.0864	1378.336426	Residential	326.96106	$ 237,374	$ 118,687	1378.312134	-0.02	1378.309937	-0.03	1378.373901	0.04	1378.371704	0.04	3.902832	$ 9,264	0	$ -	$ 9,264.30	5.05834	$ 12,007	0	$ -	$ 12,007.17
136	1364.1649	1364.414917	Residential	4181.148926	$ 3,035,514	$ 1,517,757	1364.769409	0.35	1364.77124	0.36	1364.967041	0.55	1364.687012	0.27	14.63476	$ 444,240	14.888664	$ 225,974	$ 670,213.96	12.16285	$ 369,205	0	$ -	$ 369,205.03
137	1360.8499	1361.099854	Residential	4583.988647	$ 3,327,976	$ 1,663,988	1360.899902	-0.20	1360.900024	-0.20	1361.072632	-0.03	1360.932739	-0.17	3.200192	$ 106,502	0	$ -	$ 106,501.61	3.33154	$ 110,873	0	$ -	$ 110,872.84
138	1368.3804	1368.630371	Residential	8776.445618	$ 6,371,700	$ 3,185,850	1368.661865	0.03	1368.660034	0.03	1368.665161	0.03	1368.665161	0.03	4.94482	$ 315,069	1.322748	$ 42,141	$ 357,209.84	5.0437	$ 321,369	0	$ -	$ 321,369.41
139	1353.156	1353.406006	Residential	323.715698	$ 235,018	$ 117,509	1353.186035	-0.22	1353.189941	-0.22	1353.190063	-0.22	1353.188965	-0.22	3.120116	$ 7,333	0.00	$ -	$ 7,332.82	3.131836	$ 7,360	0.00	$ -	$ 7,360.37
140	1378.5293	1378.779297	Residential	5263.701416	$ 3,821,447	$ 1,910,724	1378.623413	-0.16	1378.624146	-0.16	1378.66626	-0.11	1378.677856	-0.10	3.38	$ 129,030	0.00	$ -	$ 129,029.79	3.59	$ 137,352	9.07	$ 173,295	$ 310,646.44
141	1379.809	1380.05896	Residential	7932.297974	$ 5,758,848	$ 2,879,424	1380.026367	-0.03	1380.030029	-0.03	1380.028198	-0.03	1380.028198	-0.03	3.869628	$ 222,846	0	$ -	$ 222,846.01	3.876952	$ 223,268	0	$ -	$ 223,267.79
142	1371.869	1372.119019	Residential	4879.887024	$ 3,542,798	$ 1,771,399	1372.077759	-0.04	1372.077759	-0.04	1372.083496	-0.04	1372.081787	-0.04	3.83496	$ 135,865	0	$ -	$ 135,864.89	3.851072	$ 136,436	0	$ -	$ 136,435.70
143	1378.5239	1378.773926	Residential	188.311951	$ 136,714	$ 68,357	1378.562744	-0.21	1378.566528	-0.21	1378.578857	-0.20	1378.578735	-0.20	3.155272	$ 4,314	0	$ -	$ 4,313.71	3.219236	$ 4,401	0	$ -	$ 4,401.16
144	1375.1558	1375.405762	Residential	3412.608	$ 3,412,608	$ 1,706,304	1375.356201	-0.05	1375.359985	-0.05	1375.710083	0.30	1375.35791	-0.05	3.80	$ 129,739	0.00	$ -	$ 129,739.03	3.81	$ 129,972	0.00	$ -	$ 129,972.31
145	1364.0173	1364.267334	Residential	263.903442	$ 191,594	$ 95,797	1364.084961	-0.18	1364.079956	-0.19	1364.11499	-0.15	1364.086426	-0.18	3.270508	$ 6,266	0	$ -	$ 6,266.09	3.276368	$ 6,277	0	$ -	$ 6,277.32
146	1361.9521	1362.202148	Residential	5469.552246	$ 3,970,895	$ 1,985,447	1362.174438	-0.03	1362.178223	-0.02	1362.365112	0.16	1362.176025	-0.03	3.89	$ 154,434	0.00	$ -	$ 154,434.46	3.90	$ 154,687	0.00	$ -	$ 154,686.53
147	1361.5681	1361.818115	Residential	5371.711365	$ 3,899,862	$ 1,949,931	1361.999634	0.18	1361.995728	0.18	1362.157593	0.34	1361.909668	0.09	9.44557	$ 368,364	7.623798	$ 148,659	$ 517,023.06	6.74659	$ 263,108	23.625	$ 460,671	$ 723,778.98
148	1376.0001	1376.250122	Residential	4847.492981	$ 3,519,280	$ 1,759,640	1376.239746	-0.01	1376.24292	-0.01	1376.241943	-0.01	1376.241943	-0.01	3.958496	$ 139,311	0	$ -	$ 139,310.55	3.967284	$ 139,620	0	$ -	$ 139,619.83
149	1376.4144	1376.664429	Residential	5930.882202	$ 4,305,820	$ 2,152,910	1376.478149	-0.19	1376.47998	-0.18	1376.766724	0.10	1376.542114	-0.12	3.25	$ 140,149	0.00	$ -	$ 140,149.29	3.51	$ 151,166	0.00	$ -	$ 151,166.16
150	1372.437	1372.687012	Residential	5813.009705	$ 4,220,245	$ 2,110,123	1372.519775	-0.17	1372.52002	-0.17	1372.522461	-0.16	1372.522461	-0.16	3.331052	$ 140,579	0	$ -	$ 140,578.56	3.341796	$ 141,032	8.33129892	$ 175,801	$ 316,832.60
151	1387.2883	1387.53833	Residential	4486.418701	$ 3,257,140	$ 1,628,570	1387.536377	0.00	1387.540039	0.00	1387.53833	0.00	1387.53833	0.00	3.992188	$ 130,031	0	$ -	$ 130,031.15	4	$ 130,286	0	$ -	$ 130,285.60
152	1375.7926	1376.042603	Residential	4326.913086	$ 3,141,339	$ 1,570,669	1375.835449	-0.21	1375.839966	-0.20	1376.119263	0.08	1375.941162	-0.10	3.17	$ 99,624	0.00	$ -	$ 99,623.92	3.59	$ 112,907	0.00	$ -	$ 112,907.13
153	1367.1001	1367.350098	Residential	5923.343201	$ 4,300,347	$ 2,150,174	1367.170654	-0.18	1367.170044	-0.18	1367.174072	-0.18	1367.174072	-0.18	3.282224	$ 141,147	0	$ -	$ 141,147.03	3.295896	$ 141,735	15.82177758	$ 340,196	$ 481,930.65
154	1378.0719	1378.321899	Residential	5311.497314	$ 3,856,147	$ 1,928,074	1378.216553	-0.11	1378.219971	-0.10	1378.218384	-0.10	1378.218384	-0.10	3.578616	$ 137,997	0	$ -	$ 137,996.70	3.58594	$ 138,279	0	$ -	$ 138,279.12
155	1380.4923	1380.74231	Residential	2746.666016	$ 1,994,080	$ 997,040	1380.633667	-0.11	1380.62915	-0.11	1380.637695	-0.10	1380.638184	-0.10	3.57	$ 71,097	0.00	$ -	$ 71,097.47	3.58	$ 71,458	0.00	$ -	$ 71,457.76
156	1373.4617	1373.71167	Residential	6659.882751	$ 4,835,075	$ 2,417,537	1373.625244	-0.09	1373.630005	-0.08	1373.626709	-0.08	1373.626709	-0.08	3.65	$ 176,688	0.00	$ -	$ 176,687.95	3.66	$ 176,971	0.00	$ -	$ 176,971.28
157	1376.4575	1376.70752	Residential	4604.081482	$ 3,342,563	$ 1,671,282	1376.469116	-0.24	1376.470581	-0.24	1376.488281	-0.22	1376.477417	-0.23	3.046384	$ 101,827	0	$ -	$ 101,827.31	3.079588	$ 102,937	0.6818847	$ 11,396	$ 114,333.39
158	1374.9485	1375.198486	Residential	5014.781799	$ 3,640,732	$ 1,820,366	1374.963501	-0.23	1374.963257	-0.24	1374.966919	-0.23	1374.966919	-0.23	3.06006	$ 111,409	0	$ -	$ 111,408.57	3.073732	$ 111,906	0	$ -	$ 111,906.33
159	1368.0206	1368.27063	Residential	8032.684509	$ 5,831,729	$ 2,915,864	1368.052124	-0.22	1368.050049	-0.22	1368.055664	-0.21	1368.055664	-0.21	3.13	$ 182,298	0.00	$ -	$ 182,298.45	3.14	$ 183,124	0.00	$ -	$ 183,124.22
160	1364.0402	1364.290161	Residential	7812.84906	$ 5,672,128	$ 2,836,064	1364.276733	-0.01	1364.280029	-0.01	1364.278564	-0.01	1364.278564	-0.01	3.946288	$ 223,839	0	$ -	$ 223,838.52	3.954104	$ 224,282	5.8037112	$ 164,597	$ 388,878.83
161	1379.0062	1379.256226	Residential	4673.951538	$ 3,393,289	$ 1,696,644	1379.0354	-0.22	1379.033325	-0.22	1379.041504	-0.21	1379.041504	-0.21	3.116696	$ 105,758	0	$ -	$ 105,758.50	3.141112	$ 106,587	0	$ -	$ 106,587.00
162	1351.6937	1351.943726	Residential	7145.512817	$ 5,187,642	$ 2,593,821	1351.736572	-0.21	1351.73999	-0.20	1351.739258	-0.20	1351.739258	-0.20	3.171384	$ 164,520	0	$ -	$ 164,520.06	3.182128	$ 165,077	0	$ -	$ 165,077.42
163	1356.0435	1356.293457	Residential	8016.633606	$ 5,820,076	$ 2,910,038	1356.115234	-0.18	1356.119995	-0.17	1356.119141	-0.17	1356.119141	-0.17	3.29	$ 191,312	0.00	$ -	$ 191,312.18	3.30	$ 192,222	0.00	$ -	$ 192,221.75
164	1353.3625	1353.612549	Residential	5229.221985	$ 3,796,415	$ 1,898,208	1353.494629	-0.12	1353.48999	-0.12	1353.49646	-0.12	1353.496948	-0.12	3.52832	$ 133,950	0	$ -	$ 133,949.68	3.535644	$ 134,228	0	$ -	$ 134,227.72
165	1383.4026	1383.652588	Residential	5383.90863	$ 3,908,718	$ 1,954,359	1383.43689	-0.22	1383.439697	-0.21	1383.464355	-0.19	1383.744873	0.09	3.137208	$ 122,625	0	$ -	$ 122,624.60	6.76855	$ 264,564	24.9118653	$ 486,867	$ 751,430.75
166	1372.4465	1372.696533	Residential	5019.003479	$ 3,643,797	$ 1,821,898	1372.785156	0.09	1372.790039	0.09	1372.791992	0.10	1372.786621	0.09	6.65869	$ 242,629	3.722166	$ 67,814	$ 310,443.19	6.70264	$ 244,231	0	$ -	$ 244,230.56
167	1362.7709	1363.020874	Residential	89.848938	$ 65,230	$ 32,615	1362.811768	-0.21	1362.813477	-0.21	1362.815186	-0.21	1362.815186	-0.21	3.163576	$ 2,064	0	$ -	$ 2,063.61	3.177248	$ 2,073	8.65429698	$ 2,823	$ 4,895.14
168	1365.083	1365.333008	Residential	7013.951599	$ 5,092,129	$ 2,546,064	1365.13855	-0.19	1365.140015	-0.19	1365.140991	-0.19	1365.140991	-0.19	3.22	$ 164,077	0.00	$ -	$ 164,076.95	3.23	$ 164,574	0.00	$ -	$ 164,574.14
169	1362.7377	1362.987671	Residential	5120.312622	$ 3,717,347	$ 1,858,673	1362.824219	-0.16	1362.821777	-0.17	1362.997803	0.01	1362.758911	-0.23	3.346192	$ 124,390	0	$ -	$ 124,389.57	3.08496	$ 114,679	0	$ -	$ 114,678.67
170	1360.1978	1360.447754	Residential	793.997314	$ 576,442	$ 288,221	1360.297607	-0.15	1360.296753	-0.15	1360.363892	-0.08	1360.36377	-0.08	3.399412	$ 19,596	0	$ -	$ 19,595.64	3.664064	$ 21,121	0	$ -	$ 21,121.21
171	1376.9437	1377.193726	Residential	6148.210022	$ 4,463,600	$ 2,231,800	1377.074829	-0.12	1377.073853	-0.12	1377.077393	-0.12	1377.077393	-0.12	3.524412	$ 157,316	0	$ -	$ 157,315.67	3.534668	$ 157,773	0	$ -	$ 157,773.46
172	1382.8645	1383.114502	Residential	417.621704	$ 303,193	$ 151,597	1383.075317	-0.04	1383.074097	-0.04	1383.662109	0.55	1383.49707	0.38	3.84326	$ 11,653	0	$ -	$ 11,652.51	15.47704	$ 46,925	0	$ -	$ 46,925.36
173	1382.9543	1383.204346	Residential	7021.7854	$ 5,097,816	$ 2,548,908	1383.303101	0.10	1383.30249	0.10	1383.720337	0.52	1384.014648	0.81	6.96	$ 354,943	4.15	$ 105,721	$ 460,664.42	28.31	$ 1,443,144	0.00	$ -	$ 1,443,143.85
174	1360.3568	1360.606812	Residential	987.539978	$ 716,954	$ 358,477	1360.389648	-0.22	1360.390015	-0.22	1360.392334	-0.21	1360.392334	-0.21	3.131344	$ 22,450	0	$ -	$ 22,450.30	3.142088	$ 22,527	0	$ -	$ 22,527.33
175	1371.0583	1371.30835	Residential	4343.393616	$ 3,153,304	$ 1,576,652	1371.106812	-0.20	1371.103516	-0.20	1371.108887	-0.20	1371.108887	-0.20	3.193848	$ 100,712	0	$ -	$ 100,711.73	3.202148	$ 100,973	0	$ -	$ 100,973.45
176	1363.4857	1363.735718	Residential	1258.273743	$ 913,507	$ 456,753	1363.566162	-0.17	1363.56543	-0.17	1363.614722	-0.02	1363.61731	-0.12	3.321776	$ 30,345	0	$ -	$ 30,344.65	3.526368	$ 32,214	0	$ -	$ 32,213.61
177	1382.4683	1382.718262	Residential	5926.931763	$ 4,302,952	$ 2,151,476	1382.520874	-0.20	1382.522339	-0.20	1383.109375	0.39	1382.892212	0.17	3.210448	$ 138,144	0	$ -	$ 138,144.05	9.2185	$ 396,668	0	$ -	$ 396,667.67
178	1367.0305	1367.280518	Residential	7461.676697	$ 5,417,177	$ 2,708,589	1367.084473	-0.20	1367.079956	-0.20	1367.086426	-0.19	1367.086304	-0.19	3.21582	$ 174,207	0	$ -	$ 174,206.67	3.223144	$ 174,603	0	$ -	$ 174,603.42
179	1366.8289	1367.078857	Residential	8772.664185	$ 6,368,954	$ 3,184,477	1367.044067	-0.03	1367.04834	-0.03	1367.045654	-0.03	1367.045654	-0.03	3.860384	$ 245,895	0	$ -	$ 245,895.13	3.867188	$ 246,299	0	$ -	$ 246,299.43
180	1364.3354	1364.585449	Residential	1242.911804	$ 902,354	$ 451,177	1364.427124	-0.16	1364.428833	-0.16	1364.576904	-0.01	1364.416138	-0.17	3.3667	$ 30,380	0	$ -	$ 30,379.55	3.322756	$ 29,983	0	$ -	$ 29,983.02
181	1385.5297	1385.779663	Residential	4264.038574	$ 3,095,692	$ 1,547,846	1385.641846	-0.14	1385.642456	-0.14	1385.643677	-0.14	1385.643799	-0.14	3.448732	$ 106,762	0	$ -	$ 106,762.12	3.456544	$ 107,004	0	$ -	$ 107,003.96
182	1374.311	1374.561035	Residential	5276.539246	$ 3,830,767	$ 1,915,384	1374.384644	-0.18	1374.380005	-0.18	1374.387817	-0.17	1374.387817	-0.17	3.294436	$ 126,202	0	$ -	$ 126,202.18	3.307128	$ 126,688	0	$ -	$ 126,688.38
183	1358.566	1358.81604	Residential	7594.135925	$ 5,513,343	$ 2,756,671	1358.577881	-0.24	1358.579956	-0.24	1358.580444	-0.24	1358.580444	-0.24	3.05	$ 168,012	0.00	$ -	$ 168,011.62	3.06	$ 168,577	0.00	$ -	$ 168,576.85
184	1380.236	1380.485962	Residential	4827.576904	$ 3,504,821	$ 1,752,410	1380.30188	-0.18	1380.304321	-0.18	1380.490601	0.00	1380.304321	-0.18	3.263672	$ 114,386	0	$ -	$ 114,385.86	3.273436	$ 114,728	0	$ -	$ 114

10-Year and 100-Year Existing Building Damages in Area K

																Existing								
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
195	1371.9503	1372.200317	Residential	5811.423157	$ 4,219,093	$ 2,109,547	1372.028442	-0.17	1372.030029	-0.17	1372.031372	-0.17	1372.031372	-0.17	3.3125	$ 139,757	0	$ -	$ 139,757.46	3.32422	$ 140,252	5.18334978	$ 109,345	$ 249,597.12
196	1375.9243	1376.174316	Residential	3570.859131	$ 2,592,444	$ 1,296,222	1375.952637	-0.22	1375.952393	-0.22	1375.955322	-0.22	1375.955444	-0.22	3.113284	$ 80,710	0	$ -	$ 80,710.14	3.124512	$ 81,001	0	$ -	$ 81,001.22
197	1382.3914	1382.641357	Residential	4534.560791	$ 3,292,091	$ 1,646,046	1382.78833	0.15	1382.78894	0.15	1382.793213	0.15	1382.793091	0.15	8.41	$ 276,838	6.17	$ 101,608	$ 378,446.39	8.55	$ 281,540	0.00	$ -	$ 281,540.29
198	1372.3955	1372.645508	Residential	3843.095703	$ 2,790,087	$ 1,395,044	1372.505371	-0.14	1372.508545	-0.14	1372.546753	-0.10	1372.546753	-0.10	3.439452	$ 95,964	0	$ -	$ 95,963.72	3.60498	$ 100,582	0	$ -	$ 100,582.10
199	1378.7993	1379.049316	Residential	5130.287109	$ 3,724,588	$ 1,862,294	1379.104492	0.06	1379.099976	0.05	1379.106445	0.06	1379.106323	0.06	5.66	$ 210,636	2.32	$ 43,157	$ 253,792.56	5.71	$ 212,682	0.00	$ -	$ 212,681.82
200	1369.2933	1369.543335	Residential	4194.780518	$ 3,045,411	$ 1,522,705	1369.405518	-0.14	1369.407227	-0.14	1369.692261	0.15	1369.369751	-0.17	3.448732	$ 105,028	0	$ -	$ 105,028.05	3.305664	$ 100,671	0	$ -	$ 100,671.04
201	1384.4399	1384.689941	Residential	4500.588989	$ 3,267,428	$ 1,633,714	1385.165039	0.48	1385.160034	0.47	1385.166504	0.48	1385.166626	0.48	18.25294	$ 596,402	19.954116	$ 325,993	$ 922,394.75	18.30055	$ 597,957	0	$ -	$ 597,957.22
202	1386.7983	1387.04834	Residential	4524.202332	$ 3,284,571	$ 1,642,285	1387.091187	0.04	1387.081299	0.03	1387.682007	0.63	1386.833618	-0.21	5.28541	$ 173,603	1.799574	$ 29,554	$ 203,157.18	3.141112	$ 103,172	0	$ -	$ 103,172.05
203	1372.1863	1372.436279	Residential	4600.928711	$ 3,340,274	$ 1,670,137	1372.266113	-0.17	1372.266479	-0.17	1372.269165	-0.17	1372.269287	-0.17	3.319336	$ 110,875	0	$ -	$ 110,874.93	3.332032	$ 111,299	0	$ -	$ 111,299.01
204	1351.7186	1351.968628	Residential	927.027771	$ 673,022	$ 336,511	1351.785278	-0.18	1351.790039	-0.18	1351.787354	-0.18	1351.787476	-0.18	3.2666	$ 21,985	0	$ -	$ 21,984.94	3.275392	$ 22,044	0	$ -	$ 22,044.11
205	1373.9084	1374.158447	Residential	6269.81665	$ 4,551,887	$ 2,275,943	1374.034424	-0.12	1374.030029	-0.13	1374.037842	-0.12	1374.037842	-0.12	3.503908	$ 159,494	0	$ -	$ 159,493.93	3.51758	$ 160,116	0	$ -	$ 160,116.26
206	1365.4144	1365.664429	Residential	6051.600159	$ 4,393,462	$ 2,196,731	1365.444336	-0.22	1365.444214	-0.22	1365.870117	0.21	1365.701416	0.04	3.119628	$ 137,060	0	$ -	$ 137,059.66	5.10961	$ 224,489	0	$ -	$ 224,488.76
207	1353.8657	1354.115723	Residential	755.925842	$ 548,802	$ 274,401	1353.93396	-0.18	1353.930054	-0.19	1353.936157	-0.18	1353.936157	-0.18	3.27	$ 17,962	0.00	$ -	$ 17,962.01	3.28	$ 18,010	0.00	$ -	$ 18,010.24
208	1369.4989	1369.694946	Residential	7994.761414	$ 5,804,197	$ 2,902,098	1369.686035	-0.01	1369.689941	-0.01	1369.687744	-0.01	1369.687744	-0.01	3.96	$ 230,099	0.00	$ -	$ 230,099.02	3.97	$ 230,496	19.49	$ 565,697	$ 796,192.43
209	1356.6626	1356.912598	Residential	6371.821533	$ 4,625,942	$ 2,312,971	1356.790527	-0.12	1356.794678	-0.12	1357.093018	0.18	1356.822266	-0.09	3.511716	$ 162,450	0	$ -	$ 162,449.96	3.638672	$ 168,323	0	$ -	$ 168,322.87
210	1378.3789	1378.628906	Residential	1189.775024	$ 863,777	$ 431,888	1378.425903	-0.20	1378.430054	-0.20	1378.454956	-0.17	1378.473999	-0.15	3.19	$ 27,537	0.00	$ -	$ 27,537.10	3.38	$ 29,199	0.00	$ -	$ 29,198.86
211	1372.8145	1373.064453	Residential	7189.552734	$ 5,219,615	$ 2,609,808	1372.927002	-0.14	1372.930054	-0.13	1372.929077	-0.14	1372.929199	-0.14	3.450196	$ 180,087	0	$ -	$ 180,086.96	3.458984	$ 180,546	0	$ -	$ 180,545.66
212	1384.6993	1384.949341	Residential	4849.682129	$ 3,520,869	$ 1,760,435	1384.800659	-0.15	1384.798706	-0.15	1384.845337	-0.10	1384.848267	-0.10	3.41	$ 119,895	0.00	$ -	$ 119,895.17	3.60	$ 126,600	16.95	$ 298,389	$ 424,988.54
213	1374.1124	1374.362427	Residential	5543.06311	$ 4,024,264	$ 2,012,132	1374.303589	-0.06	1374.300049	-0.06	1375.235962	0.87	1374.947021	0.58	3.76	$ 151,499	0.00	$ -	$ 151,499.37	21.54	$ 866,739	7.57	$ 152,266	$ 1,019,004.42
214	1351.9253	1352.175293	Residential	7474.652283	$ 5,426,598	$ 2,713,299	1352.022827	-0.15	1352.020386	-0.15	1352.025024	-0.15	1352.025146	-0.15	3.39	$ 183,969	0.00	$ -	$ 183,969.04	3.40	$ 184,472	0.00	$ -	$ 184,472.41
215	1372.7062	1372.956177	Residential	365.232666	$ 265,159	$ 132,579	1372.750366	-0.21	1372.75	-0.21	1372.754272	-0.20	1372.754272	-0.20	3.176756	$ 8,423	0	$ -	$ 8,423.45	3.19238	$ 8,465	0	$ -	$ 8,464.88
216	1383.9557	1384.205688	Residential	10282.73602	$ 7,465,266	$ 3,732,633	1384.018188	-0.19	1384.02002	-0.19	1384.431885	0.23	1384.276855	0.07	3.25	$ 242,621	0	$ -	$ 242,621.16	6.13501	$ 457,995	0	$ -	$ 457,994.84
217	1379.6527	1379.90271	Residential	5808.621948	$ 4,217,060	$ 2,108,530	1379.669067	-0.23	1379.665283	-0.24	1379.678833	-0.22	1379.678833	-0.22	3.065428	$ 129,271	0	$ -	$ 129,270.92	3.104492	$ 130,918	0	$ -	$ 130,918.28
218	1378.8989	1379.148926	Residential	5431.955078	$ 3,943,599	$ 1,971,800	1378.959473	-0.19	1378.959961	-0.19	1379.071411	-0.08	1379.14856	0.00	3.242188	$ 127,859	0	$ -	$ 127,858.91	3.998536	$ 157,686	15.55517586	$ 306,717	$ 464,403.15
219	1361.0637	1361.313721	Residential	697.469788	$ 506,363	$ 253,182	1361.248169	-0.07	1361.244873	-0.07	1361.327881	0.01	1361.283569	-0.03	3.737792	$ 18,927	0	$ -	$ 18,926.80	3.879392	$ 19,644	0	$ -	$ 19,643.81
220	1363.9265	1364.176514	Residential	5530.390808	$ 4,015,064	$ 2,007,532	1364.312012	0.14	1364.307861	0.13	1364.484375	0.31	1364.317505	0.14	8.06	$ 323,812	5.69	$ 114,247	$ 438,059.43	8.23	$ 330,429	3.97	$ 79,767	$ 410,195.95
221	1365.9146	1366.164551	Residential	7421.591003	$ 5,388,075	$ 2,694,038	1365.946289	-0.22	1365.947144	-0.22	1365.94812	-0.22	1365.94812	-0.22	3.126952	$ 168,483	0	$ -	$ 168,482.52	3.134276	$ 168,877	0	$ -	$ 168,877.14
222	1355.2457	1355.495728	Residential	6237.714416	$ 4,528,581	$ 2,264,290	1355.38916	-0.11	1355.387085	-0.11	1355.394287	-0.10	1355.394287	-0.10	3.573728	$ 161,839	0	$ -	$ 161,839.16	3.594236	$ 162,768	0	$ -	$ 162,767.88
223	1367.9564	1368.206421	Residential	6903.520142	$ 5,011,956	$ 2,505,978	1368.126953	-0.08	1368.130005	-0.08	1368.12915	-0.08	1368.12915	-0.08	3.682128	$ 184,547	0.00	$ -	$ 184,546.62	3.690916	$ 184,987	0.00	$ -	$ 184,987.07
224	1367.7229	1367.9729	Residential	7568.887512	$ 5,495,012	$ 2,747,506	1367.817627	-0.16	1367.819946	-0.15	1367.859985	-0.11	1367.819946	-0.15	3.378908	$ 185,671	0	$ -	$ 185,671.41	3.388184	$ 186,181	0	$ -	$ 186,181.13
225	1372.2632	1372.513184	Residential	6819.513489	$ 4,950,967	$ 2,475,483	1372.534302	0.02	1372.530029	0.02	1372.535645	0.02	1372.535645	0.02	4.63	$ 229,405	0.89	$ 21,956	$ 251,361.48	4.67	$ 231,400	0.00	$ -	$ 231,399.77
226	1382.7257	1382.975708	Residential	414.181458	$ 300,696	$ 150,348	1382.818604	-0.16	1382.819946	-0.16	1382.976807	0.00	1383.06543	0.09	3.371584	$ 10,138	0.00	$ -	$ 10,138.21	6.69166	$ 20,122	0.00	$ -	$ 20,121.54
227	1377.9037	1378.153687	Residential	6325.296997	$ 4,592,166	$ 2,296,083	1377.931274	-0.22	1377.93042	-0.22	1377.95105	-0.20	1377.956909	-0.20	3.11	$ 142,832	0.00	$ -	$ 142,832.33	3.21	$ 147,541	0.00	$ -	$ 147,541.14
228	1369.9781	1370.228149	Residential	7107.003967	$ 5,159,685	$ 2,579,842	1370.020264	-0.21	1370.02002	-0.21	1370.023315	-0.20	1370.023315	-0.20	3.17	$ 163,483	0.00	$ -	$ 163,482.55	3.18	$ 164,112	0.00	$ -	$ 164,112.24
229	1366.7046	1366.95459	Residential	6420.218262	$ 4,661,078	$ 2,330,539	1366.699341	-0.26	1366.699951	-0.25	1366.702881	-0.25	1366.702881	-0.25	2.98	$ 138,854	0.00	$ -	$ 138,853.71	2.99	$ 139,514	0.00	$ -	$ 139,513.72
230	1355.0955	1355.345459	Residential	7691.567017	$ 5,584,078	$ 2,792,039	1355.132324	-0.21	1355.130005	-0.22	1355.30835	-0.04	1355.136841	-0.21	3.14746	$ 175,757	0	$ -	$ 175,756.61	3.165528	$ 176,766	19.65673794	$ 548,824	$ 725,589.30
231	1372.5229	1372.772949	Residential	7904.628235	$ 5,738,760	$ 2,869,380	1372.625	-0.15	1372.622925	-0.15	1372.852051	0.08	1372.627319	-0.15	3.408204	$ 195,589	0	$ -	$ 195,588.65	3.41748	$ 196,121	0	$ -	$ 196,120.98
232	1373.4587	1373.70874	Residential	6641.056396	$ 4,821,407	$ 2,410,703	1373.506714	-0.20	1373.506592	-0.20	1373.51062	-0.20	1373.51062	-0.20	3.19	$ 153,894	0.00	$ -	$ 153,894.30	3.21	$ 154,648	0.00	$ -	$ 154,647.59
233	1368.4092	1368.65918	Residential	650.331116	$ 472,140	$ 236,070	1368.462769	-0.20	1368.466675	-0.19	1368.465942	-0.19	1368.465942	-0.19	3.214356	$ 15,176	0	$ -	$ 15,176.27	3.227048	$ 15,236	0	$ -	$ 15,236.20
234	1360.5137	1360.763672	Residential	6230.277466	$ 4,523,181	$ 2,261,591	1360.886719	0.12	1360.882568	0.12	1361.106689	0.34	1360.874512	0.11	7.69141	$ 347,896	5.167974	$ 116,878	$ 464,774.85	7.3252	$ 331,332	0	$ -	$ 331,332.09
235	1353.9615	1354.211548	Residential	6218.86676	$ 4,514,897	$ 2,257,449	1354.11731	-0.09	1354.119995	-0.09	1354.119385	-0.09	1354.119385	-0.09	3.62	$ 163,577	0.00	$ -	$ 163,576.90	3.63	$ 163,952	0.00	$ -	$ 163,951.63
236	1361.0813	1361.331299	Residential	552.338257	$ 400,998	$ 200,499	1361.399292	0.07	1361.398926	0.07	1361.947754	0.62	1361.722046	0.39	6.03979	$ 24,219	2.855706	$ 5,726	$ 29,945.07	15.72241	$ 63,046	8.90551746	$ 17,855	$ 80,901.94
237	1363.077	1363.327026	Residential	10609.44226	$ 7,702,455	$ 3,851,228	1363.127563	-0.20	1363.130005	-0.20	1363.129761	-0.20	1363.129761	-0.20	3.20	$ 246,644	0.00	$ -	$ 246,644.01	3.21	$ 247,321	0.00	$ -	$ 247,321.21
238	1349.4791	1349.729126	Residential	1499.625549	$ 1,088,728	$ 544,364	1349.505493	-0.22	1349.505371	-0.22	1349.608521	-0.12	1349.554077	-0.18	3.105468	$ 33,810	0	$ -	$ 33,810.10	3.299804	$ 35,926	0	$ -	$ 35,925.89
239	1368.2323	1368.4823	Residential	6792.286804	$ 4,931,200	$ 2,465,600	1368.323364	-0.16	1368.321777	-0.16	1368.325684	-0.16	1368.325684	-0.16	3.36	$ 165,898	0.00	$ -	$ 165,898.20	3.37	$ 166,356	9.72	$ 239,547	$ 405,903.07
240	1366.8684	1367.118408	Residential	6303.598511	$ 4,576,413	$ 2,288,206	1366.92749	-0.19	1366.926025	-0.19	1366.931519	-0.19	1366.931519	-0.19	3.236328	$ 148,108	0	$ -	$ 148,107.72	3.252444	$ 148,845	0	$ -	$ 148,845.25
241	1381.4254	1381.675415	Residential	8258.813843	$ 5,995,899	$ 2,997,949	1381.619629	-0.06	1381.620728	-0.05	1381.691772	0.02	1381.666382	-0.01	3.776856	$ 226,456	0	$ -	$ 226,456.47	3.963868	$ 237,670	0	$ -	$ 237,669.52
242	1374.0637	1374.313721	Residential	1514.909546	$ 1,099,824	$ 549,912	1374.154053	-0.16	1374.150024	-0.16	1374.155151	-0.16	1374.155273	-0.16	3.361328	$ 36,969	0	$ -	$ 36,968.70	3.366208	$ 37,022	0	$ -	$ 37,022.37
243	1361.5778	1361.827759	Residential	5731.376465	$ 4,160,979	$ 2,080,490	1361.610352	-0.22	1361.609985	-0.22	1361.613403	-0.21	1361.613403	-0.21	3.13	$ 130,254	0.00	$ -	$ 130,254.13	3.14	$ 130,762	5.05	$ 105,066	$ 235,827.68
244	1368.0669	1368.316895	Residential	820.711121	$ 595,836	$ 297,918	1368.264038	-0.05	1368.26001	-0.06	1368.454102	0.14	1368.264893	-0.05	3.788572	$ 22,574	0	$ -	$ 22,573.69	3.791992	$ 22,594	0	$ -	$ 22,594.06
245	1377.4694	1377.71936	Residential	9322.061707	$ 6,767,817	$ 3,383,908	1377.481201	-0.24	1377.478882	-0.24	1377.491089	-0.23	1377.491089	-0.23	3.05	$ 206,240	0.00	$ -	$ 206,240.01	3.09	$ 208,917	0.00	$ -	$ 208,916.82
246	1370.7789	1371.028931	Residential	4462.246643	$ 3,239,591	$ 1,619,796	1370.87854	-0.15	1370.880005	-0.15	1370.880981	-0.15	1370.880981	-0.15	3.398436	$ 110,095	0	$ -	$ 110,095.43	3.4082	$ 110,412	0	$ -	$ 110,411.74
247	1383.4347	1383.684692	Residential	5164.128662	$ 3,749,157	$ 1,874,579	1383.55481	-0.13	1383.557129	-0.13	1383.557861	-0.13	1383.557861	-0.13	3.48	$ 130,488	0.00	$ -	$ 130,488.37	3.49	$ 130,946	0.00	$ -	$ 130,945.92
248	1383.4193	1383.669312	Residential	5801.94397	$ 4,212,211	$ 2,106,106	1383.576904	-0.09	1383.579956	-0.09	1383.578613	-0.09	1383.578491	-0.09	3.630368	$ 152,919	0.00	$ -	$ 152,918.77	3.636716	$ 153,186	0.00	$ -	$ 153,186.16
249	1364.1787	1364.428711	Residential	4602.597412	$ 3,341,486	$ 1,670,743	1364.308594	-0.12	1364.310059	-0.12	1364.533447	0.10	1364.389771	-0.04	3.52	$ 117,605	0.00	$ -	$ 117,604.66	3.84	$ 128,455	0.00	$ -	$ 128,454.73
250	1378.4397	1378.689697	Residential	5496.526245	$ 3,990,478	$ 1,995,239	1378.47644	-0.21	1378.47998	-0.21	1378.478271	-0.21	1378.478271	-0.21	3.15	$ 125,579	0.00	$ -	$ 125,579.23	3.15	$ 125,871	6.32	$ 126,130	$ 252,001.18
251	1380.9373	1381.187256	Residential	5218.038513	$ 3,788,296	$ 1,894,148	1380.941772	-0.25	1380.939819	-0.25	1380.987305	-0.20	1381.089478	-0.10	3.02	$ 114,333	0.00	$ -	$ 114,333.20	3.61	$ 136,715	14.10	$ 267,058	$ 403,773.58
252	1384.512	1384.761963	Residential	4131.500061	$ 2,999,469	$ 1,499,735	1384.564697	-0.20	1384.560059	-0.20	1384.589355	-0.17	1384.589355	-0.17	3.210936	$ 96,311	0	$ -	$ 96,311.03	3.309568	$ 99,269	0	$ -	$ 99,269.47
253	1359.9803	1360.230347	Residential	2268.955322	$ 1,647,262	$ 823,631	1360.014893	-0.22	1360.013794	-0.22	1360.255005	0.02	1360.105713	-0.12	3.138184	$ 51,694	0	$ -	$ 51,694.10	3.501464	$ 57,678	3.1171875	$ 25,674	$ 83,352.39
254	1352.5721	1352.822144	Residential	5705.019409	$ 4,141,844	$ 2,070,922	1352.655762	-0.17	1352.660034	-0.16	1352.8479	0.03	1352.69519	-0.13	3.33	$ 138,109	0.00	$ -	$ 138,108.63	3.49	$ 144,641	0.28	$ 5,733	$ 150,374.28
255	1377.2522	1377.502197	Residential	6675.252869	$ 4,846,234	$ 2,423,117	1377.436279	-0.07	1377.435181	-0.07	1377.437622	-0.06	1377.437744	-0.06	3.74	$ 181,071	0.00	$ -	$ 181,071.18	3.74	$ 181,355	0.00	$ -	$ 181,355.17
256	1378.1875	1378.4375	Residential	1162.67511	$ 844,102	$ 422,051	1378.304199	-0.13	1378.302246	-0.14	1378.308716	-0.13	1378.308716	-0.13	3.466796	$ 29,263	0	$ -	$ 29,263.30	3.484864	$ 29,416	0	$ -	$ 29,415.81
257	1351.558	1351.807983	Residential	7151.573364	$ 5,192,042	$ 2,596,021	1351.605347	-0.20	1351.609985	-0.20	1351.660278	-0.15	1351.607544	-0.20	3.189456	$ 165,598	0	$ -	$ 165,597.90	3.198244	$ 166,054	0	$ -	$ 166,054.18
258	1352.8057	1353.055664	Residential	1599.585388	$ 1,161,299	$ 580,649	1352.888916	-0.17	1352.890991	-0.16	1353.143311	0.09	1352.966919	-0.09	3.333008	$ 38,706	0	$ -	$ 38,706.19	3.64502	$ 42,330	0	$ -	$ 42,329.58
259	1359.526	1359.776001	Residential	5013.345703	$ 3,639,689	$ 1,819,844	1359.563477	-0.21	1359.560059	-0.22	1359.815674	0.04	1359.676147	-0.10	3.15	$ 114,647	0.00	$ -	$ 114,646.71	3.60	$ 131,050	0.00	$ -	$ 131,050.06
260	1369.9309	1370.180908	Residential	1631.4505	$ 1,184,433	$ 592,217	1370.001343	-0.18	1370.003662	-0.18	1370.005859	-0.18	1370.005859	-0.18	3.28	$ 38,870	0.00	$ -	$ 38,870.01	3.30	$ 39,084	13.37	$ 79,186	$ 118,269.80
261	1364.5201	1364.770142	Residential	6330.97168	$ 4,596,285	$ 2,298,143	1364.756348	-0.01	1364.76001	-0.01	1364.758057	-0.01	1364.758057	-0.01	3.944824	$ 181,315	0	$ -	$ 181,315.37	3.95166	$ 181,630	0	$ -	$ 181,629.57
262	1379.0126	1379.262573	Residential	11915.48267	$ 8,650,640	$ 4,325,320	1379.315308	0.05	1379.310059	0.05	1379.430786	0.17	1379.430786	0.17	5.58	$ 482,883	2.21	$ 95,800	$ 578,683.29	9.05	$ 782,571	0.00	$ -	$ 782,570.67
263	1380.3851	1380.635132	Residential	839.351196	$ 609,369	$ 304,684	1380.475952	-0.16	1380.473145	-0.16	1380.871704	0.24	1380.726929	0.09	3.36	$ 20,495	0.00	$ -	$ 20,494.78	6.75	$ 41,156	0.00	$ -	$ 41,156.23
264	1350.6312	1350.881226	Residential	11002.85187	$ 7,988,070	$ 3,994,035	1350.748291	-0.13	1350.744751	-0.14	1350.750366	-0.13	1350.750366	-0.13	3.46826	$ 277,047	0	$ -	$ 277,047.05	3.47656	$ 277,710	0	$ -	$ 277,710.06
265	1362.2693	1362.519287	Residential	8576.057251	$ 6,226,218	$ 3,113,109	1362.358276	-0.16	1362.359985	-0.16	1362.360718	-0.16	1362.360718	-0.16	3.355956	$ 208,949	0	$ -	$ 208,949.12	3.365724	$ 209,557	0	$ -	$ 209,557.30
266	1379.4694	1379.71936	Residential	541.316711	$ 392,996	$ 196,498	1379.508667	-0.21	1379.511963	-0.21	1379.52002	-0.20	1379.52002	-0.20	3.157228	$ 12,408	0	$ -	$ 12,407.78	3.20264	$ 12,586	0	$ -	$ 12,586.24
267	1375.348	1375.598022	Residential	5572.635681	$ 4,045,734	$ 2,022,867	1375.486694	-0.11	1375.48999	-0.11	1375.488647	-0.11	1375.488647	-0.11	3.554688	$ 143,813	0	$ -	$ 143,813.20	3.5625	$ 144,129	0	$ -	$ 144,129.26
268	1369.1	1369.349976	Residential	4953.879761	$ 3,596,517	$ 1,798,258	1369.13855	-0.21	1369.140015	-0.21	1369.140991	-0.21	1369.140991	-0.21	3.154296	$ 113,445	0	$ -	$ 113,444.78	3.16406	$ 113,796	1.66113276	$ 29,871	$ 143,667.41
269	1375.8182	1376.068237	Residential	7317.905151	$ 5,312,799	$ 2,656,400	1375.90625	-0.16	1375.910034	-0.16	1375.908203	-0.16	1375.908203	-0.16	3.352052	$ 178,088	0	$ -	$ 178,087.79	3.359864	$ 178,503	0	$ -	$ 178,502.83
270	1372.4429	1372.692871	Residential	5703.677429	$ 4,140,876	$ 2,070,435	1372.499146	-0.19	1372.5	-0.19	1372.842041	0.15	1372.760498	0.07	3.2251	$ 133,547	0	$ -	$ 133,547.19	6.02881	$ 249,645	0	$ -	$ 249,645.17
271	1373.303	1373.552979	Residential	4983.422424	$ 3,617,965	$ 1,808,982	1373.359741	-0.19	1373.359985	-0.19	1373.362549	-0.19	1373.362549	-0.19	3.23	$ 116,753	0.00	$ -	$ 116,753.46	3.24	$ 117,160	0.00	$ -	$ 117,159.83
272	1374.13	1374.380005	Residential	1252.694458	$ 909,456	$ 454,728	1374.165894	-0.21	1374.165894	-0.21	1374.209473	-0.17	1374.31543	-0.06	3.14	$ 28,589	0.00	$ -	$ 28,589.26	3.74	$ 34,029	0.00	$ -	$ 34,029.12
273	1380.0908	1380.34082	Residential	6937.932373	$ 5,036,939	$ 2,518,469	1380.18396	-0.16	1380.179443	-0.16	1380.187744	-0.15	1380.187744	-0.15	3.37256	$ 169,874	0	$ -	$ 169,873.79	3.387696	$ 170,636	0	$ -	$ 170,636.18
274	1367.9772	1368.227173	Residential	913.789795	$ 663,411	$ 331,706	1368.055054	-0.17	1368.054565	-0.17	1368.118164	-0.11	1368.118652	-0.11	3.311574	$ 21,969	0	$ -	$ 21,969.03	3.565916	$ 23,657	4.58349612	$ 15,204	$ 38,860.41
275	1385.3944	1385.644409	Residential	5771.407349	$ 4,190,042	$ 2,095,021	1385.609619	-0.03	1385.606689	-0.04	1385.611938	-0.03	1385.611938	-0.03	3.86084	$ 161,771	0	$ -	$ 161,770.81	3.870116	$ 162,159	0	$ -	$ 162,159.48
276	1387.2709	1387.520874	Residential	5552.046021	$ 4,030,785	$ 2,015,393	1387.311035	-0.21	1387.310547	-0.21	1387.504761	-0.02	1387.318115	-0.20	3.16	$ 127,399	0.00	$ -	$ 127,398.78	3.19	$ 128,540	0.00	$ -	$ 128,540.30
277	1367.6104	1367.860352	Residential	7009.434998	$ 5,088,850	$ 2,544,425	1367.910522	0.05	1367.907593	0.05	1367.91394	0.05	1367.91394	0.05	5.51	$ 280,146	2.11	$ 53,615	$ 333,760.87	5.61	$ 285,364	0.00	$ -	$ 285,364.38
278	1363.4945	1363.744507	Residential	853.24762	$ 619,458	$ 309,729	1363.821899	0.08	1363.81604	0.07	1363.901367	0.16	1363.778931	0.03	6.32176	$ 39,161	3.250464	$ 10,068	$ 49,228.26	5.03272	$ 31,176	0	$ -	$ 31,175.58
279	1350.0875	1350.337524	Residential	10697.2514	$ 7,766,205	$ 3,883,102	1350.165649	-0.17	1350.170044	-0.17	1350.167847	-0.17	1350.167847	-0.17	3.3125	$ 257,256	0.00	$ -	$ 257,255.52	3.321292	$ 257,938	0.00	$ -	$ 257,938.33
280	1376.0103	1376.260254	Residential	5828.388794	$ 4,231,410	$ 2,115,705	1376.113281	-0.15	1376.110474	-0.15	1376.322021	0.06	1376.210327	-0.05	3.412108	$ 144,380	0	$ -	$ 144,380.29	3.800292	$ 160,806	0	$ -	$ 160,805.95
281	1363.2751	1363.525146	Residential	4981.87793	$ 3,616,843	$ 1,808,422	1363.585938	0.06	1363.589966	0.06	1363.587646	0.06	1363.587646	0.06	5.82	$ 210,636	2.55	$ 46,174	$ 256,810.06	5.88	$ 212,490	0.00	$ -	$ 212,489.55
282	1364

10-Year and 100-Year Existing Building Damages in Area K

															Existing								
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
292	1350.9303	1351.180298	Residential	1578.312317	$ 1,145,855	$ 572,927	1350.985352	-0.19	1350.98999	-0.19	1350.987427	-0.19	1350.987305	-0.19	3.220216	$ 36,899	0	$ -	$ 36,899.00	3.228028	$ 36,989	0.00	$ -	$ 36,988.51
293	1367.7457	1367.995728	Residential	11956.06262	$ 8,680,101	$ 4,340,051	1367.846802	-0.15	1367.847534	-0.15	1368.100586	0.10	1368.070801	0.08	3.404296	$ 295,496	0	$ -	$ 295,496.35	6.25219	$ 542,696	0.00	$ -	$ 542,696.44
294	1352.0001	1352.250122	Residential	344.753784	$ 250,291	$ 125,146	1352.016235	-0.23	1352.016724	-0.23	1352.041626	-0.21	1352.020752	-0.23	3.064452	$ 7,670	0	$ -	$ 7,670.06	3.08252	$ 7,715	0.00	$ -	$ 7,715.28
295	1368.4915	1368.741455	Residential	7669.678345	$ 5,568,186	$ 2,784,093	1368.560059	-0.18	1368.560059	-0.18	1368.562866	-0.18	1368.562988	-0.18	3.274416	$ 182,326	0	$ -	$ 182,325.59	3.286132	$ 182,978	0.00	$ -	$ 182,977.96
296	1366.8972	1367.147217	Residential	9063.669006	$ 6,580,224	$ 3,290,112	1367.174805	0.03	1367.174316	0.03	1367.441162	0.29	1367.081421	-0.07	4.82764	$ 317,670	1.158696	$ 38,122	$ 355,791.91	3.736816	$ 245,891	0.00	$ -	$ 245,890.85
297	1367.4869	1367.736938	Residential	8579.124695	$ 6,228,445	$ 3,114,222	1367.578857	-0.16	1367.579956	-0.16	1367.581543	-0.16	1367.581543	-0.16	3.367676	$ 209,754	0	$ -	$ 209,753.83	3.37842	$ 210,423	0.00	$ -	$ 210,423.02
298	1355.2068	1355.456787	Residential	9155.569641	$ 6,646,944	$ 3,323,472	1355.265381	-0.19	1355.27002	-0.19	1355.2677	-0.19	1355.2677	-0.19	3.234376	$ 214,987	0	$ -	$ 214,987.15	3.243652	$ 215,604	0.00	$ -	$ 215,603.72
299	1364.124	1364.374023	Residential	4618.256714	$ 3,352,854	$ 1,676,427	1364.23877	-0.14	1364.23999	-0.13	1364.339722	-0.03	1364.241455	-0.13	3.458988	$ 115,975	0	$ -	$ 115,974.83	3.469728	$ 116,335	0.00	$ -	$ 116,334.93
300	1376.0048	1376.254761	Residential	4963.528931	$ 3,603,522	$ 1,801,761	1376.107666	-0.15	1376.109985	-0.14	1376.109985	-0.14	1376.109985	-0.14	3.41162	$ 122,938	0	$ -	$ 122,938.48	3.420896	$ 123,273	0.00	$ -	$ 123,272.74
301	1379.886	1380.135986	Residential	7881.984436	$ 5,722,321	$ 2,861,160	1380.047241	-0.09	1380.050049	-0.09	1380.049561	-0.09	1380.049561	-0.09	3.64502	$ 208,580	0	$ -	$ 208,579.73	3.6543	$ 209,111	0.00	$ -	$ 209,110.77
302	1368.6685	1368.918457	Residential	5292.979675	$ 3,842,703	$ 1,921,352	1368.994873	0.08	1368.991821	0.07	1369.317749	0.40	1368.893799	-0.02	6.29248	$ 241,801	3.209472	$ 61,665	$ 303,466.58	3.901368	$ 149,918	0.00	$ -	$ 149,917.99
303	1367.4	1367.650024	Residential	424.157715	$ 307,939	$ 153,969	1367.44519	-0.20	1367.449951	-0.20	1367.513428	-0.14	1367.51355	-0.14	3.180664	$ 9,794	0	$ -	$ 9,794.49	3.454104	$ 10,637	0.00	$ -	$ 10,636.52
304	1378.8812	1379.131226	Residential	5535.167419	$ 4,018,532	$ 2,009,266	1378.9552	-0.18	1378.953247	-0.18	1378.95813	-0.17	1378.95813	-0.17	3.295896	$ 132,447	0	$ -	$ 132,446.62	3.307616	$ 132,918	0.00	$ -	$ 132,917.59
305	1366.5336	1366.783569	Residential	3380.404663	$ 2,454,174	$ 1,227,087	1367.192749	0.41	1367.193726	0.41	1367.414429	0.63	1367.108154	0.32	16.2754	$ 399,427	17.18556	$ 210,882	$ 610,308.35	13.73755	$ 337,143	0.00	$ -	$ 337,143.35
306	1380.2086	1380.458618	Residential	15858.52405	$ 11,513,288	$ 5,756,644	1380.320923	-0.14	1380.319946	-0.14	1380.324341	-0.13	1380.324341	-0.13	3.44922	$ 397,119	0	$ -	$ 397,118.65	3.462892	$ 398,693	0.00	$ -	$ 398,692.74
307	1371.6975	1371.94751	Residential	5749.80481	$ 4,174,358	$ 2,087,179	1371.821777	-0.13	1371.821655	-0.13	1371.824951	-0.12	1371.824829	-0.12	3.497068	$ 145,980	0	$ -	$ 145,980.15	3.509276	$ 146,490	0.00	$ -	$ 146,489.75
308	1377.5427	1377.792725	Residential	13799.37878	$ 10,018,349	$ 5,009,174	1377.736206	-0.06	1377.73999	-0.05	1377.738037	-0.05	1377.738037	-0.05	3.773924	$ 378,085	0	$ -	$ 378,084.88	3.781248	$ 378,819	0.00	$ -	$ 378,818.62
309	1377.3077	1377.557739	Residential	1204.42157	$ 874,410	$ 437,205	1377.368042	-0.19	1377.364624	-0.19	1377.643188	0.09	1377.643188	0.09	3.241212	$ 28,341	0	$ -	$ 28,341.48	6.56347	$ 57,392	8.66	$ 37,882	$ 95,273.53
310	1370.2943	1370.544312	Residential	1040.882263	$ 755,681	$ 377,840	1370.353149	-0.19	1370.353394	-0.19	1370.484985	-0.06	1370.348022	-0.20	3.235348	$ 24,449	0	$ -	$ 24,448.89	3.21484	$ 24,294	0.00	$ -	$ 24,293.92
311	1365.8914	1366.141357	Residential	4740.45105	$ 3,441,567	$ 1,720,784	1366.033447	-0.11	1366.035645	-0.11	1366.249756	0.11	1365.988525	-0.15	3.56836	$ 122,808	0	$ -	$ 122,807.52	3.388672	$ 116,623	0.00	$ -	$ 116,623.43
312	1381.6313	1381.881348	Residential	5565.741516	$ 4,040,728	$ 2,020,364	1381.801147	-0.08	1381.799072	-0.08	1381.812256	-0.07	1381.812378	-0.07	3.679196	$ 148,666	0	$ -	$ 148,666.32	3.72412	$ 150,482	0.00	$ -	$ 150,481.57
313	1357.6017	1357.851685	Residential	4709.370728	$ 3,419,003	$ 1,709,502	1357.810669	-0.04	1357.810059	-0.04	1358.27124	0.42	1358.062866	0.21	3.835936	$ 131,151	0	$ -	$ 131,150.77	10.33543	$ 353,369	6.02	$ 102,896	$ 456,264.64
314	1381.8502	1382.10022	Residential	5632.723511	$ 4,089,357	$ 2,044,679	1381.916626	-0.18	1381.911987	-0.19	1381.931274	-0.17	1381.931152	-0.17	3.265624	$ 133,543	0	$ -	$ 133,543.03	3.323728	$ 135,919	0.00	$ -	$ 135,919.11
315	1384.3489	1384.598877	Residential	328.131775	$ 238,224	$ 119,112	1384.548584	-0.05	1384.546143	-0.05	1384.72168	0.12	1384.906738	0.31	3.798828	$ 9,050	0	$ -	$ 9,049.71	13.23583	$ 31,531	0.00	$ -	$ 31,530.88
316	1361.4711	1361.721069	Residential	8114.740051	$ 5,891,301	$ 2,945,651	1361.568604	-0.15	1361.569946	-0.15	1361.571045	-0.15	1361.571045	-0.15	3.39014	$ 199,723	0	$ -	$ 199,723.36	3.399904	$ 200,299	0.00	$ -	$ 200,298.59
317	1360.3242	1360.574219	Residential	3291.969604	$ 2,389,970	$ 1,194,985	1360.664551	0.09	1360.660034	0.09	1360.869141	0.29	1360.613525	0.04	6.70996	$ 160,366	3.793944	$ 45,337	$ 205,703.09	5.17918	$ 123,781	0.00	$ -	$ 123,780.84
318	1360.4828	1360.732788	Residential	7044.700256	$ 5,114,452	$ 2,557,226	1360.483276	-0.25	1360.4823	-0.25	1360.608276	-0.12	1360.561768	-0.17	3.001952	$ 153,533	0	$ -	$ 153,533.41	3.31592	$ 169,591	0.00	$ -	$ 169,591.15
319	1375.0812	1375.331177	Residential	7783.893127	$ 5,651,106	$ 2,825,553	1375.328735	0.00	1375.329956	0.00	1375.860107	0.53	1375.114136	-0.22	3.990232	$ 225,492	0	$ -	$ 225,492.26	3.131836	$ 176,983	0.00	$ -	$ 176,983.38
320	1353.952	1354.202026	Residential	5427.761719	$ 3,940,555	$ 1,970,278	1354.112427	-0.09	1354.115601	-0.09	1354.115967	-0.09	1354.114624	-0.09	3.641604	$ 143,499	0	$ -	$ 143,499.41	3.650392	$ 143,846	0.00	$ -	$ 143,845.70
321	1366.7892	1367.039185	Residential	5971.685242	$ 4,335,443	$ 2,167,722	1366.812988	-0.23	1366.810303	-0.23	1367.24707	0.21	1366.943237	-0.10	3.095212	$ 134,191	0	$ -	$ 134,191.17	3.616208	$ 156,779	0.00	$ -	$ 156,778.65
322	1378.1312	1378.381226	Residential	5963.877625	$ 4,329,775	$ 2,164,888	1378.215454	-0.17	1378.214478	-0.17	1378.220703	-0.16	1378.220703	-0.16	3.336912	$ 144,481	0	$ -	$ 144,480.79	3.357908	$ 145,390	0.00	$ -	$ 145,389.87
323	1370.1912	1370.441162	Residential	5864.994141	$ 4,257,986	$ 2,128,993	1370.313354	-0.13	1370.310059	-0.13	1370.500488	0.06	1370.292603	-0.15	3.488768	$ 148,551	0	$ -	$ 148,551.24	3.405764	$ 145,017	0.00	$ -	$ 145,016.95
324	1364.6116	1364.861572	Residential	8787.81427	$ 6,379,953	$ 3,189,977	1364.679688	-0.18	1364.684204	-0.18	1364.681763	-0.18	1364.681885	-0.18	3.272464	$ 208,782	0	$ -	$ 208,781.67	3.281252	$ 209,342	0.00	$ -	$ 209,342.34
325	1367.1274	1367.377441	Residential	862.57312	$ 626,228	$ 313,114	1367.134888	-0.24	1367.135864	-0.24	1367.141968	-0.24	1367.141968	-0.24	3.029788	$ 18,973	0	$ -	$ 18,973.38	3.058108	$ 19,151	0.00	$ -	$ 19,150.73
326	1360.1703	1360.420288	Residential	6272.609619	$ 4,553,915	$ 2,276,957	1360.312744	-0.11	1360.310059	-0.11	1360.492432	0.07	1360.253784	-0.17	3.569824	$ 162,567	0	$ -	$ 162,566.74	3.333984	$ 151,827	0.00	$ -	$ 151,826.78
327	1359.764	1360.014038	Residential	440.797302	$ 320,019	$ 160,009	1359.788696	-0.23	1359.787354		1359.799072	-0.21	1359.799072	-0.21					$ 51,107,020	-0.214966				$ 68,424,130.41

10-Year and 100-Year Proposed Building Damages in Area K

															Proposed								
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
0	1372.7792	1373.029175	Residential	5062.750061	$ 3,675,557	$ 1,837,778	1372.830444	-0.20	1372.829956	-0.20	1372.834351	-0.19	1372.834229	-0.19	3.203124	$ 117,733	0	$ -	$ 117,732.63	3.220216	$ 118,361	0	$ -	$ 118,360.86
1	1371.6405	1371.890503	Residential	5114.190857	$ 3,712,903	$ 1,856,451	1371.667114	-0.22	1371.670532	-0.22	1371.717651	-0.17	1371.717651	-0.17	3.120116	$ 115,847	0	$ -	$ 115,846.87	3.308592	$ 122,845	0	$ -	$ 122,844.80
2	1367.0981	1367.348145	Residential	7006.825439	$ 5,086,955	$ 2,543,478	1367.262939	-0.09	1367.262573	-0.09	1367.392334	0.04	1367.224731	-0.12	3.657712	$ 186,066	0	$ -	$ 186,066.17	3.506344	$ 178,366	0	$ -	$ 178,366.15
3	1374.369	1374.619019	Residential	5893.124573	$ 4,278,408	$ 2,139,204	1374.525391	-0.09	1374.530029	-0.09	1374.701172	0.08	1374.527344	-0.09	3.64	$ 155,907	0.00	$ -	$ 155,906.91	3.63	$ 155,447	0.00	$ -	$ 155,447.41
4	1380.3344	1380.584351	Residential	14318.15601	$ 10,394,981	$ 5,197,491	1380.388672	-0.20	1380.390015	-0.19	1380.391846	-0.19	1380.391846	-0.19	3.222656	$ 334,994	0	$ -	$ 334,994.49	3.22998	$ 335,756	0	$ -	$ 335,755.82
5	1381.6091	1381.859131	Residential	8338.503479	$ 6,053,754	$ 3,026,877	1381.669556	-0.19	1381.670044	-0.19	1381.842529	-0.02	1382.071655	0.21	3.24	$ 196,363	0.00	$ -	$ 196,362.70	10.38	$ 628,121	8.93	$ 270,179	$ 898,299.78
6	1365.7844	1366.034424	Residential	5481.086914	$ 3,979,269	$ 1,989,635	1366.240723	0.21	1366.241211	0.21	1366.375732	0.34	1366.19458	0.16	10.20	$ 406,029	8.69	$ 172,801	$ 578,829.93	8.80	$ 350,362	6.73	$ 133,834	$ 484,195.71
7	1361.3544	1361.60437	Residential	6888.243347	$ 5,000,865	$ 2,500,432	1361.438843	-0.17	1361.439941	-0.16	1361.44165	-0.16	1361.441772	-0.16	3.34	$ 167,143	0.00	$ -	$ 167,143.10	3.35	$ 167,509	0.00	$ -	$ 167,509.36
8	1373.5814	1373.831421	Residential	6063.259277	$ 4,401,926	$ 2,200,963	1373.639404	-0.19	1373.638428	-0.19	1373.656982	-0.17	1373.656982	-0.17	3.23	$ 142,095	0.00	$ -	$ 142,095.41	3.30	$ 145,362	0.00	$ -	$ 145,362.34
9	1369.5145	1369.764526	Residential	4737.382507	$ 3,439,340	$ 1,719,670	1369.589478	-0.18	1369.589966	-0.17	1369.974854	0.21	1369.854858	0.09	3.30	$ 113,559	0.00	$ -	$ 113,558.74	6.71	$ 230,778	3.79	$ 65,243	$ 296,021.63
10	1375.5907	1375.840698	Residential	6107.704834	$ 4,434,194	$ 2,217,097	1375.984009	0.14	1375.97998	0.14	1375.985352	0.14	1375.985352	0.14	8.17846	$ 362,649	5.849844	$ 129,697	$ 492,345.47	8.33962	$ 369,795	6.075468	$ 134,699	$ 504,493.92
11	1359.4811	1359.731079	Residential	7633.545288	$ 5,541,954	$ 2,770,977	1359.544067	-0.19	1359.540039	-0.19	1359.545654	-0.19	1359.545654	-0.19	3.24	$ 179,329	0.00	$ -	$ 179,328.76	3.26	$ 180,573	0.00	$ -	$ 180,573.48
12	1349.402	1349.651978	Residential	12252.54138	$ 8,895,345	$ 4,447,673	1349.465942	-0.19	1349.469971	-0.18	1349.508179	-0.14	1349.468506	-0.18	3.27	$ 291,053	0.00	$ -	$ 291,053.20	3.27	$ 290,532	0.00	$ -	$ 290,531.93
13	1361.3274	1361.577393	Residential	670.759644	$ 486,972	$ 243,486	1361.39917	-0.18	1361.403442	-0.17	1361.462036	-0.12	1361.462036	-0.12	3.304196	$ 16,090	0	$ -	$ 16,090.49	3.538572	$ 17,232	0	$ -	$ 17,231.84
14	1371.7996	1372.049561	Residential	6368.654053	$ 4,623,643	$ 2,311,821	1371.908325	-0.14	1371.910034	-0.14	1371.910645	-0.14	1371.910645	-0.14	3.441892	$ 159,141	0	$ -	$ 159,140.79	3.444336	$ 159,254	0	$ -	$ 159,253.79
15	1378.1814	1378.431396	Residential	5794.169983	$ 4,206,567	$ 2,103,284	1378.244873	-0.19	1378.24231	-0.19	1378.333862	-0.10	1378.259766	-0.17	3.243656	$ 136,447	0	$ -	$ 136,446.58	3.31348	$ 139,384	0	$ -	$ 139,383.77
16	1358.1885	1358.438477	Residential	7644.869263	$ 5,550,175	$ 2,775,088	1358.328003	-0.11	1358.329224	-0.11	1358.330688	-0.11	1358.330688	-0.11	3.562988	$ 197,752	0	$ -	$ 197,752.07	3.568844	$ 198,077	0	$ -	$ 198,077.09
17	1365.3146	1365.564575	Residential	6809.630554	$ 4,943,792	$ 2,471,896	1365.397461	-0.17	1365.400024	-0.16	1365.399536	-0.17	1365.399658	-0.16	3.341796	$ 165,211	0	$ -	$ 165,211.44	3.340332	$ 165,139	0	$ -	$ 165,139.06
18	1379.1108	1379.36084	Residential	5093.971191	$ 3,698,223	$ 1,849,112	1379.271729	-0.09	1379.27478	-0.09	1379.27478	-0.09	1379.274902	-0.09	3.65576	$ 135,198	0	$ -	$ 135,198.16	3.656248	$ 135,216	0	$ -	$ 135,216.21
19	1378.9204	1379.17041	Residential	2066.832153	$ 1,500,520	$ 750,260	1378.949951	-0.22	1378.947754	-0.22	1378.994751	-0.18	1378.994751	-0.18	3.109376	$ 46,657	0	$ -	$ 46,656.81	3.297364	$ 49,478	0	$ -	$ 49,477.61
20	1363.8187	1364.068726	Residential	9950.357239	$ 7,223,959	$ 3,611,980	1363.894775	-0.17	1363.890015	-0.18	1363.896851	-0.17	1363.896851	-0.17	3.285156	$ 237,318	0	$ -	$ 237,318.33	3.3125	$ 239,294	0	$ -	$ 239,293.65
21	1359.7377	1359.987671	Residential	98.510803	$ 71,519	$ 35,759	1359.800293	-0.19	1359.802612	-0.19	1360.027832	0.04	1359.882813	-0.10	3.259764	$ 2,331	0	$ -	$ 2,331.35	3.580568	$ 2,561	0	$ -	$ 2,560.78
22	1353.2081	1353.45813	Residential	1837.229675	$ 1,333,829	$ 666,914	1353.245239	-0.21	1353.25	-0.21	1353.318115	-0.14	1353.247559	-0.21	3.16748	$ 42,249	0	$ -	$ 42,248.76	3.157716	$ 42,119	0	$ -	$ 42,118.52
23	1353.9991	1354.249146	Residential	2561.5896	$ 1,859,714	$ 929,857	1354.064209	-0.18	1354.060059	-0.19	1354.065796	-0.18	1354.065918	-0.18	3.243652	$ 60,323	0	$ -	$ 60,322.65	3.267088	$ 60,758	0	$ -	$ 60,758.49
24	1376.0033	1376.253296	Residential	5004.554688	$ 3,633,307	$ 1,816,653	1376.087891	-0.17	1376.089478	-0.16	1376.089844	-0.16	1376.089844	-0.16	3.344728	$ 121,524	0	$ -	$ 121,524.23	3.346192	$ 121,577	0	$ -	$ 121,577.42
25	1366.6973	1366.947266	Residential	956.661987	$ 694,537	$ 347,268	1366.791504	-0.16	1366.790039	-0.16	1366.90979	-0.04	1366.796265	-0.15	3.37	$ 23,413	0.00	$ -	$ 23,413.47	3.40	$ 23,586	0.00	$ -	$ 23,586.44
26	1377.9141	1378.164063	Residential	272.638306	$ 197,935	$ 98,968	1377.926147	-0.24	1377.927246	-0.24	1377.952148	-0.21	1377.965576	-0.20	3.052732	$ 6,042	0	$ -	$ 6,042.44	3.206052	$ 6,346	0	$ -	$ 6,345.91
27	1359.7202	1359.970215	Residential	416.830383	$ 302,619	$ 151,309	1359.942627	-0.03	1359.942261	-0.03	1360.080933	0.11	1359.883057	-0.09	3.89	$ 11,766	0.00	$ -	$ 11,766.38	3.65	$ 11,050	0.00	$ -	$ 11,049.73
28	1373.551	1373.801025	Residential	6621.999878	$ 4,807,572	$ 2,403,786	1373.600098	-0.20	1373.599976	-0.20	1373.670898	-0.13	1373.695068	-0.11	3.20	$ 153,641	0.00	$ -	$ 153,640.58	3.58	$ 171,927	0.00	$ -	$ 171,927.04
29	1376.4547	1376.704712	Residential	5605.584473	$ 4,069,654	$ 2,034,827	1376.563599	-0.14	1376.560181	-0.14	1376.62085	-0.08	1376.62085	-0.08	3.421876	$ 139,259	0	$ -	$ 139,258.52	3.664552	$ 149,135	0	$ -	$ 149,134.60
30	1350.1412	1350.391235	Residential	7004.17749	$ 5,085,033	$ 2,542,516	1350.164063	-0.23	1350.166504	-0.22	1350.671387	0.28	1350.452393	0.06	3.10	$ 157,691	0.00	$ -	$ 157,690.73	5.83	$ 296,698	2.57	$ 65,308	$ 362,006.44
31	1349.6879	1349.937866	Residential	1574.908997	$ 1,143,384	$ 571,692	1349.755249	-0.18	1349.76001	-0.18	1349.999878	0.06	1349.757446	-0.18	3.288576	$ 37,601	0	$ -	$ 37,601.05	3.27832	$ 37,484	0	$ -	$ 37,483.78
32	1351.7725	1352.022461	Residential	7068.87146	$ 5,132,001	$ 2,566,000	1352.024414	0.00	1352.02002	0.00	1352.026245	0.00	1352.026245	0.00	3.99	$ 204,779	0.00	$ -	$ 204,778.94	4.11	$ 211,106	0.16	$ 4,078	$ 215,183.97
33	1361.1578	1361.407837	Residential	4317.881287	$ 3,134,782	$ 1,567,391	1361.28894	-0.12	1361.291138	-0.12	1361.297729	-0.11	1361.293701	-0.11	3.53	$ 110,758	0.00	$ -	$ 110,758.24	3.54	$ 111,080	0.00	$ -	$ 111,079.61
34	1380.4657	1380.715698	Residential	6718.879456	$ 4,877,906	$ 2,438,953	1380.545654	-0.17	1380.550049	-0.17	1380.547852	-0.17	1380.675903	-0.04	3.337404	$ 162,795	0	$ -	$ 162,795.45	3.84082	$ 187,352	0	$ -	$ 187,351.61
35	1352.3629	1352.612915	Residential	6026.699036	$ 4,375,384	$ 2,187,692	1352.395142	-0.22	1352.400024	-0.21	1352.397217	-0.22	1352.397339	-0.22	3.15	$ 137,756	0.00	$ -	$ 137,756.15	3.14	$ 137,286	0.00	$ -	$ 137,286.23
36	1364.9492	1365.199219	Residential	1969.893005	$ 1,430,142	$ 715,071	1365.000244	-0.20	1365	-0.20	1365.01001	-0.19	1365.003052	-0.20	3.203124	$ 45,809	0	$ -	$ 45,809.23	3.215332	$ 45,984	0	$ -	$ 45,983.82
37	1382.2072	1382.457153	Residential	12305.99646	$ 8,934,153	$ 4,467,077	1382.286987	-0.17	1382.290039	-0.17	1382.28894	-0.17	1382.289063	-0.17	3.331544	$ 297,645	0	$ -	$ 297,645.25	3.32764	$ 297,296	0	$ -	$ 297,296.46
38	1377.7423	1377.99231	Residential	5902.526306	$ 4,285,234	$ 2,142,617	1377.985107	-0.01	1377.98999	0.00	1377.98645	-0.01	1377.98645	-0.01	3.99072	$ 171,012	0	$ -	$ 171,011.69	3.97656	$ 170,405	0	$ -	$ 170,404.91
39	1368.6111	1368.861084	Residential	5975.38501	$ 4,338,130	$ 2,169,065	1368.935913	0.07	1368.930054	0.07	1369.276367	0.42	1369.043823	0.18	6.0691	$ 263,285	2.89674	$ 62,832	$ 326,117.59	9.48217	$ 411,349	7.675038	$ 166,477	$ 577,825.36
40	1358.2589	1358.508911	Residential	758.56012	$ 550,715	$ 275,357	1358.344971	-0.16	1358.339966	-0.17	1358.346558	-0.16	1358.346558	-0.16	3.32	$ 18,307	0.00	$ -	$ 18,306.97	3.35	$ 18,452	0.00	$ -	$ 18,452.18
41	1365.7938	1366.043823	Residential	5147.26416	$ 3,736,914	$ 1,868,457	1365.838989	-0.20	1365.839966	-0.20	1365.861206	-0.18	1365.849609	-0.19	3.18	$ 119,005	0.00	$ -	$ 119,004.71	3.22	$ 120,446	0.00	$ -	$ 120,446.11
42	1362.7766	1363.026611	Residential	8623.175049	$ 6,260,425	$ 3,130,213	1362.801392	-0.23	1362.800049	-0.23	1362.804321	-0.22	1362.804443	-0.22	3.09	$ 193,682	0.00	$ -	$ 193,682.03	3.11	$ 194,782	0.00	$ -	$ 194,782.36
43	1362.8351	1363.085083	Residential	5379.317261	$ 3,905,384	$ 1,952,692	1362.961548	-0.12	1362.95874	-0.13	1363.098022	0.01	1362.971558	-0.11	3.494628	$ 136,479	0	$ -	$ 136,478.65	3.5459	$ 138,481	0	$ -	$ 138,481.02
44	1373.3346	1373.584595	Residential	437.73584	$ 317,796	$ 158,898	1373.473999	-0.11	1373.469971	-0.11	1373.475342	-0.11	1373.475342	-0.11	3.541504	$ 11,255	0	$ -	$ 11,254.77	3.562988	$ 11,323	0	$ -	$ 11,323.04
45	1367.9971	1368.24707	Residential	7428.078186	$ 5,392,785	$ 2,696,392	1368.196655	-0.05	1368.199951	-0.05	1368.19873	-0.05	1368.19873	-0.05	3.81	$ 205,547	0.00	$ -	$ 205,547.29	3.81	$ 205,284	0.00	$ -	$ 205,283.90
46	1374.6667	1374.916748	Residential	4881.761841	$ 3,544,159	$ 1,772,080	1374.991455	0.07	1374.98999	0.07	1374.994629	0.08	1374.994507	0.08	6.19726	$ 219,641	3.076164	$ 54,512	$ 274,152.83	6.33277	$ 224,443	3.265878	$ 57,874	$ 282,317.40
47	1378.6304	1378.880371	Residential	5232.306396	$ 3,798,654	$ 1,899,327	1378.724121	-0.16	1378.725098	-0.16	1379.14209	0.26	1378.995605	0.12	3.38	$ 128,353	0.00	$ -	$ 128,353.04	7.46	$ 283,266	4.84	$ 91,924	$ 375,190.59
48	1377.9553	1378.205322	Residential	6055.227417	$ 4,396,095	$ 2,198,048	1378.011475	-0.19	1378.012817	-0.19	1378.015869	-0.19	1378.015869	-0.19	3.22998	$ 141,993	0	$ -	$ 141,992.99	3.242188	$ 142,530	0	$ -	$ 142,529.67
49	1376.8622	1377.112183	Residential	371.322083	$ 269,580	$ 134,790	1376.894043	-0.22	1376.893188	-0.22	1376.96582	-0.15	1376.980103	-0.13	3.12402	$ 8,422	0	$ -	$ 8,421.73	3.47168	$ 9,359	0	$ -	$ 9,358.95
50	1371.5935	1371.843506	Residential	3883.120056	$ 2,819,145	$ 1,409,573	1371.657227	-0.19	1371.65564	-0.19	1371.91626	0.07	1371.827026	-0.02	3.25	$ 91,581	0.00	$ -	$ 91,580.95	3.93	$ 110,907	0.00	$ -	$ 110,907.43
51	1367.6451	1367.895142	Residential	8502.347534	$ 6,172,704	$ 3,086,352	1367.70874	-0.19	1367.709961	-0.19	1367.711426	-0.18	1367.711426	-0.18	3.26	$ 201,185	0.00	$ -	$ 201,185.47	3.27	$ 201,547	0.00	$ -	$ 201,547.19
52	1360.0182	1360.268188	Residential	11716.17969	$ 8,505,946	$ 4,252,973	1360.080688	-0.19	1360.079956	-0.19	1360.084106	-0.18	1360.083984	-0.18	3.25	$ 276,194	0.00	$ -	$ 276,194.21	3.26	$ 277,565	0.00	$ -	$ 277,564.68
53	1376.1908	1376.440796	Residential	4086.243103	$ 2,966,612	$ 1,483,306	1376.506836	0.07	1376.51001	0.07	1376.508789	0.07	1376.508789	0.07	6.07642	$ 180,264	2.906988	$ 43,120	$ 223,383.37	6.03979	$ 179,177	2.855706	$ 42,359	$ 221,536.03
54	1386.9077	1387.157715	Residential	5026.592773	$ 3,649,306	$ 1,824,653	1387.001099	-0.16	1387.00061	-0.16	1387.004517	-0.15	1387.004517	-0.15	3.37158	$ 123,039	0	$ -	$ 123,039.28	3.387208	$ 123,610	0	$ -	$ 123,609.60
55	1376.2891	1376.539063	Residential	3620.247864	$ 2,628,300	$ 1,314,150	1376.426147	-0.11	1376.426758	-0.11	1376.470703	-0.07	1376.470703	-0.07	3.55	$ 93,325	0.00	$ -	$ 93,325.15	3.73	$ 97,945	0.00	$ -	$ 97,945.17
56	1377.2733	1377.523315	Residential	4993.57019	$ 3,625,332	$ 1,812,666	1377.564087	0.04	1377.560059	0.04	1377.56543	0.04	1377.56543	0.04	5.10	$ 184,976	1.54	$ 27,974	$ 212,949.97	5.26	$ 190,818	1.77	$ 32,063	$ 222,880.51
57	1351.041	1351.291016	Residential	10962.42029	$ 7,958,717	$ 3,979,359	1351.105469	-0.19	1351.109985	-0.18	1351.107666	-0.18	1351.107544	-0.18	3.28	$ 260,718	0.00	$ -	$ 260,717.70	3.27	$ 259,941	0.00	$ -	$ 259,940.62
58	1372.4613	1372.711304	Residential	5823.487061	$ 4,227,852	$ 2,113,926	1372.55835	-0.15	1372.560059	-0.15	1372.716797	0.01	1372.560547	-0.15	3.39502	$ 143,536	0	$ -	$ 143,536.41	3.396972	$ 143,619	0	$ -	$ 143,618.94
59	1377.0377	1377.28772	Residential	6052.135376	$ 4,393,850	$ 2,196,925	1377.146973	-0.14	1377.149902	-0.14	1377.14978	-0.14	1377.149902	-0.14	3.448728	$ 151,532	0	$ -	$ 151,531.94	3.448728	$ 151,532	0	$ -	$ 151,531.94
60	1368.8978	1369.147827	Residential	6837.879822	$ 4,964,301	$ 2,482,150	1368.899658	-0.25	1368.900024	-0.25	1368.906616	-0.24	1369.012573	-0.14	3.008788	$ 149,365	0	$ -	$ 149,365.29	3.458984	$ 171,714	0	$ -	$ 171,714.37
61	1365.9777	1366.227661	Residential	548.647339	$ 398,318	$ 199,159	1366.057861	-0.17	1366.061035	-0.17	1366.203369	-0.02	1366.046509	-0.18	3.333496	$ 13,278	0	$ -	$ 13,277.91	3.275392	$ 13,046	0	$ -	$ 13,046.47
62	1365.65	1365.900024	Residential	6442.914001	$ 4,677,556	$ 2,338,778	1365.738403	-0.16	1365.73999	-0.16	1366.14502	0.24	1365.892334	-0.01	3.36	$ 157,160	0.00	$ -	$ 157,159.51	3.97	$ 185,663	0.00	$ -	$ 185,663.41
63	1348.2711	1348.521118	Residential	624.433289	$ 453,339	$ 226,669	1348.405151	-0.12	1348.409302	-0.11	1349.341187	0.82	1348.980347	0.46	3.552736	$ 16,106	0	$ -	$ 16,105.92	17.77687	$ 80,589	19.287618	$ 43,719	$ 124,308.51
64	1379.9254	1380.175415	Residential	335.501648	$ 243,574	$ 121,787	1379.99353	-0.18	1379.992065	-0.18	1380.040283	-0.14	1380.039917	-0.14	3.27	$ 7,957	0.00	$ -	$ 7,956.59	3.46	$ 8,423	0.00	$ -	$ 8,422.82
65	1380.058	1380.307983	Residential	344.429138	$ 250,056	$ 125,028	1380.170776	-0.14	1380.171509	-0.14	1380.185059	-0.12	1380.184814	-0.12	3.454104	$ 8,637	0.00	$ -	$ 8,637.18	3.507324	$ 8,770	0.00	$ -	$ 8,770.26
66	1357.8719	1358.121948	Residential	1980.532898	$ 1,437,867	$ 718,933	1358.057495	-0.06	1358.060059	-0.06	1358.059692	-0.06	1358.059692	-0.06	3.75	$ 53,955	0.00	$ -	$ 53,955.15	3.75	$ 53,934	0.00	$ -	$ 53,934.04
67	1361.5636	1361.813599	Residential	6199.695374	$ 4,500,979	$ 2,250,489	1361.722046	-0.09	1361.719971	-0.09	1361.726318	-0.09	1361.726196	-0.09	3.625488	$ 163,182	0	$ -	$ 163,182.45	3.650388	$ 164,303	0	$ -	$ 164,303.19
68	1373.7996	1374.049561	Residential	4352.848328	$ 3,160,168	$ 1,580,084	1373.888428	-0.16	1373.890015	-0.16	1373.941406	-0.11	1373.890869	-0.16	3.36	$ 106,239	0.00	$ -	$ 106,239.03	3.37	$ 106,347	0.00	$ -	$ 106,346.98
69	1369.6515	1369.901489	Residential	7681.519775	$ 5,576,783	$ 2,788,392	1369.671997	-0.23	1369.670044	-0.23	1369.675293	-0.23	1369.675293	-0.23	3.07422	$ 171,443	0	$ -	$ 171,442.59	3.095216	$ 172,613	0	$ -	$ 172,613.49
70	1352.7987	1353.048706	Residential	4176.407654	$ 3,032,072	$ 1,516,036	1352.82373	-0.22	1352.823853	-0.22	1352.83374	-0.21	1352.83374	-0.21	3.100588	$ 94,012	0	$ -	$ 94,012.06	3.140136	$ 95,211	0	$ -	$ 95,211.18
71	1354.4823	1354.7323	Residential	5939.919373	$ 4,312,381	$ 2,156,191	1354.613403	-0.12	1354.609985	-0.12	1355.001953	0.27	1354.824707	0.09	3.51	$ 151,397	0.00	$ -	$ 151,396.50	6.77	$ 292,044	3.88	$ 83,684	$ 375,727.32
72	1358.7681	1359.018066	Residential	5464.610229	$ 3,967,307	$ 1,983,654	1358.818237	-0.20	1358.819946	-0.20	1358.820557	-0.20	1358.820557	-0.20	3.20752	$ 127,252	0	$ -	$ 127,252.17	3.209964	$ 127,349	0	$ -	$ 127,349.13
73	1370.2661	1370.516113	Residential	7295.893555	$ 5,296,819	$ 2,648,409	1370.522339	0.01	1370.521484	0.01	1370.69751	0.18	1370.449707	-0.07	4.16	$ 220,408	0.23	$ 5,974	$ 226,381.85	3.73	$ 197,803	0.00	$ -	$ 197,803.13
74	1380.3362	1380.586182	Residential	4872.422913	$ 3,537,379	$ 1,768,690	1380.464111	-0.12	1380.467407	-0.12	1380.876343	0.29	1380.724731	0.14	3.5249	$ 124,689	0.00	$ -	$ 124,689.07	8.15647	$ 288,525	5.82	$ 102,921	$ 391,446.33
75	1368.1411	1368.391113	Residential	6527.1745	$ 4,738,729	$ 2,369,364	1368.207275	-0.18	1368.209961	-0.18	1368.209473	-0.18	1368.209351	-0.18	3.28	$ 155,212	0.00	$ -	$ 155,211.94	3.27	$ 155,096	0.00	$ -	$ 155,096.32
76	1370.8282	1371.078247	Residential	7341.92395	$ 5,330,237	$ 2,665,118	1370.901245	-0.18	1370.900024	-0.18	1370.904541	-0.17	1370.904663	-0.17	3.287108	$ 175,211	0	$ -	$ 175,210.64	3.305664	$ 176,200	0	$ -	$ 176,199.72
77	1351.1089	1351.358887	Residential	7682.645386	$ 5,577,601	$ 2,788,800	1351.214355	-0.14	1351.209961	-0.15	1351.216187	-0.14	1351.216064	-0.14	3.404296	$ 189,878	0	$ -	$ 189,878.03	3.428708	$ 191,240	0	$ -	$ 191,239.64
78	1352.9404	1353.19043	Residential	359.594421	$ 261,066	$ 130,533	1353.207153	0.02	1353.199951	0.01	1353.580688	0.39	1353.317749	0.13	4.28563	$ 11,188	0.399882	$ 522	$ 11,710.28	7.81957	$ 20,414	5.347398	$ 6,980	$ 27,394.31
79	1375.2893	1375.539307	Residential	5622.966309	$ 4,082,274	$ 2,041,137	1375.408813	-0.13	1375.410034	-0.13	1375.411865	-0.13	1375.411987	-0.13	3.482908	$ 142,182	0	$ -	$ 142,181.83	3.49072	$ 142,501	0	$ -	$ 142,500.74

10-Year and 100-Year Proposed Building Damages in Area K

															Proposed								
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
80	1361.5787	1361.828735	Residential	4104.051453	$ 2,979,541	$ 1,489,771	1361.64856	-0.18	1361.650024	-0.18	1361.924194	0.10	1361.777954	-0.05	3.29	$ 97,883	0.00	$ -	$ 97,882.58	3.80	$ 113,129	0.00	$ -	$ 113,129.49
81	1372.7191	1372.969116	Residential	5524.363342	$ 4,010,688	$ 2,005,344	1372.777466	-0.19	1372.780029	-0.19	1372.78186	-0.19	1372.78186	-0.19	3.243652	$ 130,093	0	$ -	$ 130,092.75	3.250976	$ 130,386	0	$ -	$ 130,386.50
82	1378.332	1378.582031	Residential	328.372437	$ 238,398	$ 119,199	1378.797852	0.22	1378.800049	0.22	1379.000732	0.42	1379.000732	0.42	10.54	$ 25,128	9.16	$ 10,915	$ 36,043.26	16.56	$ 39,481	17.59	$ 20,962	$ 60,442.93
83	1374.9072	1375.157227	Residential	5100.398376	$ 3,702,889	$ 1,851,445	1375.089478	-0.07	1375.087524	-0.07	1375.173706	0.02	1375.173706	0.02	3.721188	$ 137,791	0	$ -	$ 137,791.47	4.49437	$ 166,422	0.692118	$ 12,814	$ 179,235.72
84	1362.9548	1363.204834	Residential	8479.753967	$ 6,156,301	$ 3,078,151	1363.019775	-0.19	1363.02002	-0.18	1363.022827	-0.18	1363.022827	-0.18	3.26	$ 200,741	0.00	$ -	$ 200,741.23	3.27	$ 201,432	0.00	$ -	$ 201,432.46
85	1366.3226	1366.572632	Residential	2076.678772	$ 1,507,669	$ 753,834	1366.432617	-0.14	1366.435669	-0.14	1366.70752	0.13	1366.435059	-0.14	3.452148	$ 52,047	0	$ -	$ 52,046.96	3.449708	$ 52,010	0	$ -	$ 52,010.17
86	1352.7321	1352.982056	Residential	5563.624268	$ 4,039,191	$ 2,019,596	1352.796631	-0.19	1352.800049	-0.18	1352.940308	-0.04	1352.799561	-0.18	3.271972	$ 132,161	0	$ -	$ 132,161.21	3.27002	$ 132,082	0	$ -	$ 132,082.36
87	1367.7133	1367.963257	Residential	4968.399292	$ 3,607,058	$ 1,803,529	1367.959106	0.00	1367.960571	0.00	1368.091064	0.13	1367.916382	-0.05	3.99	$ 143,895	0.00	$ -	$ 143,894.77	3.81	$ 137,519	0.00	$ -	$ 137,519.08
88	1361.6323	1361.882324	Residential	797.473267	$ 578,966	$ 289,483	1361.7677	-0.11	1361.77002	-0.11	1361.769897	-0.11	1361.769897	-0.11	3.550784	$ 20,558	0	$ -	$ 20,557.82	3.550292	$ 20,555	0	$ -	$ 20,554.97
89	1363.135	1363.38501	Residential	8303.006226	$ 6,027,983	$ 3,013,991	1363.190308	-0.19	1363.189941	-0.20	1363.193359	-0.19	1363.193359	-0.19	3.22	$ 194,084	0.00	$ -	$ 194,084.40	3.23	$ 194,909	0.00	$ -	$ 194,908.55
90	1366.2108	1366.460815	Residential	4910.555115	$ 3,565,063	$ 1,782,532	1366.218384	-0.24	1366.220825	-0.24	1366.294312	-0.17	1366.241577	-0.22	3.04004	$ 108,379	0	$ -	$ 108,379.34	3.123048	$ 111,339	0	$ -	$ 111,338.63
91	1368.8278	1369.077759	Residential	6629.62793	$ 4,813,110	$ 2,406,555	1368.94104	-0.14	1368.939941	-0.14	1368.944092	-0.13	1368.944214	-0.13	3.448728	$ 165,991	0	$ -	$ 165,991.07	3.46582	$ 166,814	0	$ -	$ 166,813.72
92	1374.304	1374.553955	Residential	5484.503662	$ 3,981,750	$ 1,990,875	1374.360107	-0.19	1374.359985	-0.19	1374.363159	-0.19	1374.363037	-0.19	3.22	$ 128,376	0.00	$ -	$ 128,376.39	3.24	$ 128,862	0.00	$ -	$ 128,862.48
93	1354.0405	1354.290527	Residential	7800.228271	$ 5,662,966	$ 2,831,483	1354.07605	-0.21	1354.079956	-0.21	1354.078491	-0.21	1354.078369	-0.21	3.157716	$ 178,820	0	$ -	$ 178,820.37	3.151368	$ 178,461	0	$ -	$ 178,460.89
94	1364.1387	1364.388672	Residential	9319.309509	$ 6,765,819	$ 3,382,909	1364.178955	-0.21	1364.180054	-0.21	1364.295898	-0.09	1364.261353	-0.13	3.17	$ 214,174	0.00	$ -	$ 214,173.89	3.49	$ 236,176	0.00	$ -	$ 236,176.06
95	1362.6045	1362.854492	Residential	143.450073	$ 104,145	$ 52,072	1362.984863	0.13	1362.980347	0.13	1362.987305	0.13	1362.987427	0.13	7.78	$ 8,098	5.29	$ 2,752	$ 10,850.43	7.99	$ 8,319	5.58	$ 2,907	$ 11,226.48
96	1361.0277	1361.27771	Residential	5807.243103	$ 4,216,058	$ 2,108,029	1361.062378	-0.22	1361.060059	-0.22	1361.230591	-0.05	1361.197632	-0.08	3.13	$ 131,937	0.00	$ -	$ 131,937.17	3.68	$ 155,138	0.00	$ -	$ 155,137.80
97	1379.2681	1379.518066	Residential	5512.254822	$ 4,001,897	$ 2,000,949	1379.418945	-0.10	1379.419434	-0.10	1379.574341	0.06	1379.704102	0.19	3.605472	$ 144,287	0.00	$ -	$ 144,287.28	9.58108	$ 383,425	7.81	$ 156,344	$ 539,769.30
98	1364.3967	1364.646729	Residential	1845.062622	$ 1,339,515	$ 669,758	1364.488159	-0.16	1364.48999	-0.16	1364.490356	-0.16	1364.490356	-0.16	3.373044	$ 45,182	0	$ -	$ 45,182.45	3.374508	$ 45,202	0	$ -	$ 45,202.06
99	1366.3516	1366.601563	Residential	4056.541199	$ 2,945,049	$ 1,472,524	1366.543823	-0.06	1366.536987	-0.06	1366.554199	-0.05	1366.554199	-0.05	3.74	$ 110,195	0.00	$ -	$ 110,194.78	3.81	$ 112,222	0.00	$ -	$ 112,222.38
100	1358.9648	1359.214844	Residential	5029.624146	$ 3,651,507	$ 1,825,754	1359.262451	0.05	1359.267212	0.05	1359.26416	0.05	1359.26416	0.05	5.57	$ 203,427	2.20	$ 40,157	$ 243,583.57	5.48	$ 200,084	2.07	$ 37,816	$ 237,899.93
101	1374.8926	1375.142578	Residential	9085.493774	$ 6,596,068	$ 3,298,034	1375.06897	-0.07	1375.073853	-0.07	1375.071899	-0.07	1375.071777	-0.07	3.7251	$ 245,710	0	$ -	$ 245,710.15	3.716796	$ 245,162	0	$ -	$ 245,162.41
102	1371.8109	1372.060913	Residential	4668.850098	$ 3,389,585	$ 1,694,793	1371.834229	-0.23	1371.838379	-0.22	1371.838257	-0.22	1371.838257	-0.22	3.109864	$ 105,411	0	$ -	$ 105,411.49	3.109376	$ 105,395	0	$ -	$ 105,394.95
103	1374.249	1374.499023	Residential	6966.036255	$ 5,057,342	$ 2,528,671	1374.279785	-0.22	1374.280029	-0.22	1374.282715	-0.22	1374.282715	-0.22	3.124024	$ 157,993	0	$ -	$ 157,992.59	3.134768	$ 158,536	0	$ -	$ 158,535.95
104	1353.7365	1353.98645	Residential	6619.511108	$ 4,805,765	$ 2,402,883	1353.776123	-0.21	1353.780029	-0.21	1353.778442	-0.21	1353.778442	-0.21	3.17	$ 152,550	0.00	$ -	$ 152,550.17	3.17	$ 152,245	0.00	$ -	$ 152,245.10
105	1363.4548	1363.704834	Residential	8842.429199	$ 6,419,604	$ 3,209,802	1364.171265	0.47	1364.170044	0.47	1364.463501	0.76	1364.036011	0.33	17.9563	$ 1,152,723	19.53882	$ 627,157	$ 1,779,880.68	13.93531	$ 894,592	13.909434	$ 446,465	$ 1,341,056.93
106	1363.5942	1363.844238	Residential	1209.473938	$ 878,078	$ 439,039	1363.675049	-0.17	1363.670044	-0.17	1363.677856	-0.17	1363.677856	-0.17	3.303224	$ 29,005	0.00	$ -	$ 29,004.89	3.334472	$ 29,279	0.00	$ -	$ 29,279.27
107	1364.436	1364.686035	Residential	4979.980835	$ 3,615,466	$ 1,807,733	1364.669312	-0.02	1364.665771	-0.02	1364.670898	-0.02	1364.670898	-0.02	3.92	$ 141,688	0.00	$ -	$ 141,688.09	3.94	$ 142,430	0.00	$ -	$ 142,429.55
108	1352.4829	1352.73291	Residential	5092.605652	$ 3,697,232	$ 1,848,616	1352.545166	-0.19	1352.550049	-0.18	1352.547241	-0.19	1352.547241	-0.19	3.268556	$ 120,846	0.00	$ -	$ 120,846.09	3.257324	$ 120,431	0.00	$ -	$ 120,430.82
109	1349.7738	1350.023804	Residential	10592.73084	$ 7,690,323	$ 3,845,161	1349.815918	-0.21	1349.819946	-0.20	1349.818359	-0.21	1349.818359	-0.21	3.184568	$ 244,904	0	$ -	$ 244,903.55	3.17822	$ 244,415	0	$ -	$ 244,415.37
110	1356.3748	1356.624756	Residential	7430.694946	$ 5,394,685	$ 2,697,342	1356.497437	-0.13	1356.5	-0.12	1356.499512	-0.13	1356.499512	-0.13	3.50	$ 188,867	0.00	$ -	$ 188,866.61	3.50	$ 188,761	0.00	$ -	$ 188,761.31
111	1349.6604	1349.9104	Residential	12568.94641	$ 9,125,055	$ 4,562,528	1349.750366	-0.16	1349.747437	-0.16	1349.757935	-0.15	1349.752686	-0.16	3.35	$ 305,520	0.00	$ -	$ 305,520.35	3.37	$ 307,436	0.00	$ -	$ 307,436.25
112	1369.8452	1370.095215	Residential	474.788452	$ 344,696	$ 172,348	1369.938599	-0.16	1369.93689	-0.16	1369.944946	-0.15	1369.944946	-0.15	3.3667	$ 11,605	0	$ -	$ 11,604.89	3.398924	$ 11,716	0	$ -	$ 11,715.97
113	1380.3524	1380.602417	Residential	6280.325745	$ 4,559,516	$ 2,279,758	1380.448242	-0.15	1380.449951	-0.15	1380.450562	-0.15	1380.450562	-0.15	3.390136	$ 154,574	0	$ -	$ 154,573.81	3.39258	$ 154,685	0	$ -	$ 154,685.24
114	1377.1196	1377.369629	Residential	5297.63031	$ 3,846,080	$ 1,923,040	1377.239258	-0.13	1377.23999	-0.13	1377.242188	-0.13	1377.242188	-0.13	3.481444	$ 133,899	0	$ -	$ 133,899.11	3.490236	$ 134,237	0	$ -	$ 134,237.25
115	1366.8071	1367.057129	Residential	7888.129822	$ 5,726,782	$ 2,863,391	1366.859985	-0.20	1366.859985	-0.20	1366.862915	-0.19	1366.862915	-0.19	3.211424	$ 183,911	0	$ -	$ 183,911.26	3.223144	$ 184,582	0	$ -	$ 184,582.44
116	1360.8243	1361.074341	Residential	7805.948669	$ 5,667,119	$ 2,833,559	1360.955811	-0.12	1360.959961	-0.11	1361.056763	-0.02	1360.95874	-0.12	3.54248	$ 200,757	0	$ -	$ 200,756.55	3.537596	$ 200,480	0	$ -	$ 200,479.77
117	1364.4938	1364.743774	Residential	5855.000854	$ 4,250,731	$ 2,125,365	1364.699463	-0.04	1364.699951	-0.04	1364.702148	-0.04	1364.702148	-0.04	3.824708	$ 162,578	0	$ -	$ 162,578.03	3.833496	$ 162,952	0	$ -	$ 162,951.59
118	1360.4812	1360.731201	Residential	219.949097	$ 159,683	$ 79,842	1360.793945	0.06	1360.790039	0.06	1360.794067	0.06	1360.794189	0.06	5.76514	$ 9,206	2.471196	$ 1,973	$ 11,178.99	5.88964	$ 9,405	2.645496	$ 2,112	$ 11,516.96
119	1351.2076	1351.457642	Residential	5547.851379	$ 4,027,740	$ 2,013,870	1351.428955	-0.03	1351.425171	-0.03	1351.431519	-0.03	1351.431396	-0.03	3.87	$ 155,878	0.00	$ -	$ 155,878.21	3.90	$ 156,881	0.00	$ -	$ 156,881.12
120	1374.8663	1375.116333	Residential	6444.857483	$ 4,678,967	$ 2,339,483	1374.929321	-0.19	1374.930054	-0.19	1374.932129	-0.18	1374.932251	-0.18	3.25	$ 152,295	0.00	$ -	$ 152,294.93	3.26	$ 152,706	0.00	$ -	$ 152,706.12
121	1363.498	1363.748047	Residential	212.195068	$ 154,054	$ 77,027	1363.517334	-0.23	1363.517944	-0.23	1363.666992	-0.08	1363.631226	-0.12	3.079588	$ 4,744	0	$ -	$ 4,744.22	3.532716	$ 5,442	0	$ -	$ 5,442.28
122	1368.4139	1368.66394	Residential	6069.277893	$ 4,406,296	$ 2,203,148	1368.446289	-0.22	1368.445923	-0.22	1368.67981	0.02	1368.450195	-0.21	3.13	$ 137,826	0.00	$ -	$ 137,825.93	3.15	$ 138,579	0.00	$ -	$ 138,578.88
123	1381.0881	1381.338135	Residential	6044.557678	$ 4,388,349	$ 2,194,174	1381.179443	-0.16	1381.180054	-0.16	1381.366333	0.03	1381.182739	-0.16	3.367676	$ 147,785	0	$ -	$ 147,785.37	3.378416	$ 148,257	0	$ -	$ 148,256.68
124	1379.9611	1380.21106	Residential	5559.381653	$ 4,036,111	$ 2,018,056	1380.097168	-0.11	1380.095825	-0.12	1380.099243	-0.11	1380.099243	-0.11	3.54	$ 142,840	0.00	$ -	$ 142,840.39	3.55	$ 143,392	0.00	$ -	$ 143,392.21
125	1361.5222	1361.772217	Residential	5136.399902	$ 3,729,026	$ 1,864,513	1361.562622	-0.21	1361.560059	-0.21	1361.609375	-0.16	1361.608765	-0.16	3.15	$ 117,515	0.00	$ -	$ 117,515.34	3.35	$ 124,780	0.00	$ -	$ 124,780.38
126	1349.9539	1350.203857	Residential	11645.22498	$ 8,454,433	$ 4,227,217	1350.02478	-0.18	1350.02002	-0.18	1350.026855	-0.18	1350.026855	-0.18	3.264652	$ 276,008	0	$ -	$ 276,007.83	3.291992	$ 278,319	0	$ -	$ 278,319.27
127	1357.042	1357.291992	Residential	3812.569763	$ 2,767,926	$ 1,383,963	1357.216553	-0.08	1357.219971	-0.07	1357.218506	-0.07	1357.218506	-0.07	3.71	$ 102,743	0.00	$ -	$ 102,743.07	3.71	$ 102,581	0.00	$ -	$ 102,580.87
128	1363.7706	1364.02063	Residential	246.767029	$ 179,153	$ 89,576	1363.825928	-0.19	1363.829956	-0.19	1363.828491	-0.19	1363.828491	-0.19	3.24	$ 5,800	0.00	$ -	$ 5,799.72	3.23	$ 5,789	0.00	$ -	$ 5,789.22
129	1377.3176	1377.567627	Residential	3762.542786	$ 2,731,606	$ 1,365,803	1377.35437	-0.21	1377.349976	-0.22	1377.857666	0.29	1377.634277	0.07	3.129396	$ 85,483	0	$ -	$ 85,482.77	5.9995	$ 163,883	2.7993	$ 38,233	$ 202,115.63
130	1362.1476	1362.397583	Residential	5020.589172	$ 3,644,948	$ 1,822,474	1362.411865	0.01	1362.410034	0.01	1362.727783	0.33	1362.316406	-0.08	4.37353	$ 159,413	0.522942	$ 9,530	$ 168,943.36	3.675292	$ 133,962	0	$ -	$ 133,962.47
131	1376.2094	1376.459351	Residential	5212.982361	$ 3,784,625	$ 1,892,313	1376.260254	-0.20	1376.260864	-0.20	1376.271851	-0.19	1376.271851	-0.19	3.21	$ 121,337	0.00	$ -	$ 121,337.05	3.25	$ 123,000	0.00	$ -	$ 123,000.32
132	1379.1615	1379.411499	Residential	400.356567	$ 290,659	$ 145,329	1379.424072	0.01	1379.421387	0.01	1379.488525	0.08	1379.488281	0.08	4.29664	$ 12,489	0.415296	$ 604	$ 13,092.11	6.30346	$ 18,322	3.224844	$ 4,687	$ 23,008.21
133	1361.2078	1361.457764	Residential	4320.113953	$ 3,136,403	$ 1,568,201	1361.42041	-0.04	1361.420044	-0.04	1361.433716	-0.02	1361.42334	-0.03	3.84912	$ 120,724	0	$ -	$ 120,723.90	3.862304	$ 121,137	0	$ -	$ 121,137.41
134	1362.6445	1362.894531	Residential	3840.690247	$ 2,788,341	$ 1,394,171	1362.80603	-0.09	1362.805054	-0.09	1362.809204	-0.09	1362.809326	-0.09	3.642092	$ 101,554	0	$ -	$ 101,553.95	3.65918	$ 102,030	0	$ -	$ 102,030.42
135	1378.0864	1378.336426	Residential	326.96106	$ 237,374	$ 118,687	1378.312134	-0.02	1378.309937	-0.03	1378.373901	0.04	1378.371704	0.04	3.894044	$ 9,243	0	$ -	$ 9,243.44	5.05834	$ 12,007	1.481676	$ 1,759	$ 13,765.73
136	1364.1649	1364.414917	Residential	4181.148926	$ 3,035,514	$ 1,517,757	1364.769409	0.35	1364.77124	0.36	1364.967041	0.55	1364.687012	0.27	14.68969	$ 445,908	14.965566	$ 227,141	$ 673,048.55	12.16285	$ 369,205	11.42799	$ 173,449	$ 542,654.15
137	1360.8499	1361.099854	Residential	4583.988647	$ 3,327,976	$ 1,663,988	1360.899902	-0.20	1360.900024	-0.20	1361.072632	-0.03	1360.932739	-0.17	3.20068	$ 106,518	0	$ -	$ 106,517.85	3.33154	$ 110,873	0	$ -	$ 110,872.84
138	1368.3804	1368.630371	Residential	8776.445618	$ 6,371,700	$ 3,185,850	1368.661865	0.03	1368.660034	0.03	1368.665161	0.03	1368.665161	0.03	4.88989	$ 311,569	1.245846	$ 39,691	$ 351,259.88	5.0437	$ 321,369	1.46118	$ 46,551	$ 367,920.41
139	1353.156	1353.406006	Residential	323.715698	$ 235,018	$ 117,509	1353.186035	-0.22	1353.189941	-0.22	1353.190063	-0.22	1353.188965	-0.22	3.13574	$ 7,370	0.00	$ -	$ 7,369.54	3.131836	$ 7,360	0.00	$ -	$ 7,360.37
140	1378.5293	1378.779297	Residential	5263.701416	$ 3,821,447	$ 1,910,724	1378.623413	-0.16	1378.624146	-0.16	1378.66626	-0.11	1378.677856	-0.10	3.38	$ 129,142	0.00	$ -	$ 129,141.83	3.59	$ 137,352	0.00	$ -	$ 137,351.83
141	1379.809	1380.05896	Residential	7932.297974	$ 5,758,848	$ 2,879,424	1380.026367	-0.03	1380.030029	-0.03	1380.028198	-0.03	1380.028198	-0.03	3.884276	$ 223,690	0	$ -	$ 223,689.56	3.876952	$ 223,268	0	$ -	$ 223,267.79
142	1371.869	1372.119019	Residential	4879.887024	$ 3,542,798	$ 1,771,399	1372.077759	-0.04	1372.077759	-0.04	1372.083496	-0.04	1372.081787	-0.04	3.83496	$ 135,865	0	$ -	$ 135,864.89	3.851072	$ 136,436	0	$ -	$ 136,435.70
143	1378.5239	1378.773926	Residential	188.311951	$ 136,714	$ 68,357	1378.562744	-0.21	1378.566528	-0.21	1378.578857	-0.20	1378.578735	-0.20	3.170408	$ 4,334	0	$ -	$ 4,334.41	3.219236	$ 4,401	0	$ -	$ 4,401.16
144	1375.1558	1375.405762	Residential	4700.561829	$ 3,412,608	$ 1,706,304	1375.356201	-0.05	1375.359985	-0.05	1375.710083	0.30	1375.35791	-0.05	3.82	$ 130,256	0.00	$ -	$ 130,255.56	3.81	$ 129,972	0.00	$ -	$ 129,972.31
145	1364.0173	1364.267334	Residential	263.903442	$ 191,594	$ 95,797	1364.084961	-0.18	1364.079956	-0.19	1364.11499	-0.15	1364.086426	-0.18	3.250488	$ 6,228	0	$ -	$ 6,227.74	3.276368	$ 6,277	0	$ -	$ 6,277.32
146	1361.9521	1362.202148	Residential	5469.552246	$ 3,970,895	$ 1,985,447	1362.174438	-0.03	1362.178223	-0.02	1362.365112	0.16	1362.176025	-0.03	3.90	$ 155,036	0.00	$ -	$ 155,035.65	3.90	$ 154,687	0.00	$ -	$ 154,686.53
147	1361.5681	1361.818115	Residential	5371.711365	$ 3,899,862	$ 1,949,931	1361.999634	0.18	1361.995728	0.18	1362.157593	0.34	1361.909668	0.09	9.32839	$ 363,794	7.459746	$ 145,460	$ 509,254.30	6.74659	$ 263,108	3.845226	$ 74,979	$ 338,086.99
148	1376.0001	1376.250122	Residential	4847.492981	$ 3,519,280	$ 1,759,640	1376.239746	-0.01	1376.24292	-0.01	1376.241943	-0.01	1376.241943	-0.01	3.971192	$ 139,757	0	$ -	$ 139,757.36	3.967284	$ 139,620	0	$ -	$ 139,619.83
149	1376.4144	1376.664429	Residential	5930.882202	$ 4,305,820	$ 2,152,910	1376.478149	-0.19	1376.47998	-0.18	1376.766724	0.10	1376.542114	-0.12	3.26	$ 140,465	0.00	$ -	$ 140,464.65	3.51	$ 151,166	0.00	$ -	$ 151,166.16
150	1372.437	1372.687012	Residential	5813.009705	$ 4,220,245	$ 2,110,123	1372.519775	-0.17	1372.52002	-0.17	1372.522461	-0.16	1372.522461	-0.16	3.332032	$ 140,620	0	$ -	$ 140,619.92	3.341796	$ 141,032	0	$ -	$ 141,031.98
151	1387.2883	1387.53833	Residential	4486.418701	$ 3,257,140	$ 1,628,570	1387.536377	0.00	1387.540039	0.00	1387.53833	0.00	1387.53833	0.00	4.05127	$ 131,956	0.071778	$ 1,169	$ 133,124.49	4	$ 130,286	0	$ -	$ 130,285.60
152	1375.7926	1376.042603	Residential	4326.913086	$ 3,141,339	$ 1,570,669	1375.835449	-0.21	1375.839966	-0.20	1376.119263	0.08	1375.941162	-0.10	3.19	$ 100,191	0.00	$ -	$ 100,191.50	3.59	$ 112,907	0.00	$ -	$ 112,907.13
153	1367.1001	1367.350098	Residential	5923.343201	$ 4,300,347	$ 2,150,174	1367.170654	-0.18	1367.170044	-0.18	1367.174072	-0.18	1367.174072	-0.18	3.279784	$ 141,042	0	$ -	$ 141,042.10	3.295896	$ 141,735	0	$ -	$ 141,734.97
154	1378.0719	1378.321899	Residential	5311.497314	$ 3,856,147	$ 1,928,074	1378.216553	-0.11	1378.219971	-0.10	1378.218384	-0.10	1378.218384	-0.10	3.592288	$ 138,524	0	$ -	$ 138,523.91	3.58594	$ 138,279	0	$ -	$ 138,279.12
155	1380.4923	1380.74231	Residential	2746.666016	$ 1,994,080	$ 997,040	1380.633667	-0.11	1380.62915	-0.11	1380.637695	-0.10	1380.638184	-0.10	3.55	$ 70,737	0.00	$ -	$ 70,737.18	3.58	$ 71,458	0.00	$ -	$ 71,457.76
156	1373.4617	1373.71167	Residential	6659.882751	$ 4,835,075	$ 2,417,537	1373.625244	-0.09	1373.630005	-0.08	1373.626709	-0.08	1373.626709	-0.08	3.67	$ 177,609	0.00	$ -	$ 177,608.74	3.66	$ 176,971	0.00	$ -	$ 176,971.28
157	1376.4575	1376.70752	Residential	4604.081482	$ 3,342,563	$ 1,671,282	1376.469116	-0.24	1376.470581	-0.24	1376.488281	-0.22	1376.477417	-0.23	3.052244	$ 102,023	0	$ -	$ 102,023.18	3.079588	$ 102,937	0	$ -	$ 102,937.17
158	1374.9485	1375.198486	Residential	5014.781799	$ 3,640,732	$ 1,820,366	1374.963501	-0.23	1374.963257	-0.24	1374.966919	-0.23	1374.966919	-0.23	3.059084	$ 111,373	0	$ -	$ 111,373.04	3.073732	$ 111,906	0	$ -	$ 111,906.33

10-Year and 100-Year Proposed Building Damages in Area K

															Proposed								
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
159	1368.0206	1368.27063	Residential	8032.684509	$ 5,831,729	$ 2,915,864	1368.052124	-0.22	1368.050049	-0.22	1368.055664	-0.21	1368.055664	-0.21	3.12	$ 181,814	0.00	$ -	$ 181,814.41	3.14	$ 183,124	0.00	$ -	$ 183,124.22
160	1364.0402	1364.290161	Residential	7812.84906	$ 5,672,128	$ 2,836,064	1364.276733	-0.01	1364.280029	-0.01	1364.278564	-0.01	1364.278687	-0.01	3.959472	$ 224,586	0	$ -	$ 224,586.34	3.954104	$ 224,282	0	$ -	$ 224,281.86
161	1379.0062	1379.256226	Residential	4673.951538	$ 3,393,289	$ 1,696,644	1379.0354	-0.22	1379.033325	-0.22	1379.041504	-0.21	1379.041504	-0.21	3.108396	$ 105,477	0	$ -	$ 105,476.85	3.141112	$ 106,587	0	$ -	$ 106,587.00
162	1351.6937	1351.943726	Residential	7145.512817	$ 5,187,642	$ 2,593,821	1351.736572	-0.21	1351.73999	-0.20	1351.739258	-0.20	1351.739258	-0.20	3.185056	$ 165,229	0	$ -	$ 165,229.31	3.182128	$ 165,077	0	$ -	$ 165,077.42
163	1356.0435	1356.293457	Residential	8016.633606	$ 5,820,076	$ 2,910,038	1356.115234	-0.18	1356.119995	-0.17	1356.119141	-0.17	1356.119141	-0.17	3.31	$ 192,421	0.00	$ -	$ 192,420.56	3.30	$ 192,222	0.00	$ -	$ 192,221.75
164	1353.3625	1353.612549	Residential	5229.221985	$ 3,796,415	$ 1,898,208	1353.494629	-0.12	1353.48999	-0.12	1353.49646	-0.12	1353.49646	-0.12	3.509764	$ 133,245	0	$ -	$ 133,245.21	3.535644	$ 134,228	0	$ -	$ 134,227.72
165	1383.4026	1383.652588	Residential	5383.90863	$ 3,908,718	$ 1,954,359	1383.43689	-0.22	1383.439697	-0.21	1383.464355	-0.19	1383.744873	0.09	3.148436	$ 123,063	0	$ -	$ 123,063.47	6.76855	$ 264,564	3.87597	$ 75,750	$ 340,313.87
166	1372.4465	1372.696533	Residential	5019.003479	$ 3,643,797	$ 1,821,898	1372.785156	0.09	1372.790039	0.09	1372.791992	0.10	1372.786621	0.09	6.80518	$ 247,967	3.927252	$ 71,551	$ 319,517.45	6.70264	$ 244,231	3.783696	$ 68,935	$ 313,165.66
167	1362.7709	1363.020874	Residential	89.848938	$ 65,230	$ 32,615	1362.811768	-0.21	1362.813477	-0.21	1362.815186	-0.21	1362.815186	-0.21	3.170412	$ 2,068	0	$ -	$ 2,068.07	3.177248	$ 2,073	0	$ -	$ 2,072.53
168	1365.083	1365.333008	Residential	7013.951599	$ 5,092,129	$ 2,546,064	1365.13855	-0.19	1365.140015	-0.19	1365.140991	-0.19	1365.140991	-0.19	3.23	$ 164,375	0.00	$ -	$ 164,375.35	3.23	$ 164,574	0.00	$ -	$ 164,574.14
169	1362.7377	1362.987671	Residential	5120.312622	$ 3,717,347	$ 1,858,673	1362.824219	-0.16	1362.821777	-0.17	1362.997803	0.01	1362.758911	-0.23	3.336424	$ 124,026	0	$ -	$ 124,026.46	3.08496	$ 114,679	0	$ -	$ 114,678.67
170	1360.1978	1360.447754	Residential	793.997314	$ 576,442	$ 288,221	1360.297607	-0.15	1360.296753	-0.15	1360.363892	-0.08	1360.36377	-0.08	3.395996	$ 19,576	0	$ -	$ 19,575.95	3.664064	$ 21,121	0	$ -	$ 21,121.21
171	1376.9437	1377.193726	Residential	6148.210022	$ 4,463,600	$ 2,231,800	1377.074829	-0.12	1377.073853	-0.12	1377.077393	-0.12	1377.077393	-0.12	3.520508	$ 157,141	0	$ -	$ 157,141.41	3.534668	$ 157,773	0	$ -	$ 157,773.46
172	1382.8645	1383.114502	Residential	417.621704	$ 303,193	$ 151,597	1383.075317	-0.04	1383.074097	-0.04	1383.662109	0.55	1383.49707	0.38	3.83838	$ 11,638	0	$ -	$ 11,637.71	15.47704	$ 46,925	16.067856	$ 24,358	$ 71,283.69
173	1382.9543	1383.204346	Residential	7021.7854	$ 5,097,816	$ 2,548,908	1383.303101	0.10	1383.30249	0.10	1383.720337	0.52	1384.014648	0.81	6.94	$ 354,009	4.12	$ 105,067	$ 459,075.89	28.31	$ 1,443,144	34.03	$ 867,462	$ 2,310,605.69
174	1360.3568	1360.606812	Residential	987.539978	$ 716,954	$ 358,477	1360.389648	-0.22	1360.390015	-0.22	1360.392334	-0.21	1360.392334	-0.21	3.132812	$ 22,461	0	$ -	$ 22,460.82	3.142088	$ 22,527	0	$ -	$ 22,527.33
175	1371.0583	1371.30835	Residential	4343.393616	$ 3,153,304	$ 1,576,652	1371.106812	-0.20	1371.103516	-0.20	1371.108887	-0.20	1371.108887	-0.20	3.180664	$ 100,296	0	$ -	$ 100,296.00	3.202148	$ 100,973	0	$ -	$ 100,973.45
176	1363.4857	1363.735718	Residential	1258.273743	$ 913,507	$ 456,753	1363.566162	-0.17	1363.56543	-0.17	1363.714722	-0.02	1363.61731	-0.12	3.318848	$ 30,318	0	$ -	$ 30,317.90	3.526368	$ 32,214	0	$ -	$ 32,213.61
177	1382.4683	1382.718262	Residential	5926.931763	$ 4,302,952	$ 2,151,476	1382.520874	-0.20	1382.522339	-0.20	1383.109375	0.39	1382.892212	0.17	3.216308	$ 138,396	0	$ -	$ 138,396.20	9.2185	$ 396,668	7.3059	$ 157,185	$ 553,852.37
178	1367.0305	1367.280518	Residential	7461.676697	$ 5,417,177	$ 2,708,589	1367.084473	-0.20	1367.079956	-0.20	1367.086426	-0.19	1367.086304	-0.19	3.197752	$ 173,228	0	$ -	$ 173,227.89	3.223144	$ 174,603	0	$ -	$ 174,603.42
179	1366.8289	1367.078857	Residential	8772.664185	$ 6,368,954	$ 3,184,477	1367.044067	-0.03	1367.04834	-0.03	1367.045654	-0.03	1367.045654	-0.03	3.877932	$ 246,984	0	$ -	$ 246,983.71	3.867188	$ 246,299	0	$ -	$ 246,299.43
180	1364.3354	1364.585449	Residential	1242.911804	$ 902,354	$ 451,177	1364.427124	-0.16	1364.428833	-0.16	1364.576904	-0.01	1364.416138	-0.17	3.373536	$ 30,441	0	$ -	$ 30,441.24	3.322756	$ 29,983	0	$ -	$ 29,983.02
181	1385.5297	1385.779663	Residential	4264.038574	$ 3,095,692	$ 1,547,846	1385.641846	-0.14	1385.642456	-0.14	1385.643677	-0.14	1385.643799	-0.14	3.451172	$ 106,838	0	$ -	$ 106,837.66	3.456544	$ 107,004	0	$ -	$ 107,003.96
182	1374.311	1374.561035	Residential	5276.539246	$ 3,830,767	$ 1,915,384	1374.384644	-0.18	1374.380005	-0.18	1374.387817	-0.17	1374.387817	-0.17	3.27588	$ 125,491	0	$ -	$ 125,491.35	3.307128	$ 126,688	0	$ -	$ 126,688.38
183	1358.566	1358.81604	Residential	7594.135925	$ 5,513,343	$ 2,756,671	1358.577881	-0.24	1358.579956	-0.24	1358.580444	-0.24	1358.580444	-0.24	3.06	$ 168,469	0.00	$ -	$ 168,469.23	3.06	$ 168,577	0.00	$ -	$ 168,576.85
184	1380.236	1380.485962	Residential	4827.576904	$ 3,504,821	$ 1,752,410	1380.30188	-0.18	1380.304321	-0.18	1380.490601	0.00	1380.304321	-0.18	3.273436	$ 114,728	0	$ -	$ 114,728.07	3.273436	$ 114,728	0	$ -	$ 114,728.07
185	1363.7234	1363.973389	Residential	10285.24762	$ 7,467,090	$ 3,733,545	1363.945801	-0.03	1363.949951	-0.02	1363.94751	-0.03	1363.947388	-0.03	3.906248	$ 291,683	0	$ -	$ 291,683.04	3.895996	$ 290,918	0	$ -	$ 290,917.52
186	1364.5854	1364.835449	Residential	6041.695801	$ 4,386,271	$ 2,193,136	1364.953857	0.12	1364.951416	0.12	1365.078857	0.24	1364.9823	0.15	7.48	$ 328,050	4.87	$ 106,819	$ 434,868.83	8.41	$ 368,689	6.17	$ 135,267	$ 503,956.28
187	1358.5145	1358.764526	Residential	4361.768433	$ 3,166,644	$ 1,583,322	1358.786499	0.02	1358.790039	0.03	1358.788574	0.02	1358.788574	0.02	4.76539	$ 150,903	1.071546	$ 16,966	$ 167,868.95	4.72144	$ 149,511	1.010016	$ 15,992	$ 165,503.00
188	1364.4982	1364.748169	Residential	2346.480347	$ 1,703,545	$ 851,772	1364.658569	-0.09	1364.660034	-0.09	1364.901978	0.15	1364.857544	0.11	3.65	$ 62,136	0.00	$ -	$ 62,136.11	7.28	$ 124,039	4.59	$ 39,128	$ 163,167.64
189	1349.9558	1350.205811	Residential	2159.600586	$ 1,567,870	$ 783,935	1349.965942	-0.24	1349.969971	-0.24	1349.987671	-0.22	1349.968506	-0.24	3.06	$ 47,924	0.00	$ -	$ 47,924.14	3.05	$ 47,832	0.00	$ -	$ 47,832.27
190	1378.7681	1379.018066	Residential	11906.15375	$ 8,643,868	$ 4,321,934	1378.897461	-0.12	1378.895508	-0.12	1378.978882	-0.04	1378.978882	-0.04	3.51	$ 303,380	0.00	$ -	$ 303,379.70	3.84	$ 332,207	0.00	$ -	$ 332,206.65
191	1368.9064	1369.156372	Residential	8501.921448	$ 6,172,395	$ 3,086,197	1368.998169	-0.16	1369	-0.16	1369.000854	-0.16	1369.000854	-0.16	3.37	$ 208,288	0.00	$ -	$ 208,288.21	3.38	$ 208,499	0.00	$ -	$ 208,499.06
192	1386.421	1386.671021	Residential	7075.245361	$ 5,136,628	$ 2,568,314	1386.675415	0.00	1386.675537	0.00	1387.56189	0.89	1387.329956	0.66	4.14	$ 212,424	0.19	$ 4,871	$ 217,295.60	23.77	$ 1,220,876	27.68	$ 710,788	$ 1,931,664.19
193	1362.7275	1362.977539	Residential	9759.761292	$ 7,085,587	$ 3,542,793	1362.987305	0.01	1362.98999	0.01	1362.989624	0.01	1362.989624	0.01	4.37	$ 309,890	0.52	$ 18,527	$ 328,417.01	4.36	$ 309,112	0.51	$ 17,982	$ 327,094.42
194	1359.8994	1360.149414	Residential	5130.461975	$ 3,724,715	$ 1,862,358	1360.129272	-0.02	1360.109985	-0.04	1360.291382	0.14	1360.05542	-0.09	3.842284	$ 143,114	0	$ -	$ 143,114.14	3.624024	$ 134,985	0	$ -	$ 134,984.58
195	1371.9503	1372.200317	Residential	5811.423157	$ 4,219,093	$ 2,109,547	1372.028442	-0.17	1372.030029	-0.17	1372.031372	-0.17	1372.031372	-0.17	3.318848	$ 140,025	0	$ -	$ 140,025.29	3.32422	$ 140,252	0	$ -	$ 140,251.94
196	1375.9243	1376.174316	Residential	3570.859131	$ 2,592,444	$ 1,296,222	1375.952637	-0.22	1375.952393	-0.22	1375.955322	-0.22	1375.955444	-0.22	3.112308	$ 80,685	0	$ -	$ 80,684.83	3.124512	$ 81,001	0	$ -	$ 81,001.22
197	1382.3914	1382.641357	Residential	4534.560791	$ 3,292,091	$ 1,646,046	1382.78833	0.15	1382.78894	0.15	1382.793213	0.15	1382.793091	0.15	8.43	$ 277,441	6.20	$ 102,030	$ 379,470.56	8.55	$ 281,540	6.37	$ 104,900	$ 386,439.95
198	1372.3955	1372.645508	Residential	3843.095703	$ 2,790,087	$ 1,395,044	1372.505371	-0.14	1372.508545	-0.14	1372.546753	-0.10	1372.546753	-0.10	3.452148	$ 96,318	0	$ -	$ 96,317.95	3.60498	$ 100,582	0	$ -	$ 100,582.10
199	1378.7993	1379.049316	Residential	5130.287109	$ 3,724,588	$ 1,862,294	1379.104492	0.06	1379.099976	0.05	1379.106445	0.06	1379.106323	0.06	5.52	$ 205,590	2.13	$ 39,624	$ 245,214.24	5.71	$ 212,682	2.39	$ 44,589	$ 257,270.62
200	1369.2933	1369.543335	Residential	4194.780518	$ 3,045,411	$ 1,522,705	1369.405518	-0.14	1369.407227	-0.14	1369.692261	0.15	1369.369751	-0.17	3.455568	$ 105,236	0	$ -	$ 105,236.24	3.305664	$ 100,671	0	$ -	$ 100,671.04
201	1384.4399	1384.689941	Residential	4500.588989	$ 3,267,428	$ 1,633,714	1385.165039	0.48	1385.160034	0.47	1385.166504	0.48	1385.166626	0.48	18.10279	$ 591,496	19.743906	$ 322,559	$ 914,054.48	18.30055	$ 597,957	20.02077	$ 327,082	$ 925,039.31
202	1386.7983	1387.04834	Residential	4524.202332	$ 3,284,571	$ 1,642,285	1387.091187	0.04	1387.081299	0.03	1387.682007	0.63	1386.833618	-0.21	4.98877	$ 163,860	1.384278	$ 22,734	$ 186,593.48	3.141112	$ 103,172	0	$ -	$ 103,172.05
203	1372.1863	1372.436279	Residential	4600.928711	$ 3,340,274	$ 1,670,137	1372.266113	-0.17	1372.266479	-0.17	1372.269165	-0.17	1372.269287	-0.17	3.3208	$ 110,924	0	$ -	$ 110,923.83	3.332032	$ 111,299	0	$ -	$ 111,299.01
204	1351.7186	1351.968628	Residential	927.027771	$ 673,022	$ 336,511	1351.785278	-0.18	1351.790039	-0.18	1351.787354	-0.18	1351.787476	-0.18	3.285644	$ 22,113	0	$ -	$ 22,113.11	3.275392	$ 22,044	0	$ -	$ 22,044.11
205	1373.9084	1374.158447	Residential	6269.81665	$ 4,551,887	$ 2,275,943	1374.034424	-0.12	1374.030029	-0.13	1374.037842	-0.12	1374.037842	-0.12	3.486328	$ 158,694	0	$ -	$ 158,693.71	3.51758	$ 160,116	0	$ -	$ 160,116.26
206	1365.4144	1365.664429	Residential	6051.600159	$ 4,393,462	$ 2,196,731	1365.444336	-0.22	1365.444214	-0.22	1365.870117	0.21	1365.701416	0.04	3.11914	$ 137,038	0	$ -	$ 137,038.22	5.10961	$ 224,489	1.553454	$ 34,125	$ 258,613.96
207	1353.8657	1354.115723	Residential	755.925842	$ 548,802	$ 274,401	1353.93396	-0.18	1353.930054	-0.19	1353.936157	-0.18	1353.936157	-0.18	3.26	$ 17,876	0.00	$ -	$ 17,876.26	3.28	$ 18,010	0.00	$ -	$ 18,010.24
208	1369.4449	1369.694946	Residential	7994.761414	$ 5,804,197	$ 2,902,098	1369.686035	-0.01	1369.689941	-0.01	1369.687744	-0.01	1369.687744	-0.01	3.98	$ 231,006	0.00	$ -	$ 231,005.87	3.97	$ 230,496	0.00	$ -	$ 230,495.80
209	1356.6626	1356.912598	Residential	6371.821533	$ 4,625,942	$ 2,312,971	1356.790527	-0.12	1356.794678	-0.12	1357.093018	0.18	1356.822266	-0.09	3.52832	$ 163,218	0	$ -	$ 163,218.05	3.638672	$ 168,323	0	$ -	$ 168,322.87
210	1378.3789	1378.628906	Residential	1189.775024	$ 863,777	$ 431,888	1378.425903	-0.20	1378.430054	-0.20	1378.454956	-0.17	1378.473999	-0.15	3.20	$ 27,681	0.00	$ -	$ 27,680.52	3.38	$ 29,199	0.00	$ -	$ 29,198.86
211	1372.8145	1373.064453	Residential	7189.552734	$ 5,219,615	$ 2,609,808	1372.927002	-0.14	1372.930054	-0.13	1372.929077	-0.14	1372.929199	-0.14	3.462404	$ 180,724	0	$ -	$ 180,724.17	3.458984	$ 180,546	0	$ -	$ 180,545.66
212	1384.6993	1384.949341	Residential	4849.682129	$ 3,520,869	$ 1,760,435	1384.800659	-0.15	1384.798706	-0.15	1384.845337	-0.10	1384.848267	-0.10	3.40	$ 119,620	0.00	$ -	$ 119,620.12	3.60	$ 126,600	0.00	$ -	$ 126,600.04
213	1374.1124	1374.362427	Residential	5543.06311	$ 4,024,264	$ 2,012,132	1374.303589	-0.06	1374.300049	-0.06	1375.235962	0.87	1374.947021	0.58	3.75	$ 150,930	0.00	$ -	$ 150,929.53	21.54	$ 866,739	24.55	$ 494,038	$ 1,360,776.40
214	1351.9253	1352.175293	Residential	7474.652283	$ 5,426,598	$ 2,713,299	1352.022827	-0.15	1352.020386	-0.15	1352.025024	-0.15	1352.025146	-0.15	3.38	$ 183,439	0.00	$ -	$ 183,439.18	3.40	$ 184,472	0.00	$ -	$ 184,472.41
215	1372.7062	1372.956177	Residential	365.232666	$ 265,159	$ 132,579	1372.750366	-0.21	1372.75	-0.21	1372.754272	-0.20	1372.754272	-0.20	3.175292	$ 8,420	0	$ -	$ 8,419.57	3.19238	$ 8,465	0	$ -	$ 8,464.88
216	1383.9557	1384.205688	Residential	10282.73602	$ 7,465,266	$ 3,732,633	1384.018188	-0.19	1384.02002	-0.19	1384.431885	0.23	1384.276855	0.07	3.257328	$ 243,168	0	$ -	$ 243,168.21	6.13501	$ 457,995	2.989014	$ 111,569	$ 569,563.77
217	1379.6527	1379.90271	Residential	5808.621948	$ 4,217,060	$ 2,108,530	1379.669067	-0.23	1379.665283	-0.24	1379.678833	-0.22	1379.678833	-0.22	3.050292	$ 128,633	0	$ -	$ 128,632.63	3.104492	$ 130,918	0	$ -	$ 130,918.28
218	1378.8989	1379.148926	Residential	5431.955078	$ 3,943,599	$ 1,971,800	1378.959473	-0.19	1378.959961	-0.19	1379.071411	-0.08	1379.14856	0.00	3.24414	$ 127,936	0	$ -	$ 127,935.89	3.998536	$ 157,686	0	$ -	$ 157,686.24
219	1361.0637	1361.313721	Residential	697.469788	$ 506,363	$ 253,182	1361.248169	-0.07	1361.244873	-0.07	1361.327881	0.01	1361.283569	-0.03	3.724608	$ 18,860	0	$ -	$ 18,860.04	3.879392	$ 19,644	0	$ -	$ 19,643.81
220	1363.9265	1364.176514	Residential	5530.390808	$ 4,015,064	$ 2,007,532	1364.312012	0.14	1364.307861	0.13	1364.484375	0.31	1364.317505	0.14	7.94	$ 318,813	5.52	$ 110,747	$ 429,559.50	8.23	$ 330,429	5.92	$ 118,878	$ 449,307.35
221	1365.9146	1366.164551	Residential	7421.591003	$ 5,388,075	$ 2,694,038	1365.946289	-0.22	1365.947144	-0.22	1365.94812	-0.22	1365.94812	-0.22	3.130372	$ 168,667	0	$ -	$ 168,666.79	3.134276	$ 168,877	0	$ -	$ 168,877.14
222	1355.2457	1355.495728	Residential	6237.714416	$ 4,528,581	$ 2,264,290	1355.38916	-0.11	1355.387085	-0.11	1355.394287	-0.10	1355.394287	-0.10	3.565428	$ 161,463	0	$ -	$ 161,463.28	3.594236	$ 162,768	0	$ -	$ 162,767.88
223	1367.9564	1368.206421	Residential	6903.520142	$ 5,011,956	$ 2,505,978	1368.126953	-0.08	1368.130005	-0.08	1368.12915	-0.08	1368.12915	-0.08	3.694336	$ 185,158	0.00	$ -	$ 185,158.48	3.690916	$ 184,987	0.00	$ -	$ 184,987.07
224	1367.7229	1367.9729	Residential	7568.887512	$ 5,495,012	$ 2,747,506	1367.817627	-0.16	1367.819946	-0.15	1367.859985	-0.11	1367.819946	-0.15	3.388184	$ 186,181	0	$ -	$ 186,181.13	3.388184	$ 186,181	0	$ -	$ 186,181.13
225	1372.2632	1372.513184	Residential	6819.513489	$ 4,950,967	$ 2,475,483	1372.534302	0.02	1372.530029	0.02	1372.535645	0.02	1372.535645	0.02	4.51	$ 223,058	0.71	$ 17,514	$ 240,572.18	4.67	$ 231,400	0.94	$ 23,353	$ 254,752.54
226	1382.7257	1382.975708	Residential	414.181458	$ 300,696	$ 150,348	1382.818604	-0.16	1382.819946	-0.16	1382.976807	0.00	1383.06543	0.09	3.376952	$ 10,154	0.00	$ -	$ 10,154.35	6.69166	$ 20,122	3.77	$ 5,666	$ 25,787.13
227	1377.9037	1378.153687	Residential	6325.296997	$ 4,592,166	$ 2,296,083	1377.931274	-0.22	1377.93042	-0.22	1377.95105	-0.20	1377.956909	-0.20	3.11	$ 142,675	0.00	$ -	$ 142,675.46	3.21	$ 147,541	0.00	$ -	$ 147,541.14
228	1369.9781	1370.228149	Residential	7107.003967	$ 5,159,685	$ 2,579,842	1370.020264	-0.21	1370.02002	-0.21	1370.023315	-0.20	1370.023315	-0.20	3.17	$ 163,432	0.00	$ -	$ 163,432.19	3.18	$ 164,112	0.00	$ -	$ 164,112.24
229	1366.7046	1366.95459	Residential	6420.218262	$ 4,661,078	$ 2,330,539	1366.699341	-0.26	1366.699951	-0.25	1366.702881	-0.25	1366.702881	-0.25	2.98	$ 138,967	0.00	$ -	$ 138,967.44	2.99	$ 139,514	0.00	$ -	$ 139,513.72
230	1355.0955	1355.345459	Residential	7691.567017	$ 5,584,078	$ 2,792,039	1355.132324	-0.21	1355.130005	-0.22	1355.30835	-0.04	1355.136841	-0.21	3.138184	$ 175,239	0	$ -	$ 175,238.63	3.165528	$ 176,766	0	$ -	$ 176,765.54
231	1372.5229	1372.772949	Residential	7904.628235	$ 5,738,760	$ 2,869,380	1372.625	-0.15	1372.622925	-0.15	1372.852051	0.08	1372.627319	-0.15	3.399904	$ 195,112	0	$ -	$ 195,112.33	3.41748	$ 196,121	0	$ -	$ 196,120.98
232	1373.4587	1373.70874	Residential	6641.056396	$ 4,821,407	$ 2,410,703	1373.506714	-0.20	1373.506592	-0.20	1373.51062	-0.20	1373.51062	-0.20	3.19	$ 153,871	0.00	$ -	$ 153,870.77	3.21	$ 154,648	0.00	$ -	$ 154,647.59
233	1368.4092	1368.65918	Residential	650.331116	$ 472,140	$ 236,070	1368.462769	-0.20	1368.466675	-0.19	1368.465942	-0.19	1368.465942	-0.19	3.22998	$ 15,250	0	$ -	$ 15,250.04	3.227048	$ 15,236	0	$ -	$ 15,236.20
234	1360.5137	1360.763672	Residential	6230.277466	$ 4,523,181	$ 2,261,591	1360.886719	0.12	1360.882568	0.12	1361.106689	0.34	1360.874512	0.11	7.56688	$ 342,264	4.993632	$ 112,936	$ 455,199.23	7.3252	$ 331,332	4.65528	$ 105,283	$ 436,615.47
235	1353.9615	1354.211548	Residential	6218.86676	$ 4,514,897	$ 2,257,449	1354.11731	-0.09	1354.119995	-0.09	1354.119385	-0.09	1354.119385	-0.09	3.63	$ 164,062	0.00	$ -	$ 164,061.80	3.63	$ 163,952	0.00	$ -	$ 163,951.63
236	1361.0813	1361.331299	Residential	552.338257	$ 400,998	$ 200,499	1361.399292	0.07	1361.398926	0.07	1361.947754	0.62	1361.722046	0.39	6.02881	$ 24,175	2.840334	$ 5,695	$ 29,870.22	15.72241	$ 63,046	16.411374	$ 32,905	$ 95,951.09

10-Year and 100-Year Proposed Building Damages in Area K

															Proposed								
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
237	1363.077	1363.327026	Residential	10609.44226	$ 7,702,455	$ 3,851,228	1363.127563	-0.20	1363.130005	-0.20	1363.129761	-0.20	1363.129761	-0.20	3.21	$ 247,396	0.00	$ -	$ 247,396.39	3.21	$ 247,321	0.00	$ -	$ 247,321.21
238	1349.4791	1349.729126	Residential	1499.625549	$ 1,088,728	$ 544,364	1349.505493	-0.22	1349.505371	-0.22	1349.608521	-0.12	1349.554077	-0.18	3.10498	$ 33,805	0	$ -	$ 33,804.79	3.299804	$ 35,926	0	$ -	$ 35,925.89
239	1368.2323	1368.4823	Residential	6792.286804	$ 4,931,200	$ 2,465,600	1368.323364	-0.16	1368.321777	-0.16	1368.325684	-0.16	1368.325684	-0.16	3.36	$ 165,585	0.00	$ -	$ 165,585.17	3.37	$ 166,356	0.00	$ -	$ 166,355.81
240	1366.8684	1367.118408	Residential	6303.598511	$ 4,576,413	$ 2,288,206	1366.92749	-0.19	1366.926025	-0.19	1366.931519	-0.19	1366.931519	-0.19	3.230468	$ 147,840	0	$ -	$ 147,839.54	3.252444	$ 148,845	0	$ -	$ 148,845.25
241	1381.4254	1381.675415	Residential	8258.813843	$ 5,995,899	$ 2,997,949	1381.619629	-0.06	1381.620728	-0.05	1381.691772	0.02	1381.666382	-0.01	3.781252	$ 226,720	0	$ -	$ 226,720.05	3.963868	$ 237,670	0	$ -	$ 237,669.52
242	1374.0637	1374.313721	Residential	1514.909546	$ 1,099,824	$ 549,912	1374.154053	-0.16	1374.150024	-0.16	1374.155151	-0.16	1374.155273	-0.16	3.345212	$ 36,791	0	$ -	$ 36,791.46	3.366208	$ 37,022	0	$ -	$ 37,022.37
243	1361.5778	1361.827759	Residential	5731.376465	$ 4,160,979	$ 2,080,490	1361.610352	-0.22	1361.609985	-0.22	1361.613403	-0.21	1361.613403	-0.21	3.13	$ 130,193	0.00	$ -	$ 130,193.05	3.14	$ 130,762	0.00	$ -	$ 130,761.94
244	1368.0669	1368.316895	Residential	820.711121	$ 595,836	$ 297,918	1368.264038	-0.05	1368.26001	-0.06	1368.454102	0.14	1368.264893	-0.05	3.77246	$ 22,478	0	$ -	$ 22,477.69	3.791992	$ 22,594	0	$ -	$ 22,594.06
245	1377.4694	1377.71936	Residential	9322.061707	$ 6,767,817	$ 3,383,908	1377.481201	-0.24	1377.478882	-0.24	1377.491089	-0.23	1377.491089	-0.23	3.04	$ 205,612	0.00	$ -	$ 205,612.23	3.09	$ 208,917	0.00	$ -	$ 208,916.82
246	1370.7789	1371.028931	Residential	4462.246643	$ 3,239,591	$ 1,619,796	1370.87854	-0.15	1370.880005	-0.15	1370.880981	-0.15	1370.880981	-0.15	3.404296	$ 110,285	0	$ -	$ 110,285.27	3.4082	$ 110,412	0	$ -	$ 110,411.74
247	1383.4347	1383.684692	Residential	5164.128662	$ 3,749,157	$ 1,874,579	1383.55481	-0.13	1383.557129	-0.13	1383.557861	-0.13	1383.557861	-0.13	3.49	$ 130,836	0.00	$ -	$ 130,836.15	3.49	$ 130,946	0.00	$ -	$ 130,945.92
248	1383.4193	1383.669312	Residential	5801.94397	$ 4,212,211	$ 2,106,106	1383.576904	-0.09	1383.579956	-0.09	1383.578613	-0.09	1383.578491	-0.09	3.642576	$ 153,433	0.00	$ -	$ 153,433.00	3.636716	$ 153,186	0.00	$ -	$ 153,186.16
249	1364.1787	1364.428711	Residential	4602.597412	$ 3,341,486	$ 1,670,743	1364.308594	-0.12	1364.310059	-0.12	1364.533447	0.10	1364.389771	-0.04	3.53	$ 117,800	0.00	$ -	$ 117,800.47	3.84	$ 128,455	0.00	$ -	$ 128,454.73
250	1378.4397	1378.689697	Residential	5496.526245	$ 3,990,478	$ 1,995,239	1378.47644	-0.21	1378.47998	-0.21	1378.478271	-0.21	1378.478271	-0.21	3.16	$ 126,144	0.00	$ -	$ 126,144.28	3.15	$ 125,871	0.00	$ -	$ 125,871.49
251	1380.9373	1381.187256	Residential	5218.038513	$ 3,788,296	$ 1,894,148	1380.941772	-0.25	1380.939819	-0.25	1380.987305	-0.20	1381.089478	-0.10	3.01	$ 114,037	0.00	$ -	$ 114,037.25	3.61	$ 136,715	0.00	$ -	$ 136,715.36
252	1384.512	1384.761963	Residential	4131.500061	$ 2,999,469	$ 1,499,735	1384.564697	-0.20	1384.560059	-0.20	1384.589355	-0.17	1384.589355	-0.17	3.192384	$ 95,755	0	$ -	$ 95,754.57	3.309568	$ 99,269	0	$ -	$ 99,269.47
253	1359.9803	1360.230347	Residential	2268.955322	$ 1,647,262	$ 823,631	1360.014893	-0.22	1360.013794	-0.22	1360.255005	0.02	1360.105713	-0.12	3.133788	$ 51,622	0	$ -	$ 51,621.69	3.501464	$ 57,678	0	$ -	$ 57,678.27
254	1352.5721	1352.822144	Residential	5705.019409	$ 4,141,844	$ 2,070,922	1352.655762	-0.17	1352.660034	-0.16	1352.8479	0.03	1352.69519	-0.13	3.35	$ 138,816	0.00	$ -	$ 138,816.39	3.49	$ 144,641	0.00	$ -	$ 144,640.82
255	1377.2522	1377.502197	Residential	6675.252869	$ 4,846,234	$ 2,423,117	1377.436279	-0.07	1377.435181	-0.07	1377.437622	-0.06	1377.437744	-0.06	3.73	$ 180,858	0.00	$ -	$ 180,858.34	3.74	$ 181,355	0.00	$ -	$ 181,355.17
256	1378.1875	1378.4375	Residential	1162.67511	$ 844,102	$ 422,051	1378.304199	-0.13	1378.302246	-0.14	1378.308716	-0.13	1378.308716	-0.13	3.458984	$ 29,197	0	$ -	$ 29,197.36	3.484864	$ 29,416	0	$ -	$ 29,415.81
257	1351.558	1351.807983	Residential	7151.573364	$ 5,192,042	$ 2,596,021	1351.605347	-0.20	1351.609985	-0.20	1351.660278	-0.15	1351.607544	-0.20	3.208008	$ 166,561	0	$ -	$ 166,561.13	3.198244	$ 166,054	0	$ -	$ 166,054.18
258	1352.8057	1353.055664	Residential	1599.585388	$ 1,161,299	$ 580,649	1352.888916	-0.17	1352.890991	-0.16	1353.143311	0.09	1352.966919	-0.09	3.341308	$ 38,803	0	$ -	$ 38,802.58	3.64502	$ 42,330	0	$ -	$ 42,329.58
259	1359.526	1359.776001	Residential	5013.345703	$ 3,639,689	$ 1,819,844	1359.563477	-0.21	1359.560059	-0.22	1359.815674	0.04	1359.676147	-0.10	3.14	$ 114,149	0.00	$ -	$ 114,149.09	3.60	$ 131,050	0.00	$ -	$ 131,050.06
260	1369.9309	1370.180908	Residential	1631.4505	$ 1,184,433	$ 592,217	1370.001343	-0.18	1370.003662	-0.18	1370.005859	-0.18	1370.005859	-0.18	3.29	$ 38,980	0.00	$ -	$ 38,979.88	3.30	$ 39,084	0.00	$ -	$ 39,083.97
261	1364.5201	1364.770142	Residential	6330.97168	$ 4,596,285	$ 2,298,143	1364.756348	-0.01	1364.76001	-0.01	1364.758057	-0.01	1364.758057	-0.01	3.959472	$ 181,989	0	$ -	$ 181,988.64	3.95166	$ 181,630	0	$ -	$ 181,629.57
262	1379.0126	1379.262573	Residential	11915.48267	$ 8,650,640	$ 4,325,320	1379.315308	0.05	1379.310059	0.05	1379.430786	0.17	1379.430786	0.17	5.42	$ 469,261	1.99	$ 86,265	$ 555,525.62	9.05	$ 782,571	7.06	$ 305,582	$ 1,088,152.21
263	1380.3851	1380.635132	Residential	839.351196	$ 609,369	$ 304,684	1380.475952	-0.16	1380.473145	-0.16	1380.871704	0.24	1380.726929	0.09	3.35	$ 20,426	0.00	$ -	$ 20,426.36	6.75	$ 41,156	3.86	$ 11,747	$ 52,903.26
264	1350.6312	1350.881226	Residential	11002.85187	$ 7,988,070	$ 3,994,035	1350.748291	-0.13	1350.744751	-0.14	1350.750366	-0.13	1350.750366	-0.13	3.4541	$ 275,916	0	$ -	$ 275,915.94	3.47656	$ 277,710	0	$ -	$ 277,710.06
265	1362.2693	1362.519287	Residential	8576.057251	$ 6,226,218	$ 3,113,109	1362.358276	-0.16	1362.359985	-0.16	1362.360718	-0.16	1362.360718	-0.16	3.362792	$ 209,375	0	$ -	$ 209,374.75	3.365724	$ 209,557	0	$ -	$ 209,557.30
266	1379.4694	1379.71936	Residential	541.316711	$ 392,996	$ 196,498	1379.508667	-0.21	1379.511963	-0.21	1379.52002	-0.20	1379.52002	-0.20	3.170412	$ 12,460	0	$ -	$ 12,459.59	3.20264	$ 12,586	0	$ -	$ 12,586.24
267	1375.348	1375.598022	Residential	5572.635681	$ 4,045,734	$ 2,022,867	1375.486694	-0.11	1375.48999	-0.11	1375.488647	-0.11	1375.488647	-0.11	3.567872	$ 144,347	0	$ -	$ 144,346.59	3.5625	$ 144,129	0	$ -	$ 144,129.26
268	1369.1	1369.349976	Residential	4953.879761	$ 3,596,517	$ 1,798,258	1369.13855	-0.21	1369.140015	-0.21	1369.140991	-0.21	1369.140991	-0.21	3.160156	$ 113,656	0	$ -	$ 113,655.54	3.16406	$ 113,796	0	$ -	$ 113,795.95
269	1375.8182	1376.068237	Residential	7317.905151	$ 5,312,799	$ 2,656,400	1375.90625	-0.16	1375.910034	-0.16	1375.908203	-0.16	1375.908203	-0.16	3.367188	$ 178,892	0	$ -	$ 178,891.94	3.359864	$ 178,503	0	$ -	$ 178,502.83
270	1372.4429	1372.692871	Residential	5703.677429	$ 4,140,870	$ 2,070,435	1372.499146	-0.19	1372.5	-0.19	1372.842041	0.15	1372.760498	0.07	3.228516	$ 133,689	0	$ -	$ 133,688.64	6.02881	$ 249,645	2.840334	$ 58,807	$ 308,452.44
271	1373.303	1373.552979	Residential	4983.422424	$ 3,617,965	$ 1,808,982	1373.359741	-0.19	1373.359985	-0.19	1373.362549	-0.19	1373.362549	-0.19	3.23	$ 116,789	0.00	$ -	$ 116,788.77	3.24	$ 117,160	0.00	$ -	$ 117,159.83
272	1374.13	1374.380005	Residential	1252.694458	$ 909,456	$ 454,728	1374.165894	-0.21	1374.165894	-0.21	1374.209473	-0.17	1374.31543	-0.06	3.14	$ 28,589	0.00	$ -	$ 28,589.26	3.74	$ 34,029	0.00	$ -	$ 34,029.12
273	1380.0908	1380.34082	Residential	6937.932373	$ 5,036,939	$ 2,518,469	1380.18396	-0.16	1380.179443	-0.16	1380.187744	-0.15	1380.187744	-0.15	3.354492	$ 168,964	0	$ -	$ 168,963.71	3.387696	$ 170,636	0	$ -	$ 170,636.18
274	1367.9772	1368.227173	Residential	913.789795	$ 663,411	$ 331,706	1368.055054	-0.17	1368.054565	-0.17	1368.118164	-0.11	1368.118652	-0.11	3.309568	$ 21,956	0	$ -	$ 21,956.05	3.565916	$ 23,657	0	$ -	$ 23,656.69
275	1385.3944	1385.644409	Residential	5771.407349	$ 4,190,042	$ 2,095,021	1385.609619	-0.03	1385.606689	-0.04	1385.611938	-0.03	1385.611938	-0.03	3.84912	$ 161,280	0	$ -	$ 161,279.73	3.870116	$ 162,159	0	$ -	$ 162,159.48
276	1387.2709	1387.520874	Residential	5552.046021	$ 4,030,785	$ 2,015,393	1387.311035	-0.21	1387.310547	-0.21	1387.504761	-0.02	1387.318115	-0.20	3.16	$ 127,320	0.00	$ -	$ 127,320.10	3.19	$ 128,540	0.00	$ -	$ 128,540.30
277	1367.6104	1367.860352	Residential	7009.434998	$ 5,088,850	$ 2,544,425	1367.910522	0.05	1367.907593	0.05	1367.91394	0.05	1367.91394	0.05	5.42	$ 275,675	1.98	$ 50,484	$ 326,159.19	5.61	$ 285,364	2.25	$ 57,267	$ 342,631.65
278	1363.4945	1363.744507	Residential	853.24762	$ 619,458	$ 309,729	1363.821899	0.08	1363.81604	0.07	1363.901367	0.16	1363.778931	0.03	6.14599	$ 38,072	3.004386	$ 9,305	$ 47,377.26	5.03272	$ 31,176	1.445808	$ 4,478	$ 35,653.66
279	1350.0875	1350.337524	Residential	10697.2514	$ 7,766,205	$ 3,883,102	1350.165649	-0.17	1350.170044	-0.17	1350.167847	-0.17	1350.167847	-0.17	3.33008	$ 258,621	0.00	$ -	$ 258,620.82	3.321292	$ 257,938	0.00	$ -	$ 257,938.33
280	1376.0103	1376.260254	Residential	5828.388794	$ 4,231,410	$ 2,115,705	1376.113281	-0.15	1376.110474	-0.15	1376.322021	0.06	1376.210327	-0.05	3.40088	$ 143,905	0	$ -	$ 143,905.19	3.800292	$ 160,806	0	$ -	$ 160,805.95
281	1363.2751	1363.525146	Residential	4981.87793	$ 3,616,843	$ 1,808,422	1363.585938	0.06	1363.589966	0.06	1363.587646	0.06	1363.587646	0.06	5.94	$ 215,007	2.72	$ 49,233	$ 264,240.07	5.88	$ 212,490	2.63	$ 47,471	$ 259,960.62
282	1364.8573	1365.1073	Residential	5441.521606	$ 3,950,545	$ 1,975,272	1364.873047	-0.23	1364.869995	-0.24	1365.18335	0.08	1365.019409	-0.09	3.05	$ 120,522	0.00	$ -	$ 120,522.43	3.65	$ 144,133	0.00	$ -	$ 144,133.09
283	1354.2184	1354.468384	Residential	8289.320374	$ 6,018,047	$ 3,009,023	1354.248779	-0.22	1354.25	-0.22	1354.251343	-0.22	1354.251343	-0.22	3.126464	$ 188,152	0	$ -	$ 188,152.06	3.131836	$ 188,475	0	$ -	$ 188,475.35
284	1372.8903	1373.140259	Residential	8222.430359	$ 5,969,484	$ 2,984,742	1373.056763	-0.08	1373.060059	-0.08	1373.05896	-0.08	1373.05896	-0.08	3.6792	$ 219,629	0.00	$ -	$ 219,629.27	3.674804	$ 219,367	0.00	$ -	$ 219,366.85
285	1378.4001	1378.650146	Residential	676.52594	$ 491,158	$ 245,579	1378.46167	-0.19	1378.463745	-0.19	1378.816895	0.17	1378.637695	-0.01	3.254396	$ 15,984	0.00	$ -	$ 15,984.22	3.950196	$ 19,402	0.00	$ -	$ 19,401.70
286	1368.6187	1368.868652	Residential	5465.292114	$ 3,967,802	$ 1,983,901	1368.747925	-0.12	1368.75	-0.12	1368.750244	-0.12	1368.750244	-0.12	3.525392	$ 139,881	0.00	$ -	$ 139,880.58	3.526368	$ 139,919	0.00	$ -	$ 139,919.30
287	1367.5726	1367.822632	Residential	1352.527161	$ 981,935	$ 490,967	1367.605469	-0.22	1367.606201	-0.22	1367.737671	-0.08	1367.611938	-0.21	3.134276	$ 30,777	0.00	$ -	$ 30,776.54	3.157224	$ 31,002	0.00	$ -	$ 31,001.88
288	1374.5093	1374.759277	Residential	7223.822937	$ 5,244,495	$ 2,622,248	1374.658447	-0.10	1374.660034	-0.10	1374.661987	-0.10	1374.661987	-0.10	3.603028	$ 188,961	0.00	$ -	$ 188,960.64	3.61084	$ 189,370	0.00	$ -	$ 189,370.34
289	1374.952	1375.202026	Residential	5736.555786	$ 4,164,740	$ 2,082,370	1375.108032	-0.09	1375.109985	-0.09	1375.367554	0.17	1375.110474	-0.09	3.631836	$ 151,257	0.00	$ -	$ 151,256.51	3.633792	$ 151,338	0.00	$ -	$ 151,337.97
290	1384.7537	1385.003662	Residential	5160.67395	$ 3,746,649	$ 1,873,325	1384.845093	-0.16	1384.845825	-0.16	1384.84729	-0.16	1384.84729	-0.16	3.368652	$ 126,212	0.00	$ -	$ 126,211.58	3.374512	$ 126,431	0.00	$ -	$ 126,431.13
291	1384.5807	1384.830688	Residential	5555.55072	$ 4,033,330	$ 2,016,665	1384.603516	-0.23	1384.602539	-0.23	1384.821777	-0.01	1384.624878	-0.21	3.087404	$ 124,525	0.00	$ -	$ 124,525.19	3.17676	$ 128,129	0.00	$ -	$ 128,129.21
292	1350.9303	1351.180298	Residential	1578.312317	$ 1,145,855	$ 572,927	1350.985352	-0.19	1350.98999	-0.19	1350.987427	-0.19	1350.987305	-0.19	3.238768	$ 37,112	0	$ -	$ 37,111.58	3.228028	$ 36,989	0	$ -	$ 36,988.51
293	1367.7457	1367.995728	Residential	11956.06262	$ 8,680,101	$ 4,340,051	1367.846802	-0.15	1367.847534	-0.15	1368.100586	0.10	1368.070801	0.08	3.407224	$ 295,751	0	$ -	$ 295,750.50	6.25219	$ 542,696	3.153066	$ 136,845	$ 679,541.10
294	1352.0001	1352.250122	Residential	344.753784	$ 250,291	$ 125,146	1352.016235	-0.23	1352.016724	-0.23	1352.041626	-0.21	1352.020752	-0.23	3.066408	$ 7,675	0	$ -	$ 7,674.95	3.08252	$ 7,715	0	$ -	$ 7,715.28
295	1368.4915	1368.741455	Residential	7669.678345	$ 5,568,186	$ 2,784,093	1368.560059	-0.18	1368.560059	-0.18	1368.562866	-0.18	1368.562988	-0.18	3.274416	$ 182,326	0	$ -	$ 182,325.59	3.286132	$ 182,978	0	$ -	$ 182,977.96
296	1366.8972	1367.147217	Residential	9063.669006	$ 6,580,224	$ 3,290,112	1367.174805	0.03	1367.174316	0.03	1367.441162	0.29	1367.081421	-0.07	4.81297	$ 316,704	1.138158	$ 37,447	$ 354,150.86	3.736816	$ 245,891	0	$ -	$ 245,890.85
297	1367.4869	1367.736938	Residential	8579.124695	$ 6,228,445	$ 3,114,222	1367.578857	-0.16	1367.579956	-0.16	1367.581543	-0.16	1367.581543	-0.16	3.372072	$ 210,028	0	$ -	$ 210,027.63	3.37842	$ 210,423	0	$ -	$ 210,423.02
298	1355.2068	1355.456787	Residential	9155.569641	$ 6,646,944	$ 3,323,472	1355.265381	-0.19	1355.27002	-0.19	1355.2677	-0.19	1355.2677	-0.19	3.252932	$ 216,221	0	$ -	$ 216,220.55	3.243652	$ 215,604	0	$ -	$ 215,603.72
299	1364.124	1364.374023	Residential	4618.256714	$ 3,352,854	$ 1,676,427	1364.23877	-0.14	1364.23999	-0.13	1364.339722	-0.03	1364.241455	-0.13	3.463868	$ 116,138	0	$ -	$ 116,138.45	3.469728	$ 116,335	0	$ -	$ 116,334.93
300	1376.0048	1376.254761	Residential	4963.528931	$ 3,603,522	$ 1,801,761	1376.107666	-0.15	1376.109985	-0.14	1376.109985	-0.14	1376.109985	-0.14	3.420896	$ 123,273	0	$ -	$ 123,272.74	3.420896	$ 123,273	0	$ -	$ 123,272.74
301	1379.886	1380.135986	Residential	7881.984436	$ 5,722,321	$ 2,861,160	1380.047241	-0.09	1380.050049	-0.09	1380.049561	-0.09	1380.049561	-0.09	3.656252	$ 209,222	0	$ -	$ 209,222.47	3.6543	$ 209,111	0	$ -	$ 209,110.77
302	1368.6685	1368.918457	Residential	5292.979675	$ 3,842,703	$ 1,921,352	1368.994873	0.08	1368.991821	0.07	1369.317749	0.40	1368.893799	-0.02	6.20092	$ 238,283	3.081288	$ 59,202	$ 297,485.33	3.901368	$ 149,918	0	$ -	$ 149,917.99
303	1367.4	1367.650024	Residential	424.157715	$ 307,939	$ 153,969	1367.44519	-0.20	1367.449951	-0.20	1367.513428	-0.14	1367.51355	-0.14	3.199708	$ 9,853	0	$ -	$ 9,853.13	3.454104	$ 10,637	0	$ -	$ 10,636.52
304	1378.8812	1379.131226	Residential	5535.167419	$ 4,018,532	$ 2,009,266	1378.9552	-0.18	1378.953247	-0.18	1378.95813	-0.17	1378.95813	-0.17	3.288084	$ 132,133	0	$ -	$ 132,132.69	3.307616	$ 132,918	0	$ -	$ 132,917.59
305	1366.5336	1366.783569	Residential	3380.404663	$ 2,454,174	$ 1,227,087	1367.192749	0.41	1367.193726	0.41	1367.414429	0.63	1367.108154	0.32	16.30471	$ 400,146	17.226594	$ 211,385	$ 611,531.20	13.73755	$ 337,143	13.63257	$ 167,283	$ 504,426.83
306	1380.2086	1380.458618	Residential	15858.52405	$ 11,513,288	$ 5,756,644	1380.320923	-0.14	1380.319946	-0.14	1380.324341	-0.13	1380.324341	-0.13	3.445312	$ 396,669	0	$ -	$ 396,668.71	3.462892	$ 398,693	0	$ -	$ 398,692.74
307	1371.6975	1371.94751	Residential	5749.80481	$ 4,174,358	$ 2,087,179	1371.821777	-0.13	1371.821655	-0.13	1371.824951	-0.12	1371.824829	-0.12	3.49658	$ 145,960	0	$ -	$ 145,959.78	3.509276	$ 146,490	0	$ -	$ 146,489.75
308	1377.5427	1377.792725	Residential	13799.37878	$ 10,018,349	$ 5,009,174	1377.736206	-0.06	1377.73999	-0.05	1377.738037	-0.05	1377.738037	-0.05	3.78906	$ 379,601	0	$ -	$ 379,601.25	3.781248	$ 378,819	0	$ -	$ 378,818.62
309	1377.3077	1377.557739	Residential	1204.42157	$ 874,410	$ 437,205	1377.368042	-0.19	1377.364624	-0.19	1377.489746	-0.07	1377.643188	0.09	3.22754	$ 28,222	0	$ -	$ 28,221.93	6.56347	$ 57,392	3.588858	$ 15,691	$ 73,082.31
310	1370.2943	1370.544312	Residential	1040.882263	$ 755,681	$ 377,840	1370.353149	-0.19	1370.353394	-0.19	1370.484985	-0.06	1370.348022	-0.20	3.236328	$ 24,456	0	$ -	$ 24,456.30	3.21484	$ 24,294	0	$ -	$ 24,293.92
311	1365.8914	1366.141357	Residential	4740.45105	$ 3,441,567	$ 1,720,784	1366.033447	-0.11	1366.035645	-0.11	1366.249756	0.11	1365.988525	-0.15	3.577152	$ 123,110	0	$ -	$ 123,110.10	3.388672	$ 116,623	0	$ -	$ 116,623.43
312	1381.6313	1381.881348	Residential	5565.741516	$ 4,040,728	$ 2,020,364	1381.801147	-0.08	1381.799072	-0.08	1381.812256	-0.07	1381.812378	-0.07	3.670896	$ 148,331	0	$ -	$ 148,330.94	3.72412	$ 150,482	0	$ -	$ 150,481.57
313	1357.6017	1357.851685	Residential	4709.370728	$ 3,419,003	$ 1,709,502	1357.810669	-0.04	1357.810059	-0.04	1358.27124	0.42	1358.062866	0.21	3.833496	$ 131,067	0	$ -	$ 131,067.35	10.33543	$ 353,369	8.869602	$ 151,626	$ 504,994.66
314	1381.8502	1382.10022	Residential	5632.723511	$ 4,089,357	$ 2,044,679	1381.916626	-0.18	1381.911987	-0.19	1381.931274	-0.17	1381.931152	-0.17	3.247068	$ 132,784	0	$ -	$ 132,784.21	3.323728	$ 135,919	0	$ -	$ 135,919.11
315	1384.3489	1384.598877	Residential	328.131775	$ 238,224	$ 119,112	1384.548584	-0.05	1384.546143	-0.05	1384.72168	0.12	1384.906738	0.31	3.789064	$ 9,026	0	$ -	$ 9,026.45	13.23583	$ 31,531	12.930162	$ 15,401	$ 46,932.23

10-Year and 100-Year Proposed Building Damages in Area K

															Proposed									
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
316	1361.4711	1361.721069	Residential	8114.740051	$ 5,891,301	$ 2,945,651	1361.568604	-0.15	1361.569946	-0.15	1361.571045	-0.15	1361.571045	-0.15	3.395508	$ 200,040	0	$ -	$ 200,039.61	3.399904	$ 200,299	0	$ -	$ 200,298.59
317	1360.3242	1360.574219	Residential	3291.969604	$ 2,389,970	$ 1,194,985	1360.664551	0.09	1360.660034	0.09	1360.869141	0.29	1360.613525	0.04	6.57445	$ 157,127	3.60423	$ 43,070	$ 200,197.38	5.17918	$ 123,781	1.650852	$ 19,727	$ 143,508.28
318	1360.4828	1360.732788	Residential	7044.700256	$ 5,114,452	$ 2,557,226	1360.483276	-0.25	1360.4823	-0.25	1360.608276	-0.12	1360.561768	-0.17	2.998048	$ 153,334	0	$ -	$ 153,333.74	3.31592	$ 169,591	0	$ -	$ 169,591.15
319	1375.0812	1375.331177	Residential	7783.893127	$ 5,651,106	$ 2,825,553	1375.328735	0.00	1375.329956	0.00	1375.860107	0.53	1375.114136	-0.22	3.995116	$ 225,768	0	$ -	$ 225,768.26	3.131836	$ 176,983	0	$ -	$ 176,983.38
320	1353.952	1354.202026	Residential	5427.761719	$ 3,940,555	$ 1,970,278	1354.112427	-0.09	1354.115601	-0.09	1354.115967	-0.09	1354.114624	-0.09	3.6543	$ 144,000	0	$ -	$ 143,999.70	3.650392	$ 143,846	0	$ -	$ 143,845.70
321	1366.7892	1367.039185	Residential	5971.685242	$ 4,335,443	$ 2,167,722	1366.812988	-0.23	1366.810303	-0.23	1367.24707	0.21	1366.943237	-0.10	3.084472	$ 133,726	0	$ -	$ 133,725.54	3.616208	$ 156,779	0	$ -	$ 156,778.65
322	1378.1312	1378.381226	Residential	5963.877625	$ 4,329,775	$ 2,164,888	1378.215454	-0.17	1378.214478	-0.17	1378.220703	-0.16	1378.220703	-0.16	3.333008	$ 144,312	0	$ -	$ 144,311.75	3.357908	$ 145,390	0	$ -	$ 145,389.87
323	1370.1912	1370.441162	Residential	5864.994141	$ 4,257,986	$ 2,128,993	1370.313354	-0.13	1370.310059	-0.13	1370.500488	0.06	1370.292603	-0.15	3.475588	$ 147,990	0	$ -	$ 147,990.04	3.405764	$ 145,017	0	$ -	$ 145,016.95
324	1364.6116	1364.861572	Residential	8787.81427	$ 6,379,953	$ 3,189,977	1364.679688	-0.18	1364.684204	-0.18	1364.681763	-0.18	1364.681885	-0.18	3.290528	$ 209,934	0	$ -	$ 209,934.15	3.281252	$ 209,342	0	$ -	$ 209,342.34
325	1367.1274	1367.377441	Residential	862.57312	$ 626,228	$ 313,114	1367.134888	-0.24	1367.135864	-0.24	1367.141968	-0.24	1367.141968	-0.24	3.033692	$ 18,998	0	$ -	$ 18,997.83	3.058108	$ 19,151	0	$ -	$ 19,150.73
326	1360.1703	1360.420288	Residential	6272.609619	$ 4,553,915	$ 2,276,957	1360.312744	-0.11	1360.310059	-0.11	1360.492432	0.07	1360.253784	-0.17	3.559084	$ 162,078	0	$ -	$ 162,077.65	3.333984	$ 151,827	0	$ -	$ 151,826.78
327	1359.764	1360.014038	Residential	440.797302	$ 320,019	$ 160,009	1359.788696	-0.23	1359.787354		1359.799072	-0.21	1359.799072	-0.21					$ 51,009,466.04					$ 60,716,150.04

10-Year and 100-Year Existing Building Damages in Area A

															Existing							
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
198	1331.10	1331.35	Residential	7479.12	$ 5,429,839	$ 2,714,920	1331.08	-0.27	1331.08	-0.27	1331.18	-0.17	1331.18	-0.17	2.92724608	$ 158,945	0	$ -	$ 158,944.76	3.31542968	$ 180,023	0	$ -	$ 180,022.50
528	1335.72	1335.97	Residential	10191.57	$ 7,399,081	$ 3,699,541	1335.76	-0.21	1335.76	-0.21	1335.81	-0.16	1335.81	-0.16	3.16845704	$ 234,437	0	$ -	$ 234,436.70	3.36865236	$ 249,249	0	$ -	$ 249,249.32
121	1525.48	1525.73	Residential	406.99	$ 295,472	$ 147,736	0.00	-1.00	0.00	-1.00	1166.47	-1.00	1166.47	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
538	1327.24	1327.49	Residential	2669.28	$ 1,937,899	$ 968,950	1327.36	-0.14	1327.19	-0.30	1328.06	0.57	1327.66	0.16	3.45	$ 66,842	0.00	$ -	$ 66,842.38	21.07	$ 408,369	23.90	$ 231,597	$ 639,965.63
470	1333.16	1333.41	Residential	1558.25	$ 1,131,291	$ 565,645	974.14	-1.00	974.13	-1.00	1333.04	-0.37	1333.04	-0.37	0	$ -	0	$ -	$ -	2.50341796	$ 28,321	0	$ -	$ 28,320.94
262	1340.41	1340.66	Residential	8866.52	$ 6,437,090	$ 3,218,545	1340.38	-0.28	1340.38	-0.28	1340.47	-0.19	1340.46	-0.20	2.88	$ 185,255	0.00	$ -	$ 185,254.93	3.24	$ 208,703	0.00	$ -	$ 208,702.53
61	1333.57	1333.82	Residential	2138.95	$ 1,552,880	$ 776,440	1279.33	-1.00	1279.30	-1.00	1334.09	0.27	1334.06	0.24	0.00	$ -	0.00	$ -	$ -	12.20	$ 189,443	11.48	$ 89,129	$ 278,572.45
51	1341.97	1342.22	Residential	8818.57	$ 6,402,284	$ 3,201,142	1342.64	0.42	1342.58	0.36	1343.07	0.84	1343.04	0.82	16.58	$ 1,061,691	17.62	$ 563,920	$ 1,625,611.33	29.25	$ 1,872,684	35.35	$ 1,131,615	$ 3,004,298.58
59	1343.56	1343.81	Residential	1029.42	$ 747,360	$ 373,680	1344.22	0.41	1344.05	0.24	1344.65	0.84	1344.54	0.73	16.35	$ 122,211	17.29	$ 64,621	$ 186,831.80	29.15	$ 217,838	35.21	$ 131,561	$ 349,399.02
274	1339.51	1339.76	Residential	2963.81	$ 2,151,726	$ 1,075,863	1340.25	0.49	1340.19	0.43	1340.72	0.96	1340.68	0.92	18.73	$ 403,076	20.63	$ 221,905	$ 624,980.34	32.95	$ 708,893	40.52	$ 435,977	$ 1,144,869.66
195	1331.08	1331.33	Residential	5775.30	$ 4,192,867	$ 2,096,433	1048.47	-1.00	1048.48	-1.00	1331.17	-0.16	1331.19	-0.16	0	$ -	0	$ -	$ -	3.35888672	$ 140,834	0	$ -	$ 140,833.64
537	1317.88	1318.13	Residential	11429.48	$ 8,297,801	$ 4,148,901	871.71	-1.00	871.70	-1.00	1317.76	-0.37	1317.74	-0.39	0.00	$ -	0.00	$ -	$ -	2.51	$ 207,931	0.00	$ -	$ 207,931.23
360	1323.97	1324.22	Residential	1063.36	$ 772,000	$ 386,000	1324.61	0.38	1324.58	0.36	1324.89	0.66	1324.88	0.66	15.55	$ 120,020	16.17	$ 62,398	$ 182,417.93	23.91	$ 184,620	27.88	$ 107,618	$ 292,238.49
338	1320.98	1321.23	Residential	3049.31	$ 2,213,799	$ 1,106,900	787.52	-1.00	787.51	-1.00	787.54	-1.00	787.53	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
60	1333.08	1333.33	Residential	7401.44	$ 5,373,442	$ 2,686,721	289.24	-1.00	289.23	-1.00	289.27	-1.00	289.26	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
413	1455.19	1455.44	Residential	9053.91	$ 6,573,135	$ 3,286,568	0.00	-1.00	0.00	-1.00	736.98	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
158	1332.06	1332.31	Residential	13840.34	$ 10,048,089	$ 5,024,045	1332.44	0.13	1332.44	0.13	1332.62	0.31	1332.63	0.31	7.8122557	$ 784,982	5.33715798	$ 268,141	$ 1,053,123.61	13.2907714	$ 1,335,469	13.00707996	$ 653,481	$ 1,988,950.04
238	1335.27	1335.52	Residential	6338.22	$ 4,601,549	$ 2,300,774	100.03	-1.00	100.03	-1.00	1335.16	-0.36	1335.16	-0.36	0	$ -	0	$ -	$ -	2.5493164	$ 117,308	0	$ -	$ 117,308.03
349	1324.98	1325.23	Residential	7393.78	$ 5,367,884	$ 2,683,942	673.55	-1.00	673.54	-1.00	783.59	-1.00	783.57	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
27	1316.52	1316.77	Residential	7472.12	$ 5,424,758	$ 2,712,379	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
405	1326.51	1326.76	Residential	1009.50	$ 732,896	$ 366,448	355.52	-1.00	355.52	-1.00	355.55	-1.00	355.55	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
141	1342.43	1342.68	Residential	7243.14	$ 5,258,522	$ 2,629,261	874.65	-1.00	874.65	-1.00	874.66	-1.00	874.67	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
146	1338.37	1338.62	Residential	15504.94	$ 11,256,588	$ 5,628,294	1338.87	0.25	1338.88	0.25	1339.19	0.57	1339.21	0.57	11.573242	$ 1,302,752	10.6025388	$ 596,742	$ 1,899,494.18	21.244873	$ 2,391,448	24.1428222	$ 1,358,829	$ 3,750,276.74
72	1351.63	1351.88	Residential	11007.51	$ 7,991,454	$ 3,995,727	1351.32	-0.57	1351.32	-0.57	1351.37	-0.51	1351.37	-0.51	1.73632812	$ 138,758	0	$ -	$ 138,757.86	1.953125	$ 156,083	0	$ -	$ 156,083.08
254	1345.68	1345.93	Residential	1895.39	$ 1,376,051	$ 688,025	0.00	-1.00	0.00	-1.00	753.45	-1.00	753.45	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
565	1332.50	1332.75	Residential	6624.03	$ 4,809,043	$ 2,404,522	1332.28	-0.47	1332.28	-0.47	1332.63	-0.13	1332.33	-0.43	2.11	$ 101,511	0.00	$ -	$ 101,511.20	3.49	$ 167,847	0.00	$ -	$ 167,846.88
169	1332.68	1332.93	Residential	10483.42	$ 7,610,964	$ 3,805,482	518.50	-1.00	518.50	-1.00	1332.76	-0.17	1332.76	-0.17	0	$ -	0	$ -	$ -	3.3017578	$ 251,296	0	$ -	$ 251,295.59
286	1349.36	1349.61	Residential	7943.75	$ 5,767,160	$ 2,883,580	1349.40	-0.20	1349.40	-0.20	1349.42	-0.18	1349.42	-0.18	3.19	$ 184,194	0.00	$ -	$ 184,194.30	3.26	$ 188,277	0.00	$ -	$ 188,277.49
373	1322.46	1322.71	Residential	7149.90	$ 5,190,828	$ 2,595,414	1322.63	-0.08	1322.58	-0.13	1322.97	0.26	1322.96	0.25	3.66	$ 190,018	0.00	$ -	$ 190,017.78	11.69	$ 607,020	10.77	$ 279,571	$ 886,591.20
400	1328.18	1328.43	Residential	9066.93	$ 6,582,588	$ 3,291,294	568.20	-1.00	568.20	-1.00	568.33	-1.00	568.33	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
280	1330.76	1331.01	Residential	4647.57	$ 3,374,137	$ 1,687,068	1330.98	-0.03	1330.95	-0.06	1331.20	0.20	1331.19	0.18	3.90	$ 131,489	0.00	$ -	$ 131,489.18	9.89	$ 333,781	8.25	$ 139,171	$ 472,951.63
144	1336.17	1336.42	Residential	7180.50	$ 5,213,041	$ 2,606,520	1336.51	0.08	1336.51	0.08	1336.72	0.30	1336.73	0.30	6.4060057	$ 333,948	3.36840798	$ 87,798	$ 421,745.92	12.9831541	$ 676,817	12.57641574	$ 327,807	$ 1,004,623.93
525	1326.25	1326.50	Residential	19943.97	$ 14,479,323	$ 7,239,662	1165.30	-1.00	1165.29	-1.00	1326.23	-0.27	1326.02	-0.48	0.00	$ -	0.00	$ -	$ -	2.94	$ 425,472	0.00	$ -	$ 425,471.51
404	1322.82	1323.07	Residential	5577.85	$ 4,049,522	$ 2,024,761	1322.62	-0.45	1322.60	-0.47	1322.96	-0.11	1322.95	-0.11	2.21	$ 89,493	0.00	$ -	$ 89,492.85	3.57	$ 144,442	0.00	$ -	$ 144,442.18
89	1369.74	1369.99	Residential	10864.86	$ 7,887,890	$ 3,943,945	736.76	-1.00	736.75	-1.00	736.78	-1.00	736.77	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
555	1330.05	1330.30	Residential	6177.14	$ 4,484,601	$ 2,242,300	690.87	-1.00	690.63	-1.00	1329.38	-0.92	690.95	-1.00	0.00	$ -	0.00	$ -	$ -	0.34	$ 15,197	0.00	$ -	$ 15,196.84
328	1382.11	1382.36	Residential	5083.66	$ 3,690,738	$ 1,845,369	0.00	-1.00	0.00	-1.00	1062.62	-1.00	1062.61	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
544	1317.89	1318.14	Residential	1064.51	$ 772,835	$ 386,417	0.00	-1.00	0.00	-1.00	863.13	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
269	1343.78	1344.03	Residential	1292.67	$ 938,479	$ 469,239	766.99	-1.00	0.00	-1.00	767.16	-1.00	767.11	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
163	1341.77	1342.02	Residential	767.27	$ 557,041	$ 278,521	0.00	-1.00	0.00	-1.00	900.61	-1.00	900.61	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
551	1327.07	1327.32	Residential	11720.01	$ 8,508,728	$ 4,254,364	1326.26	-1.00	915.96	-1.00	1326.52	-0.80	1326.34	-0.98	0.00	$ -	0.00	$ -	$ -	0.79	$ 67,139	0.00	$ -	$ 67,139.18
271	1331.69	1331.94	Residential	3774.99	$ 2,740,645	$ 1,370,322	1331.91	-0.04	1331.90	-0.04	1332.06	0.12	1332.04	0.10	3.86	$ 105,718	0.00	$ -	$ 105,718.24	7.61	$ 208,486	5.05	$ 69,202	$ 277,687.68
385	1323.06	1323.31	Residential	6452.90	$ 4,684,808	$ 2,342,404	1322.62	-0.69	1322.57	-0.74	1322.96	-0.35	1322.95	-0.36	1.24	$ 58,080	0.00	$ -	$ 58,079.72	2.59	$ 121,306	0.00	$ -	$ 121,306.32
460	1321.03	1321.28	Residential	1265.95	$ 919,080	$ 459,540	0.00	-1.00	0.00	-1.00	1321.13	-0.15	1321.13	-0.15	0	$ -	0	$ -	$ -	0.3857422	$ 31,118	0	$ -	$ 31,117.69
524	1332.22	1332.47	Residential	10676.48	$ 7,751,124	$ 3,875,562	1332.37	-0.10	1332.37	-0.10	1332.55	0.08	1332.56	0.08	3.58349612	$ 277,761	0	$ -	$ 277,761.24	6.5341798	$ 506,472	3.54785172	$ 137,499	$ 643,971.60
307	1348.84	1349.09	Residential	7855.95	$ 5,703,422	$ 2,851,711	1348.80	-0.29	1348.80	-0.29	1348.82	-0.27	1348.82	-0.27	2.85	$ 162,581	0.00	$ -	$ 162,580.95	2.91	$ 166,146	0.00	$ -	$ 166,145.59
346	1321.84	1322.09	Residential	2195.05	$ 1,593,607	$ 796,803	1273.33	-1.00	1273.33	-1.00	1273.38	-1.00	1273.38	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
120	1384.09	1384.34	Residential	13591.52	$ 9,867,443	$ 4,933,721	1382.97	-1.00	1383.03	-1.00	1383.41	-0.93	1383.38	-0.97	0.00	$ -	0.00	$ -	$ -	0.28	$ 27,319	0.00	$ -	$ 27,318.55
500	1317.50	1317.75	Residential	1672.89	$ 1,214,517	$ 607,259	1317.67	-0.09	1317.67	-0.09	1317.79	0.04	1317.80	0.04	3.64599608	$ 44,281	0	$ -	$ 44,281.25	5.2158205	$ 63,347	1.7021487	$ 10,336	$ 73,683.48
282	1341.63	1341.88	Residential	8841.63	$ 6,419,026	$ 3,209,513	0.00	-1.00	0.00	-1.00	770.21	-1.00	770.20	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
563	1331.78	1332.03	Residential	6237.47	$ 4,528,402	$ 2,264,201	1332.30	0.27	1331.80	-0.23	1332.80	0.77	1332.35	0.32	12.18	$ 551,777	11.46	$ 259,449	$ 811,226.33	27.07	$ 1,225,897	32.30	$ 731,333	$ 1,957,229.39
18	1309.78	1310.03	Residential	700.48	$ 508,551	$ 254,276	1310.13	0.10	1310.08	0.05	1310.35	0.32	1310.31	0.28	7.05	$ 35,837	4.27	$ 10,846	$ 46,683.42	13.48	$ 68,559	13.27	$ 33,752	$ 102,310.57
53	1338.91	1339.16	Residential	9128.88	$ 6,627,566	$ 3,313,783	1339.02	-0.14	1339.02	-0.14	1339.06	-0.10	1339.06	-0.11	3.45	$ 228,437	0.00	$ -	$ 228,437.43	3.58	$ 237,272	0.00	$ -	$ 237,272.03
191	1331.67	1331.92	Residential	8250.07	$ 5,989,549	$ 2,994,774	1331.09	-0.83	1331.09	-0.83	1331.20	-0.72	1331.22	-0.72	0.69970704	$ 41,909	0	$ -	$ 41,909.29	1.12890628	$ 67,616	0	$ -	$ 67,616.39
164	1344.25	1344.50	Residential	7496.39	$ 5,442,379	$ 2,721,189	0.00	-1.00	0.00	-1.00	755.26	-1.00	755.27	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
258	1331.78	1332.03	Residential	8405.13	$ 6,102,124	$ 3,051,062	1331.51	-0.52	1331.51	-0.52	1331.88	-0.15	1331.80	-0.23	1.92	$ 116,888	0.00	$ -	$ 116,887.86	3.39	$ 206,960	0.00	$ -	$ 206,959.74
482	1324.13	1324.38	Residential	4767.85	$ 3,461,462	$ 1,730,731	1324.29	-0.09	1324.21	-0.17	1324.68	0.30	1324.66	0.28	3.65	$ 126,374	0.00	$ -	$ 126,373.80	13.05	$ 451,689	12.67	$ 219,261	$ 670,949.87
112	1371.29	1371.54	Residential	6684.88	$ 4,853,225	$ 2,426,612	1370.55	-0.99	1370.55	-0.99	1370.82	-0.72	1370.82	-0.72	0.04	$ 2,109	0.00	$ -	$ 2,109.07	1.14	$ 55,096	0.00	$ -	$ 55,096.42
540	1319.37	1319.62	Residential	12604.81	$ 9,151,093	$ 4,575,547	0.00	-1.00	0.00	-1.00	637.48	-1.00	637.40	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
375	1325.37	1325.62	Residential	7943.12	$ 5,766,706	$ 2,883,353	414.68	-1.00	414.68	-1.00	414.73	-1.00	414.73	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
526	1326.54	1326.79	Residential	723.15	$ 525,003	$ 262,502	0.00	-1.00	0.00	-1.00	773.77	-1.00	113.99	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
170	1342.44	1342.69	Residential	676.25	$ 490,958	$ 245,479	978.28	-1.00	978.29	-1.00	1341.92	-0.76	1341.94	-0.76	0	$ -	0	$ -	$ -	0.9448242	$ 4,639	0	$ -	$ 4,638.69
167	1346.13	1346.38	Residential	8580.62	$ 6,229,533	$ 3,114,767	1346.37	-0.01	1346.37	-0.01	1346.72	0.34	1346.72	0.34	3.96	$ 246,444	0.00	$ -	$ 246,443.74	14.31	$ 891,146	14.43	$ 449,375	$ 1,340,520.69
534	1329.33	1329.58	Residential	639.16	$ 464,030	$ 232,015	0.00	-1.00	0.00	-1.00	32.18	-1.00	32.18	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
3	1317.03	1317.28	Residential	12624.49	$ 9,165,380	$ 4,582,690	1316.84	-0.43	1316.84	-0.43	1316.87	-0.41	1316.87	-0.41	2.26	$ 207,340	0.00	$ -	$ 207,339.88	2.36	$ 216,156	0.00	$ -	$ 216,156.18
129	1494.88	1495.13	Residential	8054.19	$ 5,847,340	$ 2,923,670	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
487	1329.29	1329.54	Residential	7301.80	$ 5,301,110	$ 2,650,555	1328.95	-0.58	1328.95	-0.58	1328.98	-0.56	1328.98	-0.56	1.66	$ 88,084	0.00	$ -	$ 88,084.36	1.75	$ 93,028	0.00	$ -	$ 93,028.27
505	1334.49	1334.74	Residential	1851.91	$ 1,344,488	$ 672,244	801.65	-1.00	801.65	-1.00	801.67	-1.00	801.66	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
299	1334.10	1334.35	Residential	12457.47	$ 9,044,127	$ 4,522,063	1334.08	-0.27	1334.08	-0.27	1334.36	0.01	1334.33	-0.02	2.92	$ 263,684	0.00	$ -	$ 263,683.99	4.19	$ 378,988	0.27	$ 12,056	$ 391,043.68
206	1330.94	1331.19	Residential	6811.92	$ 4,945,451	$ 2,472,726	1331.01	-0.18	1331.01	-0.18	1331.29	0.10	1331.30	0.10	3.28271484	$ 162,345	0	$ -	$ 162,345.06	7.0578613	$ 349,043	4.28100582	$ 105,858	$ 454,900.63
443	1325.91	1326.16	Residential	6111.80	$ 4,437,165	$ 2,218,582	1324.48	-1.00	1324.47	-1.00	1324.59	-1.00	1324.59	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
39	1317.80	1318.05	Residential	5414.14	$ 3,930,662	$ 1,965,331	1317.89	-0.16	1317.89	-0.16	1317.93	-0.13	1317.93	-0.13	3.37	$ 132,276	0.00	$ -	$ 132,276.00	3.49	$ 137,304	0.00	$ -	$ 137,304.48
502	1319.37	1319.62	Residential	2781.41	$ 2,019,305	$ 1,009,652	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
111	1379.55	1379.80	Residential	7498.79	$ 5,444,124	$ 2,722,062	1379.10	-0.70	1379.09	-0.71	1379.30	-0.50	1379.30	-0.50	1.18	$ 64,250	0.00	$ -	$ 64,250.23	2.01	$ 109,680	0.00	$ -	$ 109,679.95
438	1340.20	1340.45	Residential	6215.27	$ 4,512,285	$ 2,256,142	0.00	-1.00	0.00	-1.00	0.00	-1.00	1340.16	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
333	1324.71	1324.96	Residential	1601.10	$ 1,162,399	$ 581,200	1324.96	0.00	1324.89	-0.07	1325.36	0.40	1325.32	0.36	3.98	$ 46,286	0.00	$ -	$ 46,285.96	15.91	$ 184,886	16.67	$ 96,873	$ 281,758.34
173	1336.89	1337.14	Residential	10216.91	$ 7,417,477	$ 3,708,738	0.00	-1.00	0.00	-1.00	1335.14	-1.00	1335.14	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
580	1433.33	1433.58	Residential	2372.25	$ 1,722,254	$ 861,127	1431.31	-1.00	1431.31	-1.00	1431.40	-1.00	1431.39	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
193	1330.91	1331.16	Residential	388.64	$ 282,149	$ 141,075	1331.13	-0.03	1331.13	-0.03	1331.32	0.16	1331.34	0.16	3.86767576	$ 10,913	0	$ -	$ 10,912.61	8.9182129	$ 25,163	6.88549806	$ 9,714	$ 34,876.33
313	1344.58	1344.83	Residential	4545.76	$ 3,300,219	$ 1,650,110	0.00	-1.00	0.00	-1.00	1344.11	-0.72	1344.25	-0.72	0	$ -	0	$ -	$ -	1.12353516	$ 37,079	0	$ -	$ 37,079.12
30	1319.25	1319.50	Residential	8650.86	$ 6,280,523	$ 3,140,262	1319.31	-0.19	1319.31	-0.19	1319.34	-0.16	1319.34	-0.16	3.25	$ 204,270	0.00	$ -	$ 204,270.33	3.36	$ 210,802	0.00	$ -	$ 210,802.32
265	1336.62	1336.87	Residential	9275.89	$ 6,734,294	$ 3,367,147	453.05	-1.00	453.06	-1.00	453.06	-1.00	453.07	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
278	1329.33	1329.58	Residential	9887.56	$ 7,178,367	$ 3,589,183	1329.54	-0.04	1329.52	-0.06	1329.70	0.13	1329.69	0.11	3.86	$ 276,830	0.00	$ -	$ 276,829.78	7.79	$ 558,952	5.30	$ 190,272	$ 749,224.48
8	1314.25	1314.50	Residential	4845.72	$ 3,517,990	$ 1,758,995	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
288	1341.77	1342.02	Residential	7520.30	$ 5,459,739	$ 2,729,869	1341.76	-0.26	1341.76	-0.26	1341.78	-0.24	1341.78	-0.24	2.95	$ 160,886	0.00	$ -	$ 160,886.34	3.06	$ 166,965	0.00	$ -	$ 166,964.56
415	1359.67	1359.92	Residential	361.17	$ 262,212	$ 131,106	0.00	-1.00	0.00	-1.00	378.48	-1.00	378.49	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
35	1317.85	1318.10	Residential	7080.65	$ 5,140,551	$ 2,570,275	803.86	-1.00	803.87	-1.00	1317.85	-0.25	1317.85	-0.25	0	$ -	0	$ -	$ -	2.99023436	$ 153,715	0	$ -	$ 153,714.52
279	1336.73	1336.98	Residential	7751.73	$ 5,627,755	$ 2,813,877	1336.39	-0.59	1336.32	-0.66	1336.98	0.00	1336.96	-0.02	1.65	$ 92,578	0.00	$ -	$ 92,577.67	4.00	$ 225,000	0.00	$ -	$ 225,000.28
399	1329.62	1329.87	Residential	9065.18	$ 6,581,319	$ 3,290,660	766.63	-1.00	766.63	-1.00	766.71	-1.00	766.72	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
42	1323.17	1323.42	Residential	7002.87	$ 5,084,085	$ 2,542,043	1323.12	-0.30	1323.12	-0.30	1323.18	-0.24	1323.18	-0.24	2.80	$ 142,344	0.00	$ -	$ 142,344.46	3.05	$ 155,179	0.00	$ -	$ 155,178.79
57	1341.09	1341.34	Residential	7023.87	$ 5,099,331	$ 2,549,666	743.98	-1.00	743.97	-1.00	759.64	-1.00	759.62	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
397	1327.07	1327.32	Residential	9177.64	$ 6,662,967	$ 3,331,483	1326.82	-0.50	1326.82	-0.50	1327.09	-0.23	1327.09	-0.23	1.9819336	$ 132,056	0	$ -	$ 132,055.58	3.06347656	$ 204,118	0	$ -	$ 204,118.43
374	1324.33	1324.58	Residential	7554.42	$ 5,484,508	$ 2,742,254	1324.35	-0.23	1324.35	-0.23	1324.42	-0.17	1324.40	-0.19	3.07	$ 168,204	0.00	$ -	$ 168,204.07	3.33	$ 182,371	0.00	$ -	$ 182,370.60
216	1336.13	1336.38	Residential	5675.45	$ 4,120,379	$ 2,060,189	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
283	1339.27	1339.52	Residential	13817.96	$ 10,031,838	$ 5,015,919	1339.17	-0.35	1338.87	-0.65	1339.53	0.01	1339.50	-0.02	2.59	$ 259,907	0.00	$ -	$ 259,906.89	4.32	$ 433,603	0.45	$ 22,630	$ 456,233.10
334	1324.83	1325.08	Residential	10462.71	$ 7,595,925	$ 3,797,963	1324.97	-0.11	1324.90	-0.18	1325.54	0.46	1325.48	0.39	3.57	$ 271,050	0.00	$ -	$ 271,049.91	17.85	$ 1,355,880	19.39	$ 736,430	$ 2,092,310.17
26	1311.97	1312.22	Residential	13261.74	$ 9,628,026	$ 4,814,013	1311.93	-0.29	1311.93	-0.29	1311.98	-0.25	1311.97	-0.25	2.83	$ 272,152	0.00	$ -	$ 272,151.56	3.01	$ 290,063	0.00	$ -	$ 290,063.08
301	1346.57	1346.82	Residential	11175.62	$ 8,113,498	$ 4

10-Year and 100-Year Existing Building Damages in Area A

																Existing								
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
308	1334.93	1335.18	Residential	6969.43	$ 5,059,808	$ 2,529,904	1334.88	-0.29	1334.88	-0.29	1335.28	0.10	1335.29	0.10	2.82128904	$ 142,752	0	$ -	$ 142,751.81	6.9296875	$ 350,629	4.1015625	$ 103,766	$ 454,394.47
196	1332.19	1332.44	Residential	8166.56	$ 5,928,926	$ 2,964,463	0.00	-1.00	0.00	-1.00	1332.16	-0.28	1332.16	-0.28	0.00	$ -	0.00	$ -	$ -	2.86	$ 169,791	0.00	$ -	$ 169,790.77
496	1323.96	1324.21	Residential	5063.01	$ 3,675,743	$ 1,837,872	1324.30	0.09	1324.22	0.01	1324.69	0.48	1324.67	0.46	6.76	$ 248,660	3.87	$ 71,141	$ 319,801.33	18.32	$ 673,219	20.04	$ 368,333	$ 1,041,551.79
573	1331.74	1331.99	Residential	7754.41	$ 5,629,702	$ 2,814,851	1331.39	-0.60	1331.39	-0.60	1331.42	-0.57	1331.42	-0.57	1.60742188	$ 90,493	0	$ -	$ 90,493.06	1.72070312	$ 96,870	0	$ -	$ 96,870.46
108	1379.24	1379.49	Residential	1156.59	$ 839,681	$ 419,840	0.00	-1.00	0.00	-1.00	1378.04	-1.00	1378.04	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
188	1333.66	1333.91	Residential	10182.29	$ 7,392,344	$ 3,696,172	1333.86	-0.05	1333.86	-0.05	1333.93	0.02	1333.94	0.02	3.78222656	$ 279,595	0	$ -	$ 279,595.18	4.4907226	$ 331,970	0.68701164	$ 25,393	$ 357,362.77
351	1324.71	1324.96	Residential	4981.85	$ 3,616,823	$ 1,808,412	1324.58	-0.39	1324.56	-0.41	1324.99	0.02	1324.98	0.01	2.46	$ 88,919	0.00	$ -	$ 88,919.46	4.68	$ 169,309	0.95	$ 17,245	$ 186,554.28
467	1340.84	1341.09	Residential	4065.37	$ 2,951,456	$ 1,475,728	0.00	-1.00	0.00	-1.00	1079.51	-1.00	1079.52	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
132	1490.09	1490.34	Residential	1336.38	$ 970,214	$ 485,107	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
408	1322.66	1322.91	Residential	6487.88	$ 4,710,200	$ 2,355,100	1322.62	-0.29	1322.57	-0.34	1323.04	0.13	1323.04	0.13	2.84	$ 133,624	0.00	$ -	$ 133,624.33	7.96	$ 374,700	5.54	$ 130,404	$ 505,104.57
119	1390.29	1390.54	Residential	315.89	$ 229,336	$ 114,668	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
584	1353.35	1353.60	Residential	0.00	$ -	$ -	175.39	-1.00	175.39	-1.00	415.79	-1.00	415.78	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
511	1321.86	1322.11	Residential	646.27	$ 469,192	$ 234,596	1322.07	-0.03	1322.00	-0.10	1322.53	0.43	1322.24	0.14	3.87	$ 18,170	0.00	$ -	$ 18,169.74	16.84	$ 79,026	17.98	$ 42,181	$ 121,207.04
54	1336.82	1337.07	Residential	9657.93	$ 7,011,655	$ 3,505,828	1336.97	-0.10	1336.94	-0.13	1337.10	0.03	1337.08	0.01	3.59	$ 251,913	0.00	$ -	$ 251,912.89	4.96	$ 347,998	1.35	$ 47,272	$ 395,270.08
289	1315.29	1315.54	Residential	732.08	$ 531,493	$ 265,747	568.06	-1.00	568.05	-1.00	707.89	-1.00	707.90	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
425	1440.09	1440.34	Residential	3730.58	$ 2,708,404	$ 1,354,202	1436.06	-1.00	1436.06	-1.00	1436.14	-1.00	1436.13	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
325	1403.93	1404.18	Residential	4455.81	$ 3,234,917	$ 1,617,458	1401.98	-1.00	1401.98	-1.00	1402.03	-1.00	1402.03	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
45	1313.71	1313.96	Residential	5863.55	$ 4,256,937	$ 2,128,469	1313.00	-0.96	1313.00	-0.96	1313.58	-0.38	1313.58	-0.38	0.15527344	$ 6,610	0	$ -	$ 6,609.89	2.47509764	$ 105,363	0	$ -	$ 105,363.35
147	1333.51	1333.76	Residential	1860.79	$ 1,350,934	$ 675,467	800.72	-1.00	800.73	-1.00	1333.04	-0.72	1333.06	-0.72	0	$ -	0	$ -	$ -	1.10644528	$ 14,947	0	$ -	$ 14,947.35
355	1320.50	1320.75	Residential	7271.22	$ 5,278,904	$ 2,639,452	1320.51	-0.24	1320.51	-0.24	1320.53	-0.22	1320.62	-0.22	3.04150392	$ 160,558	0	$ -	$ 160,558.08	3.13427736	$ 165,455	0	$ -	$ 165,455.50
55	1333.97	1334.22	Residential	8885.46	$ 6,450,843	$ 3,225,422	1256.97	-1.00	1256.97	-1.00	1257.07	-1.00	1257.06	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
383	1323.11	1323.36	Residential	6532.58	$ 4,742,656	$ 2,371,328	1322.62	-0.74	1322.57	-0.78	1322.97	-0.39	1322.96	-0.39	1.06	$ 50,090	0.00	$ -	$ 50,089.67	2.44	$ 115,857	0.00	$ -	$ 115,856.96
377	1324.05	1324.30	Residential	6948.25	$ 5,044,428	$ 2,522,214	1324.25	-0.05	1324.22	-0.08	1324.48	0.18	1324.47	0.17	3.79	$ 191,186	0.00	$ -	$ 191,185.79	9.46	$ 477,398	7.65	$ 192,935	$ 670,332.53
501	1320.89	1321.14	Residential	14670.16	$ 10,650,533	$ 5,325,266	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
114	1377.43	1377.68	Residential	1961.87	$ 1,424,316	$ 712,158	1377.38	-0.30	1377.38	-0.30	1377.48	-0.20	1377.48	-0.20	2.79	$ 39,697	0.00	$ -	$ 39,697.25	3.20	$ 45,609	0.00	$ -	$ 45,608.72
92	1384.83	1385.08	Residential	23180.32	$ 16,828,912	$ 8,414,456	1383.02	-1.00	1383.02	-1.00	1383.70	-1.00	1383.69	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
194	1337.21	1337.46	Residential	9523.28	$ 6,913,901	$ 3,456,951	1337.21	-0.25	1337.21	-0.25	1337.29	-0.17	1337.29	-0.17	3.01	$ 208,193	0.00	$ -	$ 208,193.50	3.32	$ 229,799	0.00	$ -	$ 229,799.44
560	1318.46	1318.71	Residential	5850.33	$ 4,247,338	$ 2,123,669	1318.50	-0.21	1318.50	-0.21	1318.55	-0.16	1318.55	-0.16	3.16	$ 134,202	0.00	$ -	$ 134,201.77	3.37	$ 143,182	0.00	$ -	$ 143,181.74
300	1339.66	1339.91	Residential	13233.48	$ 9,607,509	$ 4,803,755	341.83	-1.00	341.83	-1.00	1339.10	-0.81	1339.11	-0.81	0	$ -	0	$ -	$ -	0.7573242	$ 72,760	0	$ -	$ 72,759.99
478	1321.22	1321.47	Residential	7719.33	$ 5,604,232	$ 2,802,116	1320.76	-0.71	1320.74	-0.73	1321.53	0.07	1321.51	0.04	1.18	$ 66,030	0.00	$ -	$ 66,030.33	5.95	$ 333,559	2.73	$ 76,572	$ 410,131.01
272	1339.97	1340.22	Residential	5299.00	$ 3,847,076	$ 1,923,538	1340.21	0.00	1340.15	-0.06	1340.67	0.45	1340.62	0.40	3.98	$ 153,132	0.00	$ -	$ 153,131.67	17.57	$ 675,859	19.00	$ 365,383	$ 1,041,241.81
152	1345.74	1345.99	Residential	6940.51	$ 5,038,809	$ 2,519,405	1346.19	0.20	1346.19	0.20	1346.44	0.45	1346.44	0.45	10.0864258	$ 508,236	8.52099612	$ 214,678	$ 722,914.14	17.4252931	$ 878,027	18.79541034	$ 473,532	$ 1,351,559.75
507	1326.03	1326.28	Residential	10797.12	$ 7,838,706	$ 3,919,353	1326.10	-0.18	1326.10	-0.18	1326.37	0.09	1326.37	0.09	3.27197264	$ 256,480	0	$ -	$ 256,480.31	6.6440428	$ 520,807	3.70165992	$ 145,081	$ 665,888.08
259	1335.19	1335.44	Residential	10032.44	$ 7,283,551	$ 3,641,776	1334.66	-0.78	1334.63	-0.81	1335.44	0.00	1335.39	-0.05	0.88	$ 64,122	0.00	$ -	$ 64,122.28	4.13	$ 300,944	0.18	$ 6,722	$ 307,666.03
568	1332.40	1332.65	Residential	5264.32	$ 3,821,899	$ 1,910,950	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
67	1358.85	1359.10	Residential	3832.96	$ 2,782,731	$ 1,391,366	1358.66	-0.43	1358.66	-0.43	1358.77	-0.33	1358.77	-0.33	2.26025392	$ 62,897	0	$ -	$ 62,896.80	2.69384768	$ 74,963	0	$ -	$ 74,962.55
157	1334.69	1334.94	Residential	11620.03	$ 8,436,143	$ 4,218,071	1335.22	0.28	1335.22	0.28	1335.39	0.45	1335.40	0.45	12.3935545	$ 1,045,538	11.7509763	$ 495,665	$ 1,541,202.53	17.568115	$ 1,482,071	18.995361	$ 801,238	$ 2,283,309.17
161	1338.81	1339.06	Residential	12200.44	$ 8,857,520	$ 4,428,760	1338.67	-0.39	1338.67	-0.39	1338.88	-0.18	1338.88	-0.18	2.44677736	$ 216,724	0	$ -	$ 216,723.79	3.26708984	$ 289,383	0	$ -	$ 289,383.13
178	1338.71	1338.96	Residential	2191.33	$ 1,590,906	$ 795,453	0.00	-1.00	0.00	-1.00	1338.85	-0.10	1338.86	-0.10	0	$ -	0	$ -	$ -	3.59326172	$ 57,165	0	$ -	$ 57,165.43
394	1326.19	1326.44	Residential	863.93	$ 627,213	$ 313,607	0.00	-1.00	0.00	-1.00	263.80	-1.00	263.81	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
199	1333.72	1333.97	Residential	8444.06	$ 6,130,386	$ 3,065,193	0.00	-1.00	0.00	-1.00	331.65	-1.00	331.65	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
84	1378.04	1378.29	Residential	2416.84	$ 1,754,627	$ 877,314	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
17	1314.46	1314.71	Residential	6917.41	$ 5,022,043	$ 2,511,021	1314.60	-0.11	1314.49	-0.22	1314.93	0.22	1314.87	0.16	3.57	$ 179,401	0.00	$ -	$ 179,400.71	10.48	$ 526,223	9.07	$ 227,739	$ 753,962.37
472	1336.64	1336.89	Residential	11331.29	$ 8,226,515	$ 4,113,257	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
582	1462.74	1462.99	Residential	16759.96	$ 12,167,729	$ 6,083,864	1460.73	-1.00	1460.73	-1.00	1460.80	-1.00	1460.80	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
464	1329.31	1329.56	Residential	5295.97	$ 3,844,872	$ 1,922,436	1329.39	-0.17	1329.39	-0.17	1329.44	-0.12	1329.44	-0.12	3.30322264	$ 127,005	0	$ -	$ 127,004.69	3.5073242	$ 134,852	0	$ -	$ 134,852.14
419	1390.04	1390.29	Residential	4825.64	$ 3,503,412	$ 1,751,706	1389.19	-1.00	1389.19	-1.00	1389.89	-0.40	1389.89	-0.40	0.00	$ -	0.00	$ -	$ -	2.39	$ 83,890	0.00	$ -	$ 83,890.31
439	1343.45	1343.70	Residential	6849.88	$ 4,973,013	$ 2,486,507	0.00	-1.00	0.00	-1.00	130.35	-1.00	1061.14	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
303	1333.92	1334.17	Residential	7565.22	$ 5,492,353	$ 2,746,176	0.00	-1.00	0.00	-1.00	1333.50	-0.67	1333.50	-0.67	0.00	$ -	0.00	$ -	$ -	1.32	$ 72,758	0.00	$ -	$ 72,757.58
155	1347.15	1347.40	Residential	3848.09	$ 2,793,714	$ 1,396,857	1347.66	0.26	1347.66	0.26	1347.97	0.56	1347.97	0.56	11.6757814	$ 326,188	10.74609396	$ 150,108	$ 476,295.45	20.875	$ 583,188	23.625	$ 330,007	$ 913,195.15
82	1358.10	1358.35	Residential	651.46	$ 472,962	$ 236,481	0.00	-1.00	0.00	-1.00	30.58	-1.00	30.58	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
409	1331.58	1331.83	Residential	7662.12	$ 5,562,697	$ 2,781,348	1331.57	-0.26	1331.57	-0.26	1331.60	-0.23	1331.59	-0.24	2.97	$ 165,414	0.00	$ -	$ 165,414.18	3.06	$ 170,303	0.00	$ -	$ 170,303.26
230	1337.64	1337.89	Residential	4073.31	$ 2,957,220	$ 1,478,610	1337.76	-0.13	1337.76	-0.13	1338.09	0.20	1338.10	0.20	3.46728516	$ 102,535	0	$ -	$ 102,535.26	9.9509278	$ 294,271	8.33129892	$ 123,187	$ 417,458.30
499	1321.37	1321.62	Residential	6734.36	$ 4,889,149	$ 2,444,574	1024.72	-1.00	528.49	-1.00	1278.41	-1.00	1078.87	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
207	1345.29	1345.54	Residential	62629.14	$ 45,468,757	$ 22,734,378	1345.04	-0.50	1345.04	-0.50	1345.19	-0.35	1345.19	-0.35	2.00	$ 908,487	0.00	$ -	$ 908,487.08	2.61	$ 1,185,784	0.00	$ -	$ 1,185,784.33
63	1334.63	1334.88	Residential	5989.61	$ 4,348,454	$ 2,174,227	1335.05	0.17	1335.05	0.17	1335.26	0.38	1335.26	0.38	9.1599121	$ 398,315	7.22387694	$ 157,063	$ 555,378.08	15.3012697	$ 665,369	15.82177758	$ 344,001	$ 1,009,370.10
412	1375.69	1375.94	Residential	3662.89	$ 2,659,255	$ 1,329,627	1375.59	-0.35	1375.59	-0.35	1375.64	-0.30	1375.64	-0.30	2.60400392	$ 69,247	0	$ -	$ 69,247.10	2.7836914	$ 74,025	0	$ -	$ 74,025.45
0	1317.98	1318.23	Residential	2031.12	$ 1,474,595	$ 737,297	637.78	-1.00	637.78	-1.00	1317.82	-0.41	1317.82	-0.41	0.00	$ -	0.00	$ -	$ -	2.36	$ 34,827	0.00	$ -	$ 34,827.23
531	1324.51	1324.76	Residential	18433.22	$ 13,382,516	$ 6,691,258	1323.32	-1.00	1322.88	-1.00	1323.85	-0.90	1323.41	-1.00	0.00	$ -	0.00	$ -	$ -	0.39	$ 51,687	0.00	$ -	$ 51,687.36
174	1346.24	1346.49	Residential	1124.42	$ 816,330	$ 408,165	303.67	-1.00	303.67	-1.00	1346.51	0.02	1346.51	0.02	0	$ -	0	$ -	$ -	4.4870605	$ 36,629	0.6818847	$ 2,783	$ 39,412.44
341	1322.03	1322.28	Residential	18894.74	$ 13,717,579	$ 6,858,789	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
24	1314.06	1314.31	Residential	5845.51	$ 4,243,839	$ 2,121,919	1313.88	-0.43	1313.88	-0.43	1314.07	-0.24	1314.01	-0.30	2.29	$ 97,310	0.00	$ -	$ 97,309.90	3.03	$ 128,434	0.00	$ -	$ 128,434.15
246	1335.49	1335.74	Residential	8095.61	$ 5,877,416	$ 2,938,708	1335.25	-0.49	1335.25	-0.49	1335.88	0.14	1335.88	0.14	2.02490236	$ 119,012	0	$ -	$ 119,011.94	8.145508	$ 478,745	5.8037112	$ 170,554	$ 649,299.53
403	1330.29	1330.54	Residential	11988.20	$ 8,703,431	$ 4,351,715	1329.02	-1.00	1329.02	-1.00	1329.06	-1.00	1329.06	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
76	1386.63	1386.88	Residential	12287.31	$ 8,916,955	$ 4,458,478	1381.01	-1.00	1381.01	-1.00	1383.36	-1.00	1383.36	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
2	1318.40	1318.65	Residential	9772.67	$ 7,094,958	$ 3,547,479	1318.08	-0.57	1318.08	-0.57	1318.11	-0.54	1318.11	-0.54	1.72	$ 121,702	0.00	$ -	$ 121,702.10	1.83	$ 129,635	0.00	$ -	$ 129,635.42
557	1319.81	1320.06	Residential	4983.35	$ 3,617,912	$ 1,808,956	1319.67	-0.39	1319.67	-0.39	1319.76	-0.30	1319.76	-0.30	2.45800784	$ 88,929	0	$ -	$ 88,928.57	2.80419924	$ 101,453	0	$ -	$ 101,453.47
363	1327.28	1327.53	Residential	13619.36	$ 9,887,654	$ 4,943,827	1327.80	0.27	1327.79	0.26	1328.12	0.59	1328.13	0.59	12.0859375	$ 1,195,016	11.3203125	$ 559,657	$ 1,754,672.31	21.7941895	$ 2,154,934	24.9118653	$ 1,231,599	$ 3,386,533.49
348	1322.03	1322.28	Residential	12779.27	$ 9,277,748	$ 4,638,874	716.09	-1.00	716.10	-1.00	716.26	-1.00	716.27	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
222	1335.24	1335.49	Residential	10175.58	$ 7,387,470	$ 3,693,735	1335.36	-0.13	1335.36	-0.13	1335.70	0.21	1335.71	0.21	3.46728516	$ 256,145	0	$ -	$ 256,144.64	10.1816407	$ 752,166	8.65429698	$ 319,667	$ 1,071,832.42
353	1324.46	1324.71	Residential	8593.13	$ 6,238,612	$ 3,119,306	1324.36	-0.35	1324.36	-0.35	1324.38	-0.33	1324.38	-0.33	2.60	$ 162,088	0.00	$ -	$ 162,088.16	2.69	$ 168,028	0.00	$ -	$ 168,028.25
219	1337.56	1337.81	Residential	1562.94	$ 1,134,694	$ 567,347	1337.55	-0.26	1337.55	-0.26	1337.76	-0.05	1337.77	-0.05	2.9736328	$ 33,742	0	$ -	$ 33,741.62	3.81347656	$ 43,271	0	$ -	$ 43,271.27
441	1327.97	1328.22	Residential	6274.07	$ 4,554,976	$ 2,277,488	427.21	-1.00	427.20	-1.00	950.84	-1.00	950.84	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
124	1438.10	1438.35	Residential	14426.98	$ 10,473,990	$ 5,236,995	1431.87	-1.00	1431.86	-1.00	1432.70	-1.00	1432.70	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
4	1313.10	1313.35	Residential	553.49	$ 401,831	$ 200,915	1313.18	-0.17	1313.17	-0.17	0.00	-1.00	1314.42	-1.00	3.3183594	$ 13,334	0	$ -	$ 13,334.19	0	$ -	0	$ -	$ -
533	1317.14	1317.39	Residential	10692.01	$ 7,762,402	$ 3,881,201	1317.04	-0.35	1317.04	-0.35	1317.08	-0.31	1317.08	-0.32	2.61	$ 202,740	0.00	$ -	$ 202,739.68	2.74	$ 212,935	0.00	$ -	$ 212,935.41
442	1295.07	1295.32	Residential	1280.72	$ 929,801	$ 464,900	0.00	-1.00	0.00	-1.00	0.00	-1.00	730.69	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
127	1440.11	1440.36	Residential	1667.16	$ 1,210,360	$ 605,180	1432.41	-1.00	1432.41	-1.00	1432.48	-1.00	1432.48	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
213	1344.82	1345.07	Residential	18886.60	$ 13,711,674	$ 6,855,837	1344.77	-0.29	1344.77	-0.29	1344.89	-0.17	1344.90	-0.17	2.82275388	$ 387,047	0	$ -	$ 387,046.81	3.30224608	$ 452,793	0	$ -	$ 452,793.22
339	1321.66	1321.91	Residential	4252.24	$ 3,087,125	$ 1,543,562	156.52	-1.00	156.52	-1.00	1320.88	-1.00	1320.88	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
550	1321.54	1321.79	Residential	12488.97	$ 9,066,992	$ 4,533,496	1319.73	-1.00	1319.73	-1.00	1319.76	-1.00	1319.76	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
547	1321.82	1322.07	Residential	303.30	$ 220,193	$ 110,097	0.00	-1.00	0.00	-1.00	786.73	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
7	1315.20	1315.45	Residential	8695.64	$ 6,313,034	$ 3,156,517	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
166	1334.79	1335.04	Residential	4656.42	$ 3,380,564	$ 1,690,282	238.50	-1.00	238.50	-1.00	1334.60	-0.44	1334.61	-0.44	0	$ -	0	$ -	$ -	2.2480468	$ 75,997	0	$ -	$ 75,996.66
356	1323.12	1323.37	Residential	20490.88	$ 14,876,379	$ 7,438,189	473.06	-1.00	473.06	-1.00	1322.08	-1.00	1322.08	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
366	1322.45	1322.70	Residential	7079.13	$ 5,139,449	$ 2,569,724	1321.50	-1.00	1321.50	-1.00	1322.30	-0.39	1322.30	-0.39	0.00	$ -	0.00	$ -	$ -	2.43	$ 125,048	0.00	$ -	$ 125,048.21
212	1335.76	1336.01	Residential	1686.91	$ 1,224,694	$ 612,347	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
81	1362.73	1362.98	Residential	13883.69	$ 10,079,557	$ 5,039,778	1362.85	-0.12	1362.85	-0.12	1362.93	-0.04	1362.93	-0.04	3.50097656	$ 352,883	0	$ -	$ 352,882.92	3.82421876	$ 385,464	0	$ -	$ 385,464.30
252	1342.94	1343.19	Residential	11528.90	$ 8,369,982	$ 4,184,991	1342.22	-0.97	1342.22	-0.97	1343.01	-0.18	1342.25	-0.94	0.12	$ 10,054	0.00	$ -	$ 10,053.79	3.28	$ 274,722	0.00	$ -	$ 274,721.78
451	1330.63	1330.88	Residential	4329.91	$ 3,143,516	$ 1,571,758	1329.82	-1.00	1329.82	-1.00	1329.86	-1.00	1329.86	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
290	1334.83	1335.08	Residential	11536.70	$ 8,375,645	$ 4,187,822	1333.35	-1.00	1333.32	-1.00	1334.64	-0.44	1334.63	-0.45	0.00	$ -	0.00	$ -	$ -	2.24	$ 187,920	0.00	$ -	$ 187,920.35
19	1316.38	1316.63	Residential	6993.30	$ 5,077,134	$ 2,538,567	1315.78	-0.85	1315.78	-0.85	1315.97	-0.66	1315.93	-0.70	0.61	$ 30,765	0.00	$ -	$ 30,765.25	1.34	$ 68,050	0.00	$ -	$ 68,050.45
388	1322.89	1323.14	Residential	10092.64	$ 7,327,254	$ 3,663,627	1322.62	-0.52	1322.57	-0.57	1323.24	0.10	1323.22	0.08	1.92	$ 140,892	0.00	$ -	$ 140,892.22	6.87	$ 503,462	4.02	$ 147,261	$ 650,723.13
43	1320.11	1320.36	Residential	6209.68	$ 4,508,230	$ 2,254,115	1319.63	-0.74	1319.63	-0.74	1319.65	-0.71	1319.65	-0.71	1.05	$ 47,240	0.00	$ -	$ 47,239.56	1.16	$ 52,325	0.00	$ -	$ 52,324.53
347	1326.78	1327.03	Residential	9360.23	$ 6,795,524	$ 3,397,762	821.46	-1.00	23.19	-1.00	1326.56	-0.47	1326.54	-0.49	0.00	$ -	0.00	$ -	$ -	2.10	$ 143,044	0.00	$ -	$ 143,044.44
558	1329.23	1329.48	Residential	5699.37	$ 4,137,742	$ 2,068,871	0.00	-1.00	0.00	-1.00	1329.38	-0.10	0.00	-1.00	0.00	$ -	0.00	$ -	$ -	3.61	$ 149,488	0.00	$ -	$ 149,488.05
411	1371.41	1371.66	Residential	3701.56	$ 2,687,336	$ 1,343,668	1369.90	-1.00	1369.90	-1.00	1369.95	-1.00	1369.95	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -

10-Year and 100-Year Existing Building Damages in Area A

															Existing								
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
314	1330.36	1330.61	Residential	4196.13	$ 3,046,391	$ 1,523,196	1330.19	-0.42	1330.19	-0.42	1330.73	0.12	1330.74	0.12	2.30957032	$ 70,359	0	$ -	$ 70,358.55	7.7023927	$ 234,645	5.18334978	$ 78,953	$ 313,597.60
79	1368.26	1368.51	Residential	1459.23	$ 1,059,402	$ 529,701	819.50	-1.00	819.51	-1.00	1341.09	-1.00	1341.09	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
117	1391.60	1391.85	Residential	3751.96	$ 2,723,924	$ 1,361,962	0.00	-1.00	0.00	-1.00	1391.33	-0.52	1391.33	-0.53	0.00	$ -	0.00	$ -	$ -	1.90	$ 51,805	0.00	$ -	$ 51,805.10
422	1360.68	1360.93	Residential	19148.04	$ 13,901,477	$ 6,950,738	1359.30	-1.00	1359.30	-1.00	1359.43	-1.00	1359.43	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
398	1326.86	1327.11	Residential	13652.47	$ 9,911,695	$ 4,955,847	1326.93	-0.18	1326.93	-0.18	1326.96	-0.15	1326.96	-0.15	3.28	$ 324,695	0.00	$ -	$ 324,695.12	3.40	$ 337,085	0.00	$ -	$ 337,084.74
160	1330.28	1330.53	Residential	16486.30	$ 11,969,051	$ 5,984,525	1329.35	-1.00	1329.35	-1.00	1329.39	-1.00	1329.39	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
448	1350.42	1350.67	Residential	9775.28	$ 7,096,851	$ 3,548,425	1350.44	-0.23	1350.44	-0.23	1350.50	-0.18	1350.50	-0.18	3.07958984	$ 218,554	0	$ -	$ 218,553.90	3.28515624	$ 233,143	0	$ -	$ 233,142.64
241	1340.47	1340.72	Residential	4769.11	$ 3,462,376	$ 1,731,188	0.00	-1.00	0.00	-1.00	618.40	-1.00	618.40	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
65	1360.27	1360.52	Residential	2558.86	$ 1,857,730	$ 928,865	1358.39	-1.00	1358.39	-1.00	1358.61	-1.00	1358.62	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
221	1332.89	1333.14	Residential	6409.64	$ 4,653,397	$ 2,326,698	1130.18	-1.00	1130.18	-1.00	1332.84	-0.30	1332.86	-0.30	0	$ -	0	$ -	$ -	2.81298828	$ 130,899	0	$ -	$ 130,899.50
107	1408.31	1408.56	Residential	9558.60	$ 6,939,545	$ 3,469,773	1407.44	-1.00	1407.44	-1.00	1407.53	-1.00	1407.53	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
159	1337.05	1337.30	Residential	7081.33	$ 5,141,047	$ 2,570,523	0.00	-1.00	0.00	-1.00	1336.93	-0.37	1336.93	-0.37	0	$ -	0	$ -	$ -	2.52636716	$ 129,882	0	$ -	$ 129,881.71
354	1324.37	1324.62	Residential	6151.11	$ 4,465,703	$ 2,232,851	1264.84	-1.00	1264.85	-1.00	1324.36	-0.26	1324.35	-0.27	0.00	$ -	0.00	$ -	$ -	2.98	$ 132,903	0.00	$ -	$ 132,902.62
11	1310.91	1311.16	Residential	8959.69	$ 6,504,734	$ 3,252,367	1311.35	0.19	1311.26	0.10	1311.62	0.46	1311.58	0.42	9.58	$ 622,984	7.81	$ 253,956	$ 876,940.07	17.92	$ 1,165,866	19.49	$ 633,973	$ 1,799,838.86
480	1320.99	1321.24	Residential	21154.48	$ 15,358,155	$ 7,679,077	0.00	-1.00	0.00	-1.00	67.45	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
535	1318.96	1319.21	Residential	15038.36	$ 10,917,848	$ 5,458,924	1319.07	-0.14	1319.07	-0.14	1319.10	-0.11	1319.09	-0.12	3.43	$ 374,608	0.00	$ -	$ 374,608.00	3.54	$ 386,549	0.00	$ -	$ 386,549.40
324	1416.21	1416.46	Residential	23457.64	$ 17,030,244	$ 8,515,122	1413.95	-1.00	1413.95	-1.00	1414.07	-1.00	1414.07	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
15	1310.89	1311.14	Residential	6635.11	$ 4,817,087	$ 2,408,543	1311.22	0.08	1311.13	-0.01	1311.54	0.40	1311.49	0.35	6.52	$ 314,051	3.53	$ 84,958	$ 399,009.09	16.11	$ 775,885	16.95	$ 408,241	$ 1,184,126.01
83	1371.94	1372.19	Residential	2134.99	$ 1,550,000	$ 775,000	1372.24	0.05	1372.24	0.05	1372.37	0.18	1372.36	0.17	5.53	$ 85,670	2.14	$ 16,569	$ 102,239.11	9.41	$ 145,782	7.57	$ 58,647	$ 204,429.02
396	1328.64	1328.89	Residential	16191.87	$ 11,755,297	$ 5,877,649	965.23	-1.00	965.23	-1.00	1328.35	-0.53	1328.35	-0.54	0.00	$ -	0.00	$ -	$ -	1.86	$ 219,034	0.00	$ -	$ 219,034.25
583	1330.49	1330.74	Residential	0.00	$ -	$ -	1329.79	-0.95	1329.79	-0.95	1329.82	-0.93	1329.82	-0.93	0.19970704	$ -	0	$ -	$ -	0.29003908	$ -	0	$ -	$ -
516	1322.12	1322.37	Residential	766.64	$ 556,581	$ 278,291	76.91	-1.00	76.90	-1.00	291.24	-1.00	128.43	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
342	1321.31	1321.56	Residential	440.90	$ 320,096	$ 160,048	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
150	1341.28	1341.53	Residential	4258.47	$ 3,091,652	$ 1,545,826	1341.73	0.20	1341.73	0.20	1341.90	0.37	1341.91	0.37	9.9216307	$ 306,742	8.29028298	$ 128,153	$ 434,895.66	15.1108399	$ 467,175	15.55517586	$ 240,456	$ 707,630.56
143	1329.96	1330.21	Residential	3734.03	$ 2,710,903	$ 1,355,452	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
344	1324.82	1325.07	Residential	7011.00	$ 5,089,986	$ 2,544,993	1324.73	-0.34	1324.62	-0.45	1325.17	0.09	1325.15	0.08	2.64	$ 134,507	0.00	$ -	$ 134,506.85	6.84	$ 348,060	3.97	$ 101,122	$ 449,182.53
571	1327.57	1327.82	Residential	8562.45	$ 6,216,338	$ 3,108,169	1327.58	-0.23	1327.59	-0.23	1327.62	-0.20	1327.62	-0.20	3.07421876	$ 191,104	0	$ -	$ 191,103.84	3.21142576	$ 199,633	0	$ -	$ 199,633.09
88	1379.61	1379.86	Residential	11455.28	$ 8,316,533	$ 4,158,267	1378.41	-1.00	1378.41	-1.00	1378.46	-1.00	1378.46	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
49	1377.00	1377.25	Residential	728.13	$ 528,623	$ 264,311	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
445	1348.57	1348.82	Residential	8000.24	$ 5,808,173	$ 2,904,086	1348.40	-0.42	1348.39	-0.43	1348.43	-0.39	1348.43	-0.39	2.30029296	$ 133,605	0	$ -	$ 133,604.99	2.4267578	$ 140,950	0	$ -	$ 140,950.29
376	1323.14	1323.39	Residential	7118.19	$ 5,167,807	$ 2,583,904	1322.66	-0.73	1322.57	-0.82	1323.33	-0.06	1323.33	-0.06	1.08	$ 55,640	0.00	$ -	$ 55,639.72	3.77	$ 194,979	0.00	$ -	$ 194,978.75
86	1377.55	1377.80	Residential	2949.41	$ 2,141,271	$ 1,070,635	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
520	1322.62	1322.87	Residential	15567.65	$ 11,302,117	$ 5,651,058	1322.30	-0.57	1322.30	-0.57	1322.78	-0.09	1322.35	-0.52	1.71	$ 192,765	0.00	$ -	$ 192,765.11	3.65	$ 412,295	0.00	$ -	$ 412,295.48
224	1342.44	1342.69	Residential	5688.11	$ 4,129,571	$ 2,064,785	1342.46	-0.24	1342.46	-0.24	1342.48	-0.21	1342.48	-0.21	3.05	$ 125,762	0.00	$ -	$ 125,762.36	3.16	$ 130,340	0.00	$ -	$ 130,339.57
16	1311.95	1312.20	Residential	5118.95	$ 3,716,356	$ 1,858,178	0.00	-1.00	0.00	-1.00	1311.91	-0.29	1311.88	-0.32	0.00	$ -	0.00	$ -	$ -	2.82	$ 104,958	0.00	$ -	$ 104,958.01
71	1355.29	1355.54	Residential	15605.34	$ 11,329,477	$ 5,664,738	1355.85	0.31	1355.86	0.31	1356.01	0.47	1356.03	0.47	13.1735839	$ 1,492,498	12.84301746	$ 727,523	$ 2,220,021.51	18.0405271	$ 2,043,897	19.65673794	$ 1,113,503	$ 3,157,400.16
493	1320.68	1320.93	Residential	1623.50	$ 1,178,660	$ 589,330	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
380	1324.56	1324.81	Residential	7115.36	$ 5,165,750	$ 2,582,875	1324.17	-0.64	1262.30	-1.00	1324.34	-0.47	1324.33	-0.48	1.42	$ 73,451	0.00	$ -	$ 73,450.51	2.10	$ 108,662	0.00	$ -	$ 108,662.37
291	1343.71	1343.96	Residential	10971.13	$ 7,965,040	$ 3,982,520	0.00	-1.00	0.00	-1.00	1194.25	-1.00	1194.26	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
548	1331.38	1331.63	Residential	2067.78	$ 1,501,207	$ 750,604	1330.21	-1.00	1330.21	-1.00	1330.49	-1.00	1330.48	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
326	1390.61	1390.86	Residential	6518.30	$ 4,732,285	$ 2,366,143	1390.62	-0.24	1390.62	-0.24	1390.64	-0.22	1390.64	-0.22	3.05	$ 144,464	0.00	$ -	$ 144,464.11	3.14	$ 148,577	0.00	$ -	$ 148,577.13
530	1331.84	1332.09	Residential	10819.21	$ 7,854,744	$ 3,927,372	1332.11	0.02	1332.11	0.02	1332.30	0.21	1332.31	0.21	4.4760742	$ 351,584	0.66650388	$ 26,176	$ 377,760.28	10.3610839	$ 813,837	8.90551746	$ 349,753	$ 1,163,589.48
323	1425.01	1425.26	Residential	9843.82	$ 7,146,612	$ 3,573,306	1424.74	-0.52	1424.74	-0.52	1424.79	-0.47	1424.79	-0.48	1.91	$ 136,302	0.00	$ -	$ 136,302.09	2.10	$ 150,121	0.00	$ -	$ 150,120.73
497	1320.51	1320.76	Residential	2723.39	$ 1,977,179	$ 988,590	0.00	-1.00	0.00	-1.00	147.26	-1.00	147.25	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
391	1323.62	1323.87	Residential	9604.68	$ 6,972,994	$ 3,486,497	1323.72	-0.15	1323.65	-0.22	1324.10	0.23	1324.10	0.23	3.42	$ 238,335	0.00	$ -	$ 238,334.77	10.94	$ 762,824	9.72	$ 338,733	$ 1,101,557.78
319	1347.74	1347.99	Residential	5079.32	$ 3,687,584	$ 1,843,792	1347.48	-0.52	1347.48	-0.52	1347.77	-0.23	1347.77	-0.23	1.9399414	$ 71,537	0	$ -	$ 71,536.97	3.0961914	$ 114,175	0	$ -	$ 114,174.66
492	1321.53	1321.78	Residential	1339.91	$ 972,774	$ 486,387	1320.63	-1.00	1320.63	-1.00	1320.71	-1.00	1320.70	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
321	1334.36	1334.61	Residential	10459.22	$ 7,593,394	$ 3,796,697	961.07	-1.00	961.06	-1.00	1333.64	-0.97	1333.64	-0.97	0	$ -	0	$ -	$ -	0.125	$ 9,492	0	$ -	$ 9,491.74
90	1393.57	1393.82	Residential	10984.74	$ 7,974,925	$ 3,987,462	1393.79	-0.03	1393.79	-0.03	1393.94	0.12	1393.93	0.12	3.88	$ 309,807	0.00	$ -	$ 309,807.13	7.61	$ 606,667	5.05	$ 201,369	$ 808,035.48
474	1319.47	1319.72	Residential	1083.36	$ 786,522	$ 393,261	485.09	-1.00	485.10	-1.00	485.20	-1.00	485.17	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
484	1326.28	1326.53	Residential	17723.79	$ 12,867,474	$ 6,433,737	1326.15	-0.38	1326.14	-0.39	1326.45	-0.08	1326.44	-0.09	2.50	$ 321,310	0.00	$ -	$ 321,309.88	3.69	$ 474,425	0.00	$ -	$ 474,425.28
138	1340.89	1341.14	Residential	8006.64	$ 5,812,823	$ 2,906,411	1340.56	-0.58	1340.56	-0.58	1340.78	-0.36	1340.79	-0.36	1.67041016	$ 97,098	0	$ -	$ 97,097.98	2.56445312	$ 149,067	0	$ -	$ 149,067.12
29	1317.70	1317.95	Residential	511.14	$ 371,090	$ 185,545	1197.86	-1.00	1197.85	-1.00	1317.42	-0.53	1317.42	-0.53	0.00	$ -	0.00	$ -	$ -	1.87	$ 6,951	0.00	$ -	$ 6,950.69
231	1341.90	1342.15	Residential	5392.15	$ 3,914,704	$ 1,957,352	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
32	1318.65	1318.90	Residential	4524.83	$ 3,285,027	$ 1,642,514	1318.50	-0.40	1318.50	-0.40	1318.52	-0.39	1318.51	-0.39	2.39	$ 78,436	0.00	$ -	$ 78,436.44	2.45	$ 80,377	0.00	$ -	$ 80,377.30
257	1333.35	1333.60	Residential	9422.90	$ 6,841,023	$ 3,420,512	1333.63	0.02	1333.63	0.02	1333.75	0.15	1333.70	0.10	4.70	$ 321,491	0.98	$ 33,495	$ 354,986.64	8.52	$ 582,539	6.32	$ 216,229	$ 798,767.93
491	1324.09	1324.34	Residential	6194.34	$ 4,497,094	$ 2,248,547	1324.30	-0.05	1324.22	-0.13	1324.68	0.34	1324.67	0.32	3.81	$ 171,342	0.00	$ -	$ 171,341.93	14.07	$ 632,777	14.10	$ 317,025	$ 949,802.56
223	1340.02	1340.27	Residential	4310.09	$ 3,129,127	$ 1,564,564	23.32	-1.00	23.32	-1.00	188.13	-1.00	188.13	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
317	1346.67	1346.92	Residential	5732.43	$ 4,161,744	$ 2,080,872	1346.85	-0.06	1346.85	-0.06	1346.99	0.07	1346.99	0.07	3.74707028	$ 155,943	0	$ -	$ 155,943.49	6.2265625	$ 259,134	3.1171875	$ 64,865	$ 323,998.30
350	1325.39	1325.64	Residential	9207.28	$ 6,684,486	$ 3,342,243	1325.32	-0.32	1325.28	-0.36	1325.65	0.01	1325.64	0.00	2.71	$ 180,853	0.00	$ -	$ 180,853.20	4.20	$ 280,598	0.28	$ 9,253	$ 289,851.45
36	1310.52	1310.77	Residential	5860.59	$ 4,254,790	$ 2,127,395	1310.41	-0.37	1310.41	-0.36	1310.51	-0.26	1310.51	-0.27	2.54	$ 108,032	0.00	$ -	$ 108,031.79	2.97	$ 126,293	0.00	$ -	$ 126,293.31
205	1344.40	1344.65	Residential	10715.30	$ 7,779,310	$ 3,889,655	1344.06	-0.59	1344.06	-0.59	1344.11	-0.54	1344.11	-0.54	1.6464844	$ 128,085	0	$ -	$ 128,085.13	1.85107424	$ 144,001	0	$ -	$ 144,000.81
105	1423.56	1423.81	Residential	7121.88	$ 5,170,483	$ 2,585,241	1423.11	-0.70	1423.11	-0.70	1423.19	-0.62	1423.19	-0.62	1.21679688	$ 62,914	0	$ -	$ 62,914.27	1.52490236	$ 78,845	0	$ -	$ 78,844.81
236	1335.02	1335.27	Residential	7463.86	$ 5,418,764	$ 2,709,382	772.25	-1.00	772.24	-1.00	1334.27	-1.00	1334.29	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
485	1320.88	1321.13	Residential	7138.89	$ 5,182,831	$ 2,591,415	1320.54	-0.59	1320.54	-0.59	1320.74	-0.39	1320.68	-0.45	1.66	$ 85,942	0.00	$ -	$ 85,941.86	2.44	$ 126,585	0.00	$ -	$ 126,584.57
276	1333.43	1333.68	Residential	582.30	$ 422,748	$ 211,374	1333.80	0.12	1333.76	0.09	1334.00	0.32	1333.98	0.31	7.51	$ 31,757	4.92	$ 10,393	$ 42,149.40	13.55	$ 57,286	13.37	$ 28,263	$ 85,548.67
232	1334.12	1334.37	Residential	6944.69	$ 5,041,848	$ 2,520,924	742.32	-1.00	742.32	-1.00	1334.19	-0.18	1334.21	-0.18	0	$ -	0	$ -	$ -	3.27734372	$ 165,239	0	$ -	$ 165,238.69
503	1335.00	1335.25	Residential	13617.09	$ 9,886,006	$ 4,943,003	1334.06	-1.00	1334.06	-1.00	1334.27	-0.98	1334.27	-0.98	0.00	$ -	0.00	$ -	$ -	0.08	$ 8,351	0.00	$ -	$ 8,350.97
64	1335.75	1336.00	Residential	8714.23	$ 6,326,533	$ 3,163,267	1335.57	-0.44	1335.57	-0.44	1335.61	-0.39	1335.61	-0.39	2.25	$ 142,440	0.00	$ -	$ 142,439.67	2.44	$ 154,086	0.00	$ -	$ 154,085.68
182	1332.38	1332.63	Residential	11920.23	$ 8,654,087	$ 4,327,044	228.28	-1.00	228.27	-1.00	888.27	-1.00	982.05	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
430	1362.52	1362.77	Residential	9532.75	$ 6,920,775	$ 3,460,388	1360.53	-1.00	1360.54	-1.00	1360.63	-1.00	1360.63	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
184	1331.65	1331.90	Residential	7792.51	$ 5,657,361	$ 2,828,681	1331.47	-0.43	1331.47	-0.43	1331.63	-0.27	1331.64	-0.27	2.29785156	$ 129,998	0	$ -	$ 129,997.76	2.9350586	$ 166,047	0	$ -	$ 166,046.86
204	1341.13	1341.38	Residential	1620.13	$ 1,176,216	$ 588,108	1341.03	-0.36	1341.03	-0.36	1341.13	-0.25	1341.14	-0.25	2.5791016	$ 30,336	0	$ -	$ 30,335.79	2.99560548	$ 35,235	0	$ -	$ 35,234.78
315	1338.98	1339.23	Residential	8432.94	$ 6,122,312	$ 3,061,156	1339.05	-0.18	1339.05	-0.18	1339.27	0.04	1339.28	0.04	3.2993164	$ 201,994	0	$ -	$ 201,994.44	5.1865234	$ 317,535	1.66113276	$ 50,850	$ 368,385.00
449	1326.30	1326.55	Residential	512.23	$ 371,880	$ 185,940	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
125	1431.44	1431.69	Residential	10791.68	$ 7,834,763	$ 3,917,382	1430.37	-1.00	1430.37	-1.00	1430.49	-1.00	1430.49	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
261	1344.98	1345.23	Residential	31570.81	$ 22,920,407	$ 11,460,203	1344.21	-1.00	913.11	-1.00	1344.65	-0.58	1344.54	-0.69	0.00	$ -	0.00	$ -	$ -	1.68	$ 384,655	0.00	$ -	$ 384,655.46
386	1324.50	1324.75	Residential	4437.01	$ 3,221,266	$ 1,610,633	228.38	-1.00	228.38	-1.00	1324.11	-0.64	1324.10	-0.65	0.00	$ -	0.00	$ -	$ -	1.43	$ 46,023	0.00	$ -	$ 46,022.58
414	1397.75	1398.00	Residential	6393.90	$ 4,641,974	$ 2,320,987	1395.84	-1.00	1395.84	-1.00	1396.06	-1.00	1396.06	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
229	1338.56	1338.81	Residential	4433.88	$ 3,218,996	$ 1,609,498	1338.74	-0.07	1338.74	-0.07	1338.92	0.11	1338.92	0.11	3.7319336	$ 120,131	0	$ -	$ 120,130.81	7.2739258	$ 234,147	4.58349612	$ 73,771	$ 307,918.69
431	1356.48	1356.73	Residential	3025.96	$ 2,196,849	$ 1,098,424	123.92	-1.00	123.92	-1.00	631.20	-1.00	631.20	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
509	1325.09	1325.34	Residential	15430.55	$ 11,202,578	$ 5,601,289	1324.71	-0.63	1324.71	-0.63	1324.78	-0.56	1324.78	-0.56	1.49	$ 166,398	0.00	$ -	$ 166,397.67	1.75	$ 196,483	0.00	$ -	$ 196,482.72
440	1326.41	1326.66	Residential	5519.16	$ 4,006,909	$ 2,003,455	0.00	-1.00	0.00	-1.00	1326.24	-0.42	1326.24	-0.42	0.00	$ -	0.00	$ -	$ -	2.32	$ 93,012	0.00	$ -	$ 93,011.95
402	1327.14	1327.39	Residential	1014.49	$ 736,520	$ 368,260	481.85	-1.00	481.85	-1.00	1326.17	-1.00	1326.17	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
542	1337.79	1338.04	Residential	1862.82	$ 1,352,407	$ 676,203	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
416	1398.89	1399.14	Residential	5128.78	$ 3,723,492	$ 1,861,746	1389.92	-1.00	1389.92	-1.00	1390.58	-1.00	1390.58	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
569	1321.58	1321.83	Residential	6215.34	$ 4,512,337	$ 2,256,168	1321.17	-0.67	1321.17	-0.67	1321.20	-0.64	1321.20	-0.64	1.32	$ 59,687	0.00	$ -	$ 59,687.11	1.45	$ 65,283	0.00	$ -	$ 65,283.46
384	1326.34	1326.59	Residential	13713.92	$ 9,956,308	$ 4,978,154	1326.19	-0.40	1326.19	-0.40	1326.23	-0.36	1326.23	-0.36	2.42	$ 240,497	0.00	$ -	$ 240,497.35	2.56	$ 255,179	0.00	$ -	$ 255,179.01
66	1341.15	1341.40	Residential	7401.01	$ 5,373,131	$ 2,686,565	1341.20	-0.20	1341.20	-0.20	1341.30	-0.10	1341.30	-0.10	3.20166016	$ 172,029	0	$ -	$ 172,029.39	3.61328128	$ 194,146	0	$ -	$ 194,146.33
134	1653.63	1653.88	Residential	8993.07	$ 6,528,966	$ 3,264,483	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
94	1414.71	1414.96	Residential	1163.57	$ 844,755	$ 422,378	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
87	1398.25	1398.50	Residential	724.88	$ 526,260	$ 263,130	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
420	1364.99	1365.24	Residential	4334.78	$ 3,147,053	$ 1,573,527	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
85	1347.99	1348.24	Residential	4822.15	$ 3,500,880	$ 1,750,440	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
294	1346.60	1346.85	Residential	349.86	$ 253,997	$ 126,998	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
243	1342.10	1342.35	Residential	3590.12	$ 2,606,425	$ 1,303,213	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
471	1339.29	1339.54	Residential	3984.20	$ 2,892,527	$ 1,446,264	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -

10-Year and 100-Year Existing Building Damages in Area A

															Existing									
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
473	1337.74	1337.99	Residential	5738.70	$ 4,166,293	$ 2,083,146	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
70	1337.13	1337.38	Residential	428.49	$ 311,081	$ 155,540	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
466	1333.18	1333.43	Residential	4856.25	$ 3,525,640	$ 1,762,820	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
247	1330.67	1330.92	Residential	324.60	$ 235,659	$ 117,830	1329.61	-1.00	1329.61	-1.00	0.00	-1.00	1331.19	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
486	1328.38	1328.63	Residential	10080.08	$ 7,318,139	$ 3,659,070	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
418	1326.27	1326.52	Residential	642.45	$ 466,418	$ 233,209	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
577	1325.04	1325.29	Residential	6459.08	$ 4,689,290	$ 2,344,645	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
273	1343.59	1343.84	Residential	2568.08	$ 1,864,428	$ 932,214	64.58	-1.00	64.58	-1.00	86.11	-1.00	86.12	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
562	1318.27	1318.52	Residential	6529.13	$ 4,740,151	$ 2,370,076	0.00	-1.00	0.00	-1.00	68.31	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
201	1336.36	1336.61	Residential	10297.53	$ 7,476,003	$ 3,738,002	153.83	-1.00	153.83	-1.00	153.83	-1.00	153.84	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
245	1340.43	1340.68	Residential	941.45	$ 683,496	$ 341,748	0.00	-1.00	0.00	-1.00	213.48	-1.00	213.49	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
305	1341.91	1342.16	Residential	6338.38	$ 4,601,667	$ 2,300,833	216.16	-1.00	216.16	-1.00	216.17	-1.00	216.17	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
372	1326.69	1326.94	Residential	1276.52	$ 926,755	$ 463,378	0.00	-1.00	0.00	-1.00	206.81	-1.00	206.82	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
226	1098.42	1098.67	Residential	691.10	$ 501,735	$ 250,868	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
6	1318.58	1318.83	Residential	8429.50	$ 6,119,817	$ 3,059,909	220.78	-1.00	220.78	-1.00	220.79	-1.00	220.79	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
513	1335.01	1335.26	Residential	526.95	$ 382,565	$ 191,282	0.00	-1.00	0.00	-1.00	252.12	-1.00	252.12	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
47	1318.51	1318.76	Residential	5281.01	$ 3,834,015	$ 1,917,007	349.96	-1.00	349.96	-1.00	349.97	-1.00	349.97	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
31	1318.31	1318.56	Residential	924.64	$ 671,292	$ 335,646	175.74	-1.00	175.73	-1.00	392.23	-1.00	392.23	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
175	1346.66	1346.91	Residential	1148.33	$ 833,687	$ 416,843	0.00	-1.00	0.00	-1.00	444.16	-1.00	444.16	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
248	1340.61	1340.86	Residential	2664.64	$ 1,934,529	$ 967,265	0.00	-1.00	0.00	-1.00	442.03	-1.00	442.04	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
250	1341.47	1341.72	Residential	7701.93	$ 5,591,604	$ 2,795,802	0.00	-1.00	0.00	-1.00	460.08	-1.00	460.08	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
576	1331.62	1331.87	Residential	617.80	$ 448,524	$ 224,262	505.16	-1.00	505.17	-1.00	505.22	-1.00	505.23	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
570	1320.14	1320.39	Residential	11790.86	$ 8,560,166	$ 4,280,083	506.07	-1.00	505.97	-1.00	506.25	-1.00	506.20	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
523	1326.63	1326.88	Residential	7607.83	$ 5,523,283	$ 2,761,642	524.98	-1.00	524.98	-1.00	525.04	-1.00	525.05	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
202	1275.49	1275.74	Residential	2124.08	$ 1,542,082	$ 771,041	0.00	-1.00	0.00	-1.00	477.18	-1.00	477.19	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
9	763.59	763.84	Residential	417.29	$ 302,950	$ 151,475	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
52	1346.47	1346.72	Residential	7442.51	$ 5,403,259	$ 2,701,630	149.36	-1.00	149.36	-1.00	599.70	-1.00	599.70	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
136	1341.26	1341.51	Residential	8006.87	$ 5,812,987	$ 2,906,493	266.48	-1.00	266.48	-1.00	623.67	-1.00	623.66	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
357	1322.47	1322.72	Residential	4760.72	$ 3,456,285	$ 1,728,142	0.00	-1.00	0.00	-1.00	618.21	-1.00	618.20	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
23	1316.47	1316.72	Residential	5702.06	$ 4,139,693	$ 2,069,847	619.59	-1.00	619.59	-1.00	619.65	-1.00	619.64	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
137	1343.10	1343.35	Residential	12613.34	$ 9,157,283	$ 4,578,641	692.83	-1.00	692.83	-1.00	692.84	-1.00	692.84	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
475	1322.99	1323.24	Residential	4541.68	$ 3,297,259	$ 1,648,629	83.56	-1.00	83.56	-1.00	688.76	-1.00	688.75	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
249	1339.78	1340.03	Residential	5162.03	$ 3,747,637	$ 1,873,818	758.09	-1.00	758.09	-1.00	758.09	-1.00	758.09	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
1	1317.42	1317.67	Residential	1455.68	$ 1,056,823	$ 528,411	747.59	-1.00	747.60	-1.00	747.62	-1.00	747.63	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
494	1321.28	1321.53	Residential	1256.14	$ 911,959	$ 455,980	754.22	-1.00	754.23	-1.00	754.23	-1.00	754.24	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -

10-Year and 100-Year Proposed Building Damages in Area A

															Proposed								
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
198	1331.10	1331.35	Residential	7479.12	$ 5,429,839	$ 2,714,920	1331.08	-0.27	1331.08	-0.27	1331.18	-0.17	1331.18	-0.17	2.92724608	$ 158,945	0	$ -	$ 158,944.76	3.31542968	$ 180,023	0	$ -	$ 180,022.50
528	1335.72	1335.97	Residential	10191.57	$ 7,399,081	$ 3,699,541	1335.76	-0.21	1335.76	-0.21	1335.81	-0.16	1335.81	-0.16	3.16796876	$ 234,401	0	$ -	$ 234,400.58	3.37207032	$ 249,502	0	$ -	$ 249,502.22
121	1525.48	1525.73	Residential	406.99	$ 295,472	$ 147,736	0.00	-1.00	0.00	-1.00	1166.47	-1.00	1166.47	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
538	1327.24	1327.49	Residential	2669.28	$ 1,937,899	$ 968,950	1327.36	-0.14	1327.19	-0.30	1328.06	0.57	1327.66	0.16	2.78	$ 53,955	0.00	$ -	$ 53,954.59	8.85	$ 171,478	6.79	$ 65,773	$ 237,250.71
470	1333.16	1333.41	Residential	1558.25	$ 1,131,291	$ 565,645	974.14	-1.00	974.13	-1.00	1333.04	-0.37	1333.04	-0.37	0	$ -	0	$ -	$ -	2.50341796	$ 28,321	0	$ -	$ 28,320.94
262	1340.41	1340.66	Residential	8866.52	$ 6,437,090	$ 3,218,545	1340.38	-0.28	1340.38	-0.28	1340.47	-0.19	1340.46	-0.20	2.88	$ 185,255	0.00	$ -	$ 185,254.93	3.21	$ 206,502	0.00	$ -	$ 206,502.35
61	1333.57	1333.82	Residential	2138.95	$ 1,552,880	$ 776,440	1279.33	-1.00	1279.30	-1.00	1334.09	0.27	1334.06	0.24	0.00	$ -	0.00	$ -	$ -	11.31	$ 175,681	10.24	$ 79,496	$ 255,176.89
51	1341.97	1342.22	Residential	8818.57	$ 6,402,284	$ 3,201,142	1342.64	0.42	1342.58	0.36	1343.07	0.84	1343.04	0.82	14.83	$ 949,151	15.16	$ 485,142	$ 1,434,293.06	28.47	$ 1,822,744	34.26	$ 1,096,657	$ 2,919,401.09
59	1343.56	1343.81	Residential	1029.42	$ 747,360	$ 373,680	1344.22	0.41	1344.05	0.24	1344.65	0.84	1344.54	0.73	11.11	$ 83,018	9.95	$ 37,186	$ 120,204.36	25.87	$ 193,343	30.62	$ 114,414	$ 307,756.88
274	1339.51	1339.76	Residential	2963.81	$ 2,151,726	$ 1,075,863	1340.25	0.49	1340.19	0.43	1340.72	0.96	1340.68	0.92	16.89	$ 363,361	18.04	$ 194,105	$ 557,465.73	31.56	$ 679,028	38.58	$ 415,071	$ 1,094,099.74
195	1331.08	1331.33	Residential	5775.30	$ 4,192,867	$ 2,096,433	1048.47	-1.00	1048.48	-1.00	1331.17	-0.16	1331.19	-0.16	0	$ -	0	$ -	$ -	3.35888672	$ 140,834	0	$ -	$ 140,833.64
537	1317.88	1318.13	Residential	11429.48	$ 8,297,801	$ 4,148,901	871.71	-1.00	871.70	-1.00	1317.76	-0.37	1317.74	-0.39	0.00	$ -	0.00	$ -	$ -	2.43	$ 202,016	0.00	$ -	$ 202,015.80
360	1323.97	1324.22	Residential	1063.36	$ 772,000	$ 386,000	1324.61	0.38	1324.58	0.36	1324.89	0.66	1324.88	0.66	14.77	$ 114,055	15.08	$ 58,222	$ 172,276.96	23.81	$ 183,800	27.73	$ 107,044	$ 290,844.71
338	1320.98	1321.23	Residential	3049.31	$ 2,213,799	$ 1,106,900	787.52	-1.00	787.51	-1.00	787.54	-1.00	787.53	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
60	1333.08	1333.33	Residential	7401.44	$ 5,373,442	$ 2,686,721	289.24	-1.00	289.23	-1.00	289.27	-1.00	289.26	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
413	1455.19	1455.44	Residential	9053.91	$ 6,573,135	$ 3,286,568	0.00	-1.00	0.00	-1.00	736.98	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
158	1332.06	1332.31	Residential	13840.34	$ 10,048,089	$ 5,024,045	1332.44	0.13	1332.44	0.13	1332.62	0.31	1332.63	0.31	7.8232423	$ 786,086	5.35253922	$ 268,914	$ 1,055,000.31	13.2907714	$ 1,335,469	13.00707996	$ 653,481	$ 1,988,950.04
238	1335.27	1335.52	Residential	6338.22	$ 4,601,549	$ 2,300,774	100.03	-1.00	100.03	-1.00	1335.16	-0.36	1335.16	-0.36	0	$ -	0	$ -	$ -	2.5493164	$ 117,308	0	$ -	$ 117,308.03
349	1324.98	1325.23	Residential	7393.78	$ 5,367,884	$ 2,683,942	673.55	-1.00	673.54	-1.00	783.59	-1.00	783.57	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
27	1316.52	1316.77	Residential	7472.12	$ 5,424,758	$ 2,712,379	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
405	1326.51	1326.76	Residential	1009.50	$ 732,896	$ 366,448	355.52	-1.00	355.52	-1.00	355.55	-1.00	355.55	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
141	1342.43	1342.68	Residential	7243.14	$ 5,258,522	$ 2,629,261	874.65	-1.00	874.65	-1.00	874.66	-1.00	874.67	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
146	1338.37	1338.62	Residential	15504.94	$ 11,256,588	$ 5,628,294	1338.87	0.25	1338.88	0.25	1339.19	0.57	1339.21	0.57	11.5	$ 1,294,508	10.5	$ 590,971	$ 1,885,478.44	21.244873	$ 2,391,448	24.1428222	$ 1,358,829	$ 3,750,276.74
72	1351.63	1351.88	Residential	11007.51	$ 7,991,454	$ 3,995,727	1351.32	-0.57	1351.32	-0.57	1351.37	-0.51	1351.37	-0.51	1.73583984	$ 138,719	0	$ -	$ 138,718.84	1.95458984	$ 156,200	0	$ -	$ 156,200.14
254	1345.68	1345.93	Residential	1895.39	$ 1,376,051	$ 688,025	0.00	-1.00	0.00	-1.00	753.45	-1.00	753.45	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
565	1332.50	1332.75	Residential	6624.03	$ 4,809,043	$ 2,404,522	1332.28	-0.47	1332.28	-0.47	1332.63	-0.13	1332.33	-0.43	2.11	$ 101,535	0.00	$ -	$ 101,534.68	2.29	$ 110,105	0.00	$ -	$ 110,105.49
169	1332.68	1332.93	Residential	10483.42	$ 7,610,964	$ 3,805,482	518.50	-1.00	518.50	-1.00	1332.76	-0.17	1332.76	-0.17	0	$ -	0	$ -	$ -	3.3017578	$ 251,296	0	$ -	$ 251,295.59
286	1349.36	1349.61	Residential	7943.75	$ 5,767,160	$ 2,883,580	1349.40	-0.20	1349.40	-0.20	1349.42	-0.18	1349.42	-0.18	3.19	$ 184,251	0.00	$ -	$ 184,250.62	3.26	$ 188,137	0.00	$ -	$ 188,136.69
373	1322.46	1322.71	Residential	7149.90	$ 5,190,828	$ 2,595,414	1322.63	-0.08	1322.58	-0.13	1322.97	0.26	1322.96	0.25	3.47	$ 180,133	0.00	$ -	$ 180,132.90	11.50	$ 596,755	10.49	$ 272,385	$ 869,140.61
400	1328.18	1328.43	Residential	9066.93	$ 6,582,588	$ 3,291,294	568.20	-1.00	568.20	-1.00	568.33	-1.00	568.33	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
280	1330.76	1331.01	Residential	4647.57	$ 3,374,137	$ 1,687,068	1330.98	-0.03	1330.95	-0.06	1331.20	0.20	1331.19	0.18	3.77	$ 127,074	0.00	$ -	$ 127,073.80	9.48	$ 319,818	7.67	$ 129,397	$ 449,214.88
144	1336.17	1336.42	Residential	7180.50	$ 5,213,041	$ 2,606,520	1336.51	0.08	1336.51	0.08	1336.72	0.30	1336.73	0.30	6.4023436	$ 333,757	3.36328104	$ 87,665	$ 421,421.38	12.9831541	$ 676,817	12.57641574	$ 327,807	$ 1,004,623.93
525	1326.25	1326.50	Residential	19943.97	$ 14,479,323	$ 7,239,662	1165.30	-1.00	1165.29	-1.00	1326.23	-0.27	1326.02	-0.48	0.00	$ -	0.00	$ -	$ -	2.06	$ 298,848	0.00	$ -	$ 298,848.14
404	1322.82	1323.07	Residential	5577.85	$ 4,049,522	$ 2,024,761	1322.62	-0.45	1322.60	-0.47	1322.96	-0.11	1322.95	-0.11	2.14	$ 86,586	0.00	$ -	$ 86,586.21	3.55	$ 143,612	0.00	$ -	$ 143,611.71
89	1369.74	1369.99	Residential	10864.86	$ 7,887,890	$ 3,943,945	736.76	-1.00	736.75	-1.00	736.78	-1.00	736.77	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
555	1330.05	1330.30	Residential	6177.14	$ 4,484,601	$ 2,242,300	690.87	-1.00	690.63	-1.00	1329.38	-0.92	690.95	-1.00	0.00	$ -	0.00	$ -	$ -	0.00	$ -	0.00	$ -	$ -
328	1382.11	1382.36	Residential	5083.66	$ 3,690,738	$ 1,845,369	0.00	-1.00	0.00	-1.00	1062.62	-1.00	1062.61	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
544	1317.89	1318.14	Residential	1064.51	$ 772,835	$ 386,417	0.00	-1.00	0.00	-1.00	863.13	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
269	1343.78	1344.03	Residential	1292.67	$ 938,479	$ 469,239	766.99	-1.00	0.00	-1.00	767.16	-1.00	767.11	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
163	1341.77	1342.02	Residential	767.27	$ 557,041	$ 278,521	0.00	-1.00	0.00	-1.00	900.61	-1.00	900.61	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
551	1327.07	1327.32	Residential	11720.01	$ 8,508,728	$ 4,254,364	1326.26	-1.00	915.96	-1.00	1326.52	-0.80	1326.34	-0.98	0.00	$ -	0.00	$ -	$ -	0.08	$ 7,188	0.00	$ -	$ 7,187.55
271	1331.69	1331.94	Residential	3774.99	$ 2,740,645	$ 1,370,322	1331.91	-0.04	1331.90	-0.04	1332.06	0.12	1332.04	0.10	3.85	$ 105,531	0.00	$ -	$ 105,530.89	7.02	$ 192,327	4.22	$ 57,891	$ 250,217.67
385	1323.06	1323.31	Residential	6452.90	$ 4,684,808	$ 2,342,404	1322.62	-0.69	1322.57	-0.74	1322.96	-0.35	1322.95	-0.36	1.04	$ 48,953	0.00	$ -	$ 48,952.58	2.57	$ 120,368	0.00	$ -	$ 120,368.45
460	1321.03	1321.28	Residential	1265.95	$ 919,080	$ 459,540	0.00	-1.00	0.00	-1.00	1321.13	-0.15	1321.13	-0.15	0	$ -	0	$ -	$ -	3.38769532	$ 31,136	0	$ -	$ 31,135.64
524	1332.22	1332.47	Residential	10676.48	$ 7,751,124	$ 3,875,562	1332.37	-0.10	1332.37	-0.10	1332.55	0.08	1332.56	0.08	3.58593752	$ 277,950	0	$ -	$ 277,950.48	6.5341798	$ 506,472	3.54785172	$ 137,499	$ 643,971.60
307	1348.84	1349.09	Residential	7855.95	$ 5,703,422	$ 2,851,711	1348.80	-0.29	1348.80	-0.29	1348.82	-0.27	1348.82	-0.27	2.85	$ 162,609	0.00	$ -	$ 162,608.80	2.91	$ 166,062	0.00	$ -	$ 166,062.04
346	1321.84	1322.09	Residential	2195.05	$ 1,593,607	$ 796,803	1273.33	-1.00	1273.33	-1.00	1273.38	-1.00	1273.38	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
120	1384.09	1384.34	Residential	13591.52	$ 9,867,443	$ 4,933,721	1382.97	-1.00	1383.03	-1.00	1383.41	-0.93	1383.38	-0.97	0.00	$ -	0.00	$ -	$ -	0.14	$ 13,683	0.00	$ -	$ 13,683.37
500	1317.50	1317.75	Residential	1672.89	$ 1,214,517	$ 607,259	1317.67	-0.09	1317.67	-0.09	1317.79	0.04	1317.80	0.04	3.64355468	$ 44,252	0	$ -	$ 44,251.60	5.2194826	$ 63,392	1.70727564	$ 10,368	$ 73,759.09
282	1341.63	1341.88	Residential	8841.63	$ 6,419,026	$ 3,209,513	0.00	-1.00	0.00	-1.00	770.21	-1.00	770.20	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
563	1331.78	1332.03	Residential	6237.47	$ 4,528,402	$ 2,264,201	1332.30	0.27	1331.80	-0.23	1332.80	0.77	1332.35	0.32	3.07	$ 139,191	0.00	$ -	$ 139,190.88	13.74	$ 622,091	13.63	$ 308,669	$ 930,760.23
18	1309.78	1310.03	Residential	700.48	$ 508,551	$ 254,276	1310.13	0.10	1310.08	0.05	1310.35	0.32	1310.31	0.28	5.45	$ 27,698	2.03	$ 5,149	$ 32,847.87	12.35	$ 62,823	11.69	$ 29,736	$ 92,559.20
53	1338.91	1339.16	Residential	9128.88	$ 6,627,566	$ 3,313,783	1339.02	-0.14	1339.02	-0.14	1339.06	-0.10	1339.06	-0.11	3.45	$ 228,437	0.00	$ -	$ 228,437.43	3.58	$ 236,981	0.00	$ -	$ 236,980.78
191	1331.67	1331.92	Residential	8250.07	$ 5,989,549	$ 2,994,774	1331.09	-0.83	1331.09	-0.83	1331.20	-0.72	1331.22	-0.72	0.69970704	$ 41,909	0	$ -	$ 41,909.29	1.12890628	$ 67,616	0	$ -	$ 67,616.39
164	1344.25	1344.50	Residential	7496.39	$ 5,442,379	$ 2,721,189	0.00	-1.00	0.00	-1.00	755.26	-1.00	755.27	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
258	1331.78	1332.03	Residential	8405.13	$ 6,102,124	$ 3,051,062	1331.51	-0.52	1331.51	-0.52	1331.88	-0.15	1331.80	-0.23	1.92	$ 116,858	0.00	$ -	$ 116,858.06	3.07	$ 187,354	0.00	$ -	$ 187,354.28
482	1324.13	1324.38	Residential	4767.85	$ 3,461,462	$ 1,730,731	1324.29	-0.09	1324.21	-0.17	1324.68	0.30	1324.66	0.28	3.34	$ 115,574	0.00	$ -	$ 115,573.63	12.48	$ 431,914	11.87	$ 205,419	$ 637,332.46
112	1371.29	1371.54	Residential	6684.88	$ 4,853,225	$ 2,426,612	1370.55	-0.99	1370.55	-0.99	1370.82	-0.72	1370.82	-0.72	0.04	$ 1,896	0.00	$ -	$ 1,895.79	1.11	$ 53,698	0.00	$ -	$ 53,698.28
540	1319.37	1319.62	Residential	12604.81	$ 9,151,093	$ 4,575,547	0.00	-1.00	0.00	-1.00	637.48	-1.00	637.40	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
375	1325.37	1325.62	Residential	7943.12	$ 5,766,706	$ 2,883,353	414.68	-1.00	414.68	-1.00	414.73	-1.00	414.73	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
526	1326.54	1326.79	Residential	723.15	$ 525,003	$ 262,502	0.00	-1.00	0.00	-1.00	773.77	-1.00	113.99	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
170	1342.44	1342.69	Residential	676.25	$ 490,958	$ 245,479	978.28	-1.00	978.29	-1.00	1341.92	-0.76	1341.94	-0.76	0	$ -	0	$ -	$ -	0.9448242	$ 4,639	0	$ -	$ 4,638.69
167	1346.13	1346.38	Residential	8580.62	$ 6,229,533	$ 3,114,767	1346.37	-0.01	1346.37	-0.01	1346.72	0.34	1346.72	0.34	3.96	$ 246,626	0.00	$ -	$ 246,626.24	14.25	$ 887,952	14.36	$ 447,139	$ 1,335,091.16
534	1329.33	1329.58	Residential	639.16	$ 464,030	$ 232,015	0.00	-1.00	0.00	-1.00	32.18	-1.00	32.18	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
3	1317.03	1317.28	Residential	12624.49	$ 9,165,380	$ 4,582,690	1316.84	-0.43	1316.84	-0.43	1316.87	-0.41	1316.87	-0.41	2.26	$ 207,385	0.00	$ -	$ 207,384.63	2.35	$ 215,843	0.00	$ -	$ 215,842.91
129	1494.88	1495.13	Residential	8054.19	$ 5,847,340	$ 2,923,670	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
487	1329.29	1329.54	Residential	7301.80	$ 5,301,110	$ 2,650,555	1328.95	-0.58	1328.95	-0.58	1328.98	-0.56	1328.98	-0.56	1.66	$ 88,058	0.00	$ -	$ 88,058.48	1.75	$ 92,873	0.00	$ -	$ 92,872.96
505	1334.49	1334.74	Residential	1851.91	$ 1,344,488	$ 672,244	801.65	-1.00	801.65	-1.00	801.67	-1.00	801.66	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
299	1334.10	1334.35	Residential	12457.47	$ 9,044,127	$ 4,522,063	1334.08	-0.27	1334.08	-0.27	1334.36	0.01	1334.33	-0.02	2.92	$ 263,684	0.00	$ -	$ 263,683.99	3.92	$ 354,655	0.00	$ -	$ 354,655.18
206	1330.94	1331.19	Residential	6811.92	$ 4,945,451	$ 2,472,726	1331.01	-0.18	1331.01	-0.18	1331.29	0.10	1331.30	0.10	3.28271484	$ 162,345	0	$ -	$ 162,345.06	7.0578613	$ 349,043	4.28100582	$ 105,858	$ 454,900.63
443	1325.91	1326.16	Residential	6111.80	$ 4,437,165	$ 2,218,582	1324.48	-1.00	1324.47	-1.00	1324.59	-1.00	1324.59	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
39	1317.80	1318.05	Residential	5414.14	$ 3,930,662	$ 1,965,331	1317.89	-0.16	1317.89	-0.16	1317.93	-0.13	1317.93	-0.13	3.37	$ 132,276	0.00	$ -	$ 132,276.00	3.49	$ 137,132	0.00	$ -	$ 137,131.75
502	1319.37	1319.62	Residential	2781.41	$ 2,019,305	$ 1,009,652	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
111	1379.55	1379.80	Residential	7498.79	$ 5,444,124	$ 2,722,062	1379.10	-0.70	1379.09	-0.71	1379.30	-0.50	1379.30	-0.50	1.18	$ 64,197	0.00	$ -	$ 64,197.06	1.99	$ 108,457	0.00	$ -	$ 108,457.15
438	1340.20	1340.45	Residential	6215.27	$ 4,512,285	$ 2,256,142	0.00	-1.00	0.00	-1.00	0.00	-1.00	1340.16	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
333	1324.71	1324.96	Residential	1601.10	$ 1,162,399	$ 581,200	1324.96	0.00	1324.89	-0.07	1325.36	0.40	1325.32	0.36	3.72	$ 43,244	0.00	$ -	$ 43,243.75	14.80	$ 171,987	15.11	$ 87,844	$ 259,831.40
173	1336.89	1337.14	Residential	10216.91	$ 7,417,477	$ 3,708,738	0.00	-1.00	0.00	-1.00	1335.14	-1.00	1335.14	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
580	1433.33	1433.58	Residential	2372.25	$ 1,722,254	$ 861,127	1431.31	-1.00	1431.31	-1.00	1431.40	-1.00	1431.39	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
193	1330.91	1331.16	Residential	388.64	$ 282,149	$ 141,075	1331.13	-0.03	1331.13	-0.03	1331.32	0.16	1331.34	0.16	3.8666992	$ 10,910	0	$ -	$ 10,909.85	8.9182129	$ 25,163	6.88549806	$ 9,714	$ 34,876.33
313	1344.58	1344.83	Residential	4545.76	$ 3,300,219	$ 1,650,110	0.00	-1.00	0.00	-1.00	1344.11	-0.72	1344.25	-0.72	0	$ -	0	$ -	$ -	1.12353516	$ 37,079	0	$ -	$ 37,079.12

10-Year and 100-Year Proposed Building Damages in Area A

															Proposed								
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
30	1319.25	1319.50	Residential	8650.86	$ 6,280,523	$ 3,140,262	1319.31	-0.19	1319.31	-0.19	1319.34	-0.16	1319.34	-0.16	3.25	$ 204,240	0.00	$ -	$ 204,239.66	3.35	$ 210,557	0.00	$ -	$ 210,556.99
265	1336.62	1336.87	Residential	9275.89	$ 6,734,294	$ 3,367,147	453.05	-1.00	453.06	-1.00	453.06	-1.00	453.07	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
278	1329.33	1329.58	Residential	9887.56	$ 7,178,367	$ 3,589,183	1329.54	-0.04	1329.52	-0.06	1329.70	0.13	1329.69	0.11	3.77	$ 270,836	0.00	$ -	$ 270,836.13	7.42	$ 532,664	4.79	$ 171,871	$ 704,534.95
8	1314.25	1314.50	Residential	4845.72	$ 3,517,990	$ 1,758,995	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
288	1341.77	1342.02	Residential	7520.30	$ 5,459,739	$ 2,729,869	1341.76	-0.26	1341.76	-0.26	1341.78	-0.24	1341.78	-0.24	2.95	$ 160,886	0.00	$ -	$ 160,886.34	3.06	$ 166,858	0.00	$ -	$ 166,857.93
415	1359.67	1359.92	Residential	361.17	$ 262,212	$ 131,106	0.00	-1.00	0.00	-1.00	378.48	-1.00	378.49	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
35	1317.85	1318.10	Residential	7080.65	$ 5,140,551	$ 2,570,275	803.86	-1.00	803.87	-1.00	1317.85	-0.25	1317.85	-0.25	0	$ -	0	$ -	$ -	2.99365232	$ 153,890	0	$ -	$ 153,890.22
279	1336.73	1336.98	Residential	7751.73	$ 5,627,755	$ 2,813,877	1336.39	-0.59	1336.32	-0.66	1336.98	0.00	1336.96	-0.02	1.36	$ 76,695	0.00	$ -	$ 76,694.65	3.90	$ 219,642	0.00	$ -	$ 219,641.82
399	1329.62	1329.87	Residential	9065.18	$ 6,581,319	$ 3,290,660	766.63	-1.00	766.63	-1.00	766.71	-1.00	766.72	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
42	1323.17	1323.42	Residential	7002.87	$ 5,084,085	$ 2,542,043	1323.12	-0.30	1323.12	-0.30	1323.18	-0.24	1323.18	-0.24	2.80	$ 142,295	0.00	$ -	$ 142,294.81	3.04	$ 154,434	0.00	$ -	$ 154,434.06
57	1341.09	1341.34	Residential	7023.87	$ 5,099,331	$ 2,549,666	743.98	-1.00	743.97	-1.00	759.64	-1.00	759.62	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
397	1327.07	1327.32	Residential	9177.64	$ 6,662,967	$ 3,331,483	1326.82	-0.50	1326.82	-0.50	1327.09	-0.23	1327.09	-0.23	1.98095704	$ 131,991	0	$ -	$ 131,990.51	3.06347656	$ 204,118	0	$ -	$ 204,118.43
374	1324.33	1324.58	Residential	7554.42	$ 5,484,508	$ 2,742,254	1324.35	-0.23	1324.35	-0.23	1324.42	-0.17	1324.40	-0.19	3.07	$ 168,204	0.00	$ -	$ 168,204.07	3.26	$ 178,755	0.00	$ -	$ 178,755.32
216	1336.13	1336.38	Residential	5675.45	$ 4,120,379	$ 2,060,189	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
283	1339.27	1339.52	Residential	13817.96	$ 10,031,838	$ 5,015,919	1339.17	-0.35	1338.87	-0.65	1339.53	0.01	1339.50	-0.02	1.38	$ 138,868	0.00	$ -	$ 138,868.46	3.93	$ 394,514	0.00	$ -	$ 394,513.77
334	1324.83	1325.08	Residential	10462.71	$ 7,595,925	$ 3,797,963	1324.97	-0.11	1324.90	-0.18	1325.54	0.46	1325.48	0.39	3.27	$ 248,611	0.00	$ -	$ 248,610.77	15.79	$ 1,199,270	16.50	$ 626,803	$ 1,826,072.65
26	1311.97	1312.22	Residential	13261.74	$ 9,628,026	$ 4,814,013	1311.93	-0.29	1311.93	-0.29	1311.98	-0.25	1311.97	-0.25	2.83	$ 272,152	0.00	$ -	$ 272,151.56	3.00	$ 288,982	0.00	$ -	$ 288,981.81
301	1346.57	1346.82	Residential	11175.62	$ 8,113,498	$ 4,056,749	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
308	1334.93	1335.18	Residential	6969.43	$ 5,059,808	$ 2,529,904	1334.88	-0.29	1334.88	-0.29	1335.28	0.10	1335.29	0.10	2.82177732	$ 142,777	0	$ -	$ 142,776.51	6.9296875	$ 350,629	4.1015625	$ 103,766	$ 454,394.47
196	1332.19	1332.44	Residential	8166.56	$ 5,928,926	$ 2,964,463	0.00	-1.00	0.00	-1.00	1332.16	-0.28	1332.16	-0.28	0.00	$ -	0.00	$ -	$ -	2.86	$ 169,588	0.00	$ -	$ 169,588.13
496	1323.96	1324.21	Residential	5063.01	$ 3,675,743	$ 1,837,872	1324.30	0.09	1324.22	0.01	1324.69	0.48	1324.67	0.46	4.33	$ 159,145	0.46	$ 8,480	$ 167,625.02	17.84	$ 655,585	19.37	$ 355,989	$ 1,011,574.20
573	1331.74	1331.99	Residential	7754.41	$ 5,629,702	$ 2,814,851	1331.39	-0.60	1331.39	-0.60	1331.42	-0.57	1331.42	-0.57	1.60791016	$ 90,521	0	$ -	$ 90,520.55	1.72070312	$ 96,870	0	$ -	$ 96,870.46
108	1379.24	1379.49	Residential	1156.59	$ 839,681	$ 419,840	0.00	-1.00	0.00	-1.00	1378.04	-1.00	1378.04	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
188	1333.66	1333.91	Residential	10182.29	$ 7,392,344	$ 3,696,172	1333.86	-0.05	1333.86	-0.05	1333.93	0.02	1333.94	0.02	3.78271484	$ 279,631	0	$ -	$ 279,631.28	4.4907226	$ 331,970	0.68701164	$ 25,393	$ 357,362.77
351	1324.71	1324.96	Residential	4981.85	$ 3,616,823	$ 1,808,412	1324.58	-0.39	1324.56	-0.41	1324.99	0.02	1324.98	0.01	2.36	$ 85,529	0.00	$ -	$ 85,528.69	4.31	$ 155,799	0.43	$ 7,788	$ 163,587.10
467	1340.84	1341.09	Residential	4065.37	$ 2,951,456	$ 1,475,728	0.00	-1.00	0.00	-1.00	1079.51	-1.00	1079.52	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
132	1490.09	1490.34	Residential	1336.38	$ 970,214	$ 485,107	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
408	1322.66	1322.91	Residential	6487.88	$ 4,710,200	$ 2,355,100	1322.62	-0.29	1322.57	-0.34	1323.04	0.13	1323.04	0.13	2.65	$ 124,586	0.00	$ -	$ 124,585.71	7.81	$ 367,973	5.34	$ 125,695	$ 493,668.31
119	1390.29	1390.54	Residential	315.89	$ 229,336	$ 114,668	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
584	1353.35	1353.60	Residential	0.00	$ -	$ -	175.39	-1.00	175.39	-1.00	415.79	-1.00	415.78	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
511	1321.86	1322.11	Residential	646.27	$ 469,192	$ 234,596	1322.07	-0.03	1322.00	-0.10	1322.53	0.43	1322.24	0.14	3.58	$ 16,797	0.00	$ -	$ 16,797.45	8.15	$ 38,218	5.80	$ 13,615	$ 51,833.37
54	1336.82	1337.07	Residential	9657.93	$ 7,011,655	$ 3,505,828	1336.97	-0.10	1336.94	-0.13	1337.10	0.03	1337.08	0.01	3.48	$ 244,278	0.00	$ -	$ 244,278.13	4.37	$ 306,144	0.51	$ 17,974	$ 324,117.87
289	1315.29	1315.54	Residential	732.08	$ 531,493	$ 265,747	568.06	-1.00	568.05	-1.00	707.89	-1.00	707.90	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
425	1440.09	1440.34	Residential	3730.58	$ 2,708,404	$ 1,354,202	1436.06	-1.00	1436.06	-1.00	1436.14	-1.00	1436.13	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
325	1403.93	1404.18	Residential	4455.81	$ 3,234,917	$ 1,617,458	1401.98	-1.00	1401.98	-1.00	1402.03	-1.00	1402.03	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
45	1313.71	1313.96	Residential	5863.55	$ 4,256,937	$ 2,128,469	1313.00	-0.96	1313.00	-0.96	1313.58	-0.38	1313.58	-0.38	0.15478516	$ 6,589	0	$ -	$ 6,589.11	2.47509764	$ 105,363	0	$ -	$ 105,363.35
147	1333.51	1333.76	Residential	1860.79	$ 1,350,934	$ 675,467	800.72	-1.00	800.73	-1.00	1333.04	-0.72	1333.06	-0.72	0	$ -	0	$ -	$ -	1.10644528	$ 14,947	0	$ -	$ 14,947.35
355	1320.50	1320.75	Residential	7271.22	$ 5,278,904	$ 2,639,452	1320.51	-0.24	1320.51	-0.24	1320.53	-0.22	1320.62	-0.22	3.04101564	$ 160,532	0	$ -	$ 160,532.30	3.13427736	$ 165,455	0	$ -	$ 165,455.50
55	1333.97	1334.22	Residential	8885.46	$ 6,450,843	$ 3,225,422	1256.97	-1.00	1256.97	-1.00	1257.07	-1.00	1257.06	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
383	1323.11	1323.36	Residential	6532.58	$ 4,742,656	$ 2,371,328	1322.62	-0.74	1322.57	-0.78	1322.97	-0.39	1322.96	-0.39	0.86	$ 40,850	0.00	$ -	$ 40,849.83	2.42	$ 114,838	0.00	$ -	$ 114,838.03
377	1324.05	1324.30	Residential	6948.25	$ 5,044,428	$ 2,522,214	1324.25	-0.05	1324.22	-0.08	1324.48	0.18	1324.47	0.17	3.69	$ 185,964	0.00	$ -	$ 185,964.02	9.21	$ 464,467	7.29	$ 183,883	$ 648,349.37
501	1320.89	1321.14	Residential	14670.16	$ 10,650,533	$ 5,325,266	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
114	1377.43	1377.68	Residential	1961.87	$ 1,424,316	$ 712,158	1377.38	-0.30	1377.38	-0.30	1377.48	-0.20	1377.48	-0.20	2.80	$ 39,881	0.00	$ -	$ 39,880.85	3.19	$ 45,386	0.00	$ -	$ 45,386.17
92	1384.83	1385.08	Residential	23180.32	$ 16,828,912	$ 8,414,456	1383.02	-1.00	1383.02	-1.00	1383.70	-1.00	1383.69	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
194	1337.21	1337.46	Residential	9523.28	$ 6,913,901	$ 3,456,951	1337.21	-0.25	1337.21	-0.25	1337.29	-0.17	1337.29	-0.17	3.01	$ 208,160	0.00	$ -	$ 208,159.74	3.31	$ 228,652	0.00	$ -	$ 228,651.62
560	1318.46	1318.71	Residential	5850.33	$ 4,247,338	$ 2,123,669	1318.50	-0.21	1318.50	-0.21	1318.55	-0.16	1318.55	-0.16	3.16	$ 134,223	0.00	$ -	$ 134,222.51	3.36	$ 142,912	0.00	$ -	$ 142,912.13
300	1339.66	1339.91	Residential	13233.48	$ 9,607,509	$ 4,803,755	341.83	-1.00	341.83	-1.00	1339.10	-0.81	1339.11	-0.81	0	$ -	0	$ -	$ -	0.7573242	$ 72,760	0	$ -	$ 72,759.99
478	1321.22	1321.47	Residential	7719.33	$ 5,604,232	$ 2,802,116	1320.76	-0.71	1320.74	-0.73	1321.53	0.07	1321.51	0.04	1.08	$ 60,585	0.00	$ -	$ 60,584.81	5.24	$ 293,743	1.74	$ 48,702	$ 342,445.13
272	1339.97	1340.22	Residential	5299.00	$ 3,847,076	$ 1,923,538	1340.21	0.00	1340.15	-0.06	1340.67	0.45	1340.62	0.40	3.75	$ 144,171	0.00	$ -	$ 144,171.44	16.15	$ 621,196	17.01	$ 327,119	$ 948,314.61
152	1345.74	1345.99	Residential	6940.51	$ 5,038,809	$ 2,519,405	1346.19	0.20	1346.19	0.20	1346.44	0.45	1346.44	0.45	10.0827637	$ 508,051	8.51586918	$ 214,549	$ 722,600.45	17.4472657	$ 879,134	18.82617198	$ 474,307	$ 1,353,441.91
507	1326.03	1326.28	Residential	10797.12	$ 7,838,706	$ 3,919,353	1326.10	-0.18	1326.10	-0.18	1326.37	0.09	1326.37	0.09	3.27197264	$ 256,480	0	$ -	$ 256,480.31	6.6440428	$ 520,807	3.70165992	$ 145,081	$ 665,888.08
259	1335.19	1335.44	Residential	10032.44	$ 7,283,551	$ 3,641,776	1334.66	-0.78	1334.63	-0.81	1335.44	0.00	1335.39	-0.05	0.77	$ 55,836	0.00	$ -	$ 55,835.82	3.81	$ 277,152	0.00	$ -	$ 277,151.93
568	1332.40	1332.65	Residential	5264.32	$ 3,821,899	$ 1,910,950	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
67	1358.85	1359.10	Residential	3832.96	$ 2,782,731	$ 1,391,366	1358.66	-0.43	1358.66	-0.43	1358.77	-0.33	1358.77	-0.33	2.26025392	$ 62,897	0	$ -	$ 62,896.80	2.69531252	$ 75,003	0	$ -	$ 75,003.31
157	1334.69	1334.94	Residential	11620.03	$ 8,436,143	$ 4,218,071	1335.22	0.28	1335.22	0.28	1335.39	0.45	1335.40	0.45	12.3935545	$ 1,045,538	11.7509763	$ 495,665	$ 1,541,202.53	17.568115	$ 1,482,071	18.995361	$ 801,238	$ 2,283,309.17
161	1338.81	1339.06	Residential	12200.44	$ 8,857,520	$ 4,428,760	1338.67	-0.39	1338.67	-0.39	1338.88	-0.18	1338.88	-0.18	2.44287112	$ 216,378	0	$ -	$ 216,377.79	3.26708984	$ 289,383	0	$ -	$ 289,383.13
178	1338.71	1338.96	Residential	2191.33	$ 1,590,906	$ 795,453	0.00	-1.00	0.00	-1.00	1338.85	-0.10	1338.86	-0.10	0	$ -	0	$ -	$ -	3.59326172	$ 57,165	0	$ -	$ 57,165.43
394	1326.19	1326.44	Residential	863.93	$ 627,213	$ 313,607	0.00	-1.00	0.00	-1.00	263.80	-1.00	263.81	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
199	1333.72	1333.97	Residential	8444.06	$ 6,130,386	$ 3,065,193	0.00	-1.00	0.00	-1.00	331.65	-1.00	331.65	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
84	1378.04	1378.29	Residential	2416.84	$ 1,754,627	$ 877,314	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
17	1314.46	1314.71	Residential	6917.41	$ 5,022,043	$ 2,511,021	1314.60	-0.11	1314.49	-0.22	1314.93	0.22	1314.87	0.16	3.12	$ 156,890	0.00	$ -	$ 156,889.79	8.71	$ 437,577	6.60	$ 165,687	$ 603,264.30
472	1336.64	1336.89	Residential	11331.29	$ 8,226,515	$ 4,113,257	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
582	1462.74	1462.99	Residential	16759.96	$ 12,167,729	$ 6,083,864	1460.73	-1.00	1460.73	-1.00	1460.80	-1.00	1460.80	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
464	1329.31	1329.56	Residential	5295.97	$ 3,844,872	$ 1,922,436	1329.39	-0.17	1329.39	-0.17	1329.44	-0.12	1329.44	-0.12	3.30078124	$ 126,911	0	$ -	$ 126,910.83	3.5073242	$ 134,852	0	$ -	$ 134,852.14
419	1390.04	1390.29	Residential	4825.64	$ 3,503,412	$ 1,751,706	1389.19	-1.00	1389.19	-1.00	1389.89	-0.40	1389.89	-0.40	0.00	$ -	0.00	$ -	$ -	2.39	$ 83,599	0.00	$ -	$ 83,599.50
439	1343.45	1343.70	Residential	6849.88	$ 4,973,013	$ 2,486,507	0.00	-1.00	0.00	-1.00	130.35	-1.00	1061.14	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
303	1333.92	1334.17	Residential	7565.22	$ 5,492,353	$ 2,746,176	0.00	-1.00	0.00	-1.00	1333.50	-0.67	1333.50	-0.67	0.00	$ -	0.00	$ -	$ -	1.32	$ 72,543	0.00	$ -	$ 72,543.04
155	1347.15	1347.40	Residential	3848.09	$ 2,793,714	$ 1,396,857	1347.66	0.26	1347.66	0.26	1347.97	0.56	1347.97	0.56	11.6831056	$ 326,393	10.75634784	$ 150,251	$ 476,643.30	20.8896484	$ 583,597	23.64550776	$ 330,294	$ 913,890.85
82	1358.10	1358.35	Residential	651.46	$ 472,962	$ 236,481	0.00	-1.00	0.00	-1.00	30.58	-1.00	30.58	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
409	1331.58	1331.83	Residential	7662.12	$ 5,562,697	$ 2,781,348	1331.57	-0.26	1331.57	-0.26	1331.60	-0.23	1331.59	-0.24	2.97	$ 165,414	0.00	$ -	$ 165,414.18	3.06	$ 170,140	0.00	$ -	$ 170,140.29
230	1337.64	1337.89	Residential	4073.31	$ 2,957,220	$ 1,478,610	1337.76	-0.13	1337.76	-0.13	1338.09	0.20	1338.10	0.20	3.46923828	$ 102,593	0	$ -	$ 102,593.02	9.9509278	$ 294,271	8.33129892	$ 123,187	$ 417,458.30
499	1321.37	1321.62	Residential	6734.36	$ 4,889,149	$ 2,444,574	1024.72	-1.00	528.49	-1.00	1278.41	-1.00	1078.87	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
207	1345.29	1345.54	Residential	62629.14	$ 45,468,757	$ 22,734,378	1345.04	-0.50	1345.04	-0.50	1345.19	-0.35	1345.19	-0.35	2.00	$ 909,153	0.00	$ -	$ 909,153.12	2.60	$ 1,183,342	0.00	$ -	$ 1,183,342.15
63	1334.63	1334.88	Residential	5989.61	$ 4,348,454	$ 2,174,227	1335.05	0.17	1335.05	0.17	1335.26	0.38	1335.26	0.38	9.1708984	$ 398,792	7.23925776	$ 157,398	$ 556,190.23	15.3012697	$ 665,369	15.82177758	$ 344,001	$ 1,009,370.10
412	1375.69	1375.94	Residential	3662.89	$ 2,659,255	$ 1,329,627	1375.59	-0.35	1375.59	-0.35	1375.64	-0.30	1375.64	-0.30	2.60400392	$ 69,247	0	$ -	$ 69,247.10	2.78564452	$ 74,077	0	$ -	$ 74,077.39
0	1317.98	1318.23	Residential	2031.12	$ 1,474,595	$ 737,297	637.78	-1.00	637.78	-1.00	1317.82	-0.41	1317.82	-0.41	0.00	$ -	0.00	$ -	$ -	2.35	$ 34,712	0.00	$ -	$ 34,712.02
531	1324.51	1324.76	Residential	18433.22	$ 13,382,516	$ 6,691,258	1323.32	-1.00	1322.88	-1.00	1323.85	-0.90	1323.41	-1.00	0.00	$ -	0.00	$ -	$ -	0.00	$ -	0.00	$ -	$ -
174	1346.24	1346.49	Residential	1124.42	$ 816,330	$ 408,165	303.67	-1.00	303.67	-1.00	1346.51	0.02	1346.51	0.02	0	$ -	0	$ -	$ -	4.4870605	$ 36,629	0.6818847	$ 2,783	$ 39,412.44
341	1322.03	1322.28	Residential	18894.74	$ 13,717,579	$ 6,858,789	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -

10-Year and 100-Year Proposed Building Damages in Area A

															Proposed									
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
24	1314.06	1314.31	Residential	5845.51	$ 4,243,839	$ 2,121,919	1313.88	-0.43	1313.88	-0.43	1314.07	-0.24	1314.01	-0.30	2.29	$ 97,289	0.00	$ -	$ 97,289.18	2.80	$ 118,819	0.00	$ -	$ 118,819.20
246	1335.49	1335.74	Residential	8095.61	$ 5,877,416	$ 2,938,708	1335.25	-0.49	1335.25	-0.49	1335.88	0.14	1335.88	0.14	2.02539064	$ 119,041	0	$ -	$ 119,040.64	8.145508	$ 478,745	5.8037112	$ 170,554	$ 649,299.53
403	1330.29	1330.54	Residential	11988.20	$ 8,703,431	$ 4,351,715	1329.02	-1.00	1329.02	-1.00	1329.06	-1.00	1329.06	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
76	1386.63	1386.88	Residential	12282.31	$ 8,916,955	$ 4,458,478	1381.01	-1.00	1381.01	-1.00	1383.36	-1.00	1383.36	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
2	1318.40	1318.65	Residential	9772.67	$ 7,094,958	$ 3,547,479	1318.08	-0.57	1318.08	-0.57	1318.11	-0.54	1318.11	-0.54	1.71	$ 121,667	0.00	$ -	$ 121,667.45	1.82	$ 129,393	0.00	$ -	$ 129,392.92
557	1319.81	1320.06	Residential	4983.35	$ 3,617,912	$ 1,808,956	1319.67	-0.39	1319.67	-0.39	1319.76	-0.30	1319.76	-0.30	2.45800784	$ 88,929	0	$ -	$ 88,928.57	2.80615236	$ 101,524	0	$ -	$ 101,524.14
363	1327.28	1327.53	Residential	13619.36	$ 9,887,654	$ 4,943,827	1327.80	0.27	1327.79	0.26	1328.12	0.59	1328.13	0.59	11.7014158	$ 1,156,995	10.78198212	$ 533,043	$ 1,690,038.01	21.7941895	$ 2,154,934	24.9118653	$ 1,231,599	$ 3,386,533.49
348	1322.03	1322.28	Residential	12779.27	$ 9,277,748	$ 4,638,874	716.09	-1.00	716.10	-1.00	716.26	-1.00	716.27	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
222	1335.24	1335.49	Residential	10175.58	$ 7,387,470	$ 3,693,735	1335.36	-0.13	1335.36	-0.13	1335.70	0.21	1335.71	0.21	3.4663086	$ 256,073	0	$ -	$ 256,072.50	10.1816407	$ 752,166	8.65429698	$ 319,667	$ 1,071,832.42
353	1324.46	1324.71	Residential	8593.13	$ 6,238,612	$ 3,119,306	1324.36	-0.35	1324.36	-0.35	1324.38	-0.33	1324.38	-0.33	2.60	$ 162,119	0.00	$ -	$ 162,118.62	2.69	$ 167,906	0.00	$ -	$ 167,906.40
219	1337.56	1337.81	Residential	1562.94	$ 1,134,694	$ 567,347	1337.55	-0.26	1337.55	-0.26	1337.76	-0.05	1337.77	-0.05	2.9736328	$ 33,742	0	$ -	$ 33,741.62	3.81347656	$ 43,271	0	$ -	$ 43,271.27
441	1327.97	1328.22	Residential	6274.07	$ 4,554,976	$ 2,277,488	427.21	-1.00	427.20	-1.00	950.84	-1.00	950.84	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
124	1438.10	1438.35	Residential	14426.98	$ 10,473,990	$ 5,236,995	1431.87	-1.00	1431.86	-1.00	1432.70	-1.00	1432.70	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
4	1313.10	1313.35	Residential	553.49	$ 401,831	$ 200,915	1313.18	-0.17	1313.17	-0.17	0.00	-1.00	1314.42	-1.00	3.30371096	$ 13,275	0	$ -	$ 13,275.33	0	$ -	0	$ -	$ -
533	1317.14	1317.39	Residential	10692.01	$ 7,762,402	$ 3,881,201	1317.04	-0.35	1317.04	-0.35	1317.08	-0.31	1317.08	-0.32	2.61	$ 202,778	0.00	$ -	$ 202,777.58	2.74	$ 212,670	0.00	$ -	$ 212,670.09
442	1295.07	1295.32	Residential	1280.72	$ 929,801	$ 464,900	0.00	-1.00	0.00	-1.00	0.00	-1.00	730.69	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
127	1440.11	1440.36	Residential	1667.16	$ 1,210,360	$ 605,180	1432.41	-1.00	1432.41	-1.00	1432.48	-1.00	1432.48	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
213	1344.82	1345.07	Residential	18886.60	$ 13,711,674	$ 6,855,837	1344.77	-0.29	1344.77	-0.29	1344.89	-0.17	1344.90	-0.17	2.82324216	$ 387,114	0	$ -	$ 387,113.77	3.30224608	$ 452,793	0	$ -	$ 452,793.22
339	1321.66	1321.91	Residential	4252.24	$ 3,087,125	$ 1,543,562	156.52	-1.00	156.52	-1.00	1320.88	-1.00	1320.88	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
550	1321.54	1321.79	Residential	12488.97	$ 9,066,992	$ 4,533,496	1319.73	-1.00	1319.73	-1.00	1319.76	-1.00	1319.76	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
547	1321.82	1322.07	Residential	303.30	$ 220,193	$ 110,097	0.00	-1.00	0.00	-1.00	786.73	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
7	1315.20	1315.45	Residential	8695.64	$ 6,313,034	$ 3,156,517	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
166	1334.79	1335.04	Residential	4656.42	$ 3,380,564	$ 1,690,282	238.50	-1.00	238.50	-1.00	1334.60	-0.44	1334.61	-0.44	0	$ -	0	$ -	$ -	2.24804688	$ 75,997	0	$ -	$ 75,996.66
356	1323.12	1323.37	Residential	20490.88	$ 14,876,379	$ 7,438,189	473.06	-1.00	473.06	-1.00	1322.08	-1.00	1322.08	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
366	1322.45	1322.70	Residential	7079.13	$ 5,139,449	$ 2,569,724	1321.50	-1.00	1321.50	-1.00	1322.30	-0.39	1322.30	-0.39	0.00	$ -	0.00	$ -	$ -	2.43	$ 124,822	0.00	$ -	$ 124,822.36
212	1335.76	1336.01	Residential	1686.91	$ 1,224,694	$ 612,347	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
81	1362.73	1362.98	Residential	13883.69	$ 10,079,557	$ 5,039,778	1362.85	-0.12	1362.85	-0.12	1362.93	-0.04	1362.93	-0.04	3.50097656	$ 352,883	0	$ -	$ 352,882.92	3.82519532	$ 385,563	0	$ -	$ 385,562.74
252	1342.94	1343.19	Residential	11528.90	$ 8,369,982	$ 4,184,991	1342.22	-0.97	1342.22	-0.97	1343.01	-0.18	1342.25	-0.94	0.12	$ 10,095	0.00	$ -	$ 10,094.65	0.23	$ 19,617	0.00	$ -	$ 19,617.15
451	1330.63	1330.88	Residential	4329.91	$ 3,143,516	$ 1,571,758	1329.82	-1.00	1329.82	-1.00	1329.86	-1.00	1329.86	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
290	1334.83	1335.08	Residential	11536.70	$ 8,375,645	$ 4,187,822	1333.35	-1.00	1333.32	-1.00	1334.64	-0.44	1334.63	-0.45	0.00	$ -	0.00	$ -	$ -	2.19	$ 183,135	0.00	$ -	$ 183,135.43
19	1316.38	1316.63	Residential	6993.30	$ 5,077,134	$ 2,538,567	1315.78	-0.85	1315.78	-0.85	1315.97	-0.66	1315.93	-0.70	0.58	$ 29,575	0.00	$ -	$ 29,575.30	1.18	$ 60,043	0.00	$ -	$ 60,043.06
388	1322.89	1323.14	Residential	10092.64	$ 7,327,254	$ 3,663,627	1322.62	-0.52	1322.57	-0.57	1323.24	0.10	1323.22	0.08	1.73	$ 126,545	0.00	$ -	$ 126,545.40	6.46	$ 473,409	3.45	$ 126,223	$ 599,632.72
43	1320.11	1320.36	Residential	6209.68	$ 4,508,230	$ 2,254,115	1319.63	-0.74	1319.63	-0.74	1319.65	-0.71	1319.65	-0.71	1.05	$ 47,240	0.00	$ -	$ 47,239.56	1.16	$ 52,126	0.00	$ -	$ 52,126.41
347	1326.78	1327.03	Residential	9360.23	$ 6,795,524	$ 3,397,762	821.46	-1.00	23.19	-1.00	1326.56	-0.47	1326.54	-0.49	0.00	$ -	0.00	$ -	$ -	2.05	$ 139,030	0.00	$ -	$ 139,029.51
558	1329.23	1329.48	Residential	5699.37	$ 4,137,742	$ 2,068,871	0.00	-1.00	0.00	-1.00	1329.38	-0.10	0.00	-1.00	0.00	$ -	0.00	$ -	$ -	0.00	$ -	0.00	$ -	$ -
411	1371.41	1371.66	Residential	3701.56	$ 2,687,336	$ 1,343,668	1369.90	-1.00	1369.90	-1.00	1369.95	-1.00	1369.95	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
314	1330.36	1330.61	Residential	4196.13	$ 3,046,391	$ 1,523,196	1330.19	-0.42	1330.19	-0.42	1330.73	0.12	1330.74	0.12	2.30664064	$ 70,269	0	$ -	$ 70,269.30	7.7023927	$ 234,645	5.18334978	$ 78,953	$ 313,597.60
79	1368.26	1368.51	Residential	1459.23	$ 1,059,402	$ 529,701	819.50	-1.00	819.51	-1.00	1341.09	-1.00	1341.09	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
117	1391.60	1391.85	Residential	3751.96	$ 2,723,924	$ 1,361,962	0.00	-1.00	0.00	-1.00	1391.33	-0.52	1391.33	-0.53	0.00	$ -	0.00	$ -	$ -	1.90	$ 51,685	0.00	$ -	$ 51,685.40
422	1360.68	1360.93	Residential	19148.04	$ 13,901,477	$ 6,950,738	1359.30	-1.00	1359.30	-1.00	1359.43	-1.00	1359.43	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
398	1326.86	1327.11	Residential	13652.47	$ 9,911,695	$ 4,955,847	1326.93	-0.18	1326.93	-0.18	1326.96	-0.15	1326.96	-0.15	3.28	$ 324,695	0.00	$ -	$ 324,695.12	3.40	$ 336,552	0.00	$ -	$ 336,552.37
160	1330.28	1330.53	Residential	16486.30	$ 11,969,051	$ 5,984,525	1329.35	-1.00	1329.35	-1.00	1329.39	-1.00	1329.39	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
448	1350.42	1350.67	Residential	9775.28	$ 7,096,851	$ 3,548,425	1350.44	-0.23	1350.44	-0.23	1350.50	-0.18	1350.50	-0.18	3.07958984	$ 218,554	0	$ -	$ 218,553.90	3.28515624	$ 233,143	0	$ -	$ 233,142.64
241	1340.47	1340.72	Residential	4769.11	$ 3,462,376	$ 1,731,188	0.00	-1.00	0.00	-1.00	618.40	-1.00	618.40	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
65	1360.27	1360.52	Residential	2558.86	$ 1,857,730	$ 928,865	1358.39	-1.00	1358.39	-1.00	1358.61	-1.00	1358.62	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
221	1332.89	1333.14	Residential	6409.64	$ 4,653,397	$ 2,326,698	1130.18	-1.00	1130.18	-1.00	1332.84	-0.30	1332.86	-0.30	0	$ -	0	$ -	$ -	2.81298828	$ 130,899	0	$ -	$ 130,899.50
107	1408.31	1408.56	Residential	9558.60	$ 6,939,545	$ 3,469,773	1407.44	-1.00	1407.44	-1.00	1407.53	-1.00	1407.53	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
159	1337.05	1337.30	Residential	7081.33	$ 5,141,047	$ 2,570,523	0.00	-1.00	0.00	-1.00	1336.93	-0.37	1336.93	-0.37	0	$ -	0	$ -	$ -	2.52636716	$ 129,882	0	$ -	$ 129,881.71
354	1324.37	1324.62	Residential	6151.11	$ 4,465,703	$ 2,232,851	1264.84	-1.00	1264.85	-1.00	1324.36	-0.26	1324.35	-0.27	0.00	$ -	0.00	$ -	$ -	2.91	$ 130,003	0.00	$ -	$ 130,002.53
11	1310.91	1311.16	Residential	8959.69	$ 6,504,734	$ 3,252,367	1311.35	0.19	1311.26	0.10	1311.62	0.46	1311.58	0.42	6.85	$ 445,755	3.99	$ 129,896	$ 575,651.45	16.59	$ 1,078,919	17.62	$ 573,111	$ 1,652,029.25
480	1320.99	1321.24	Residential	21154.48	$ 15,358,155	$ 7,679,077	0.00	-1.00	0.00	-1.00	67.45	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
535	1318.96	1319.21	Residential	15038.36	$ 10,917,848	$ 5,458,924	1319.07	-0.14	1319.07	-0.14	1319.10	-0.11	1319.09	-0.12	3.43	$ 374,608	0.00	$ -	$ 374,608.00	3.54	$ 386,123	0.00	$ -	$ 386,122.92
324	1416.21	1416.46	Residential	23457.64	$ 17,030,244	$ 8,515,122	1413.95	-1.00	1413.95	-1.00	1414.07	-1.00	1414.07	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
15	1310.89	1311.14	Residential	6635.11	$ 4,817,087	$ 2,408,543	1311.22	0.08	1311.13	-0.01	1311.54	0.40	1311.49	0.35	3.98	$ 191,484	0.00	$ -	$ 191,483.90	14.45	$ 695,973	14.63	$ 352,302	$ 1,048,274.99
83	1371.94	1372.19	Residential	2134.99	$ 1,550,000	$ 775,000	1372.24	0.05	1372.24	0.05	1372.37	0.18	1372.36	0.17	5.52	$ 85,557	2.13	$ 16,490	$ 102,046.11	9.20	$ 142,546	7.28	$ 56,382	$ 198,928.71
396	1328.64	1328.89	Residential	16191.87	$ 11,755,297	$ 5,877,649	965.23	-1.00	965.23	-1.00	1328.35	-0.53	1328.35	-0.54	0.00	$ -	0.00	$ -	$ -	1.86	$ 218,575	0.00	$ -	$ 218,575.05
583	1330.49	1330.74	Residential	0.00	$ -	$ -	1329.79	-0.95	1329.79	-0.95	1329.82	-0.93	1329.82	-0.93	0.19970704	$ -	0	$ -	$ -	0.28759768	$ -	0	$ -	$ -
516	1322.12	1322.37	Residential	766.64	$ 556,581	$ 278,291	76.91	-1.00	76.90	-1.00	291.24	-1.00	128.43	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
342	1321.31	1321.56	Residential	440.90	$ 320,096	$ 160,048	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
150	1341.28	1341.53	Residential	4258.47	$ 3,091,652	$ 1,545,826	1341.73	0.20	1341.73	0.20	1341.90	0.37	1341.91	0.37	9.9216307	$ 306,742	8.29028298	$ 128,153	$ 434,895.66	15.1108399	$ 467,175	15.55517586	$ 240,456	$ 707,630.56
143	1329.96	1330.21	Residential	3734.03	$ 2,710,903	$ 1,355,452	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
344	1324.82	1325.07	Residential	7011.00	$ 5,089,986	$ 2,544,993	1324.73	-0.34	1324.62	-0.45	1325.17	0.09	1325.15	0.08	2.21	$ 112,561	0.00	$ -	$ 112,561.26	6.29	$ 320,286	3.21	$ 81,681	$ 401,967.21
571	1327.57	1327.82	Residential	8562.45	$ 6,216,338	$ 3,108,169	1327.58	-0.23	1327.59	-0.23	1327.62	-0.20	1327.62	-0.20	3.07714844	$ 191,286	0	$ -	$ 191,285.96	3.21142576	$ 199,633	0	$ -	$ 199,633.09
88	1379.61	1379.86	Residential	11455.28	$ 8,316,533	$ 4,158,267	1378.41	-1.00	1378.41	-1.00	1378.46	-1.00	1378.46	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
49	1377.00	1377.25	Residential	728.13	$ 528,623	$ 264,311	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
445	1348.57	1348.82	Residential	8000.24	$ 5,808,173	$ 2,904,086	1348.40	-0.42	1348.39	-0.43	1348.43	-0.39	1348.43	-0.39	2.296875	$ 133,406	0	$ -	$ 133,406.47	2.42822264	$ 141,035	0	$ -	$ 141,035.37
376	1323.14	1323.39	Residential	7118.19	$ 5,167,807	$ 2,583,904	1322.66	-0.73	1322.57	-0.82	1323.33	-0.06	1323.33	-0.06	0.73	$ 37,875	0.00	$ -	$ 37,875.39	3.77	$ 194,878	0.00	$ -	$ 194,877.81
86	1377.55	1377.80	Residential	2949.41	$ 2,141,271	$ 1,070,635	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
520	1322.62	1322.87	Residential	15567.65	$ 11,302,117	$ 5,651,058	1322.30	-0.57	1322.30	-0.57	1322.78	-0.09	1322.35	-0.52	1.71	$ 192,765	0.00	$ -	$ 192,765.11	1.90	$ 215,115	0.00	$ -	$ 215,115.49
224	1342.44	1342.69	Residential	5688.11	$ 4,129,571	$ 2,064,785	1342.46	-0.24	1342.46	-0.24	1342.48	-0.21	1342.48	-0.21	3.05	$ 125,762	0.00	$ -	$ 125,762.36	3.15	$ 130,279	0.00	$ -	$ 130,279.08
16	1311.95	1312.20	Residential	5118.95	$ 3,716,356	$ 1,858,178	0.00	-1.00	0.00	-1.00	1311.91	-0.29	1311.88	-0.32	0.00	$ -	0.00	$ -	$ -	2.72	$ 101,238	0.00	$ -	$ 101,238.03
71	1355.29	1355.54	Residential	15605.34	$ 11,329,477	$ 5,664,738	1355.85	0.31	1355.86	0.31	1356.01	0.47	1356.03	0.47	13.3	$ 1,506,820	13.02	$ 737,549	$ 2,244,369.39	18.0405271	$ 2,043,897	19.65673794	$ 1,113,503	$ 3,157,400.16
493	1320.68	1320.93	Residential	1623.50	$ 1,178,660	$ 589,330	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
380	1324.56	1324.81	Residential	7115.36	$ 5,165,750	$ 2,582,875	1324.17	-0.64	1262.30	-1.00	1324.34	-0.47	1324.33	-0.48	0.00	$ -	0.00	$ -	$ -	2.09	$ 107,830	0.00	$ -	$ 107,830.00
291	1343.71	1343.96	Residential	10971.13	$ 7,965,040	$ 3,982,520	0.00	-1.00	0.00	-1.00	1194.25	-1.00	1194.26	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
548	1331.38	1331.63	Residential	2067.78	$ 1,501,207	$ 750,604	1330.21	-1.00	1330.21	-1.00	1330.49	-1.00	1330.48	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
326	1390.61	1390.86	Residential	6518.30	$ 4,732,285	$ 2,366,143	1390.62	-0.24	1390.62	-0.24	1390.64	-0.22	1390.64	-0.22	3.05	$ 144,464	0.00	$ -	$ 144,464.11	3.14	$ 148,415	0.00	$ -	$ 148,415.38
530	1331.84	1332.09	Residential	10819.21	$ 7,854,744	$ 3,927,372	1332.11	0.02	1332.11	0.02	1332.30	0.21	1332.31	0.21	4.4724121	$ 351,297	0.66137694	$ 25,975	$ 377,271.27	10.3610839	$ 813,837	8.90551746	$ 349,753	$ 1,163,589.48
323	1425.01	1425.26	Residential	9843.82	$ 7,146,612	$ 3,573,306	1424.74	-0.52	1424.74	-0.52	1424.79	-0.47	1424.79	-0.48	1.91	$ 136,302	0.00	$ -	$ 136,302.09	2.10	$ 149,737	0.00	$ -	$ 149,736.88
497	1320.51	1320.76	Residential	2723.39	$ 1,977,179	$ 988,590	0.00	-1.00	0.00	-1.00	147.26	-1.00	147.25	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -

10-Year and 100-Year Proposed Building Damages in Area A

															Proposed								
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
391	1323.62	1323.87	Residential	9604.68	$ 6,972,994	$ 3,486,497	1323.72	-0.15	1323.65	-0.22	1324.10	0.23	1324.10	0.23	3.14	$ 218,757	0.00	$ -	$ 218,757.27	10.79	$ 752,099	9.50	$ 331,226	$ 1,083,325.18
319	1347.74	1347.99	Residential	5079.32	$ 3,687,584	$ 1,843,792	1347.48	-0.52	1347.48	-0.52	1347.77	-0.23	1347.77	-0.23	1.9375	$ 71,447	0	$ -	$ 71,446.94	3.0961914	$ 114,175	0	$ -	$ 114,174.66
492	1321.53	1321.78	Residential	1339.91	$ 972,774	$ 486,387	1320.63	-1.00	1320.63	-1.00	1320.71	-1.00	1320.70	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
321	1334.36	1334.61	Residential	10459.22	$ 7,593,394	$ 3,796,697	961.07	-1.00	961.06	-1.00	1333.64	-0.97	1333.64	-0.97	0	$ -	0	$ -	$ -	0.125	$ 9,492	0	$ -	$ 9,491.74
90	1393.57	1393.82	Residential	10984.74	$ 7,974,925	$ 3,987,462	1393.79	-0.03	1393.79	-0.03	1393.94	0.12	1393.93	0.12	3.88	$ 309,768	0.00	$ -	$ 309,768.19	7.49	$ 597,613	4.89	$ 195,031	$ 792,644.42
474	1319.47	1319.72	Residential	1083.36	$ 786,522	$ 393,261	485.09	-1.00	485.10	-1.00	485.20	-1.00	485.17	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
484	1326.28	1326.53	Residential	17723.79	$ 12,867,474	$ 6,433,737	1326.15	-0.38	1326.14	-0.39	1326.45	-0.08	1326.44	-0.09	2.44	$ 313,393	0.00	$ -	$ 313,393.36	3.65	$ 469,336	0.00	$ -	$ 469,336.09
138	1340.89	1341.14	Residential	8006.64	$ 5,812,823	$ 2,906,411	1340.56	-0.58	1340.56	-0.58	1340.78	-0.36	1340.79	-0.36	1.67041016	$ 97,098	0	$ -	$ 97,097.98	2.56445312	$ 149,067	0	$ -	$ 149,067.12
29	1317.70	1317.95	Residential	511.14	$ 371,090	$ 185,545	1197.86	-1.00	1197.85	-1.00	1317.42	-0.53	1317.42	-0.53	0.00	$ -	0.00	$ -	$ -	1.86	$ 6,918	0.00	$ -	$ 6,918.07
231	1341.90	1342.15	Residential	5392.15	$ 3,914,704	$ 1,957,352	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
32	1318.65	1318.90	Residential	4524.83	$ 3,285,027	$ 1,642,514	1318.50	-0.40	1318.50	-0.40	1318.52	-0.39	1318.51	-0.39	2.39	$ 78,436	0.00	$ -	$ 78,436.44	2.44	$ 80,313	0.00	$ -	$ 80,313.14
257	1333.35	1333.60	Residential	9422.90	$ 6,841,023	$ 3,420,512	1333.63	0.02	1333.63	0.02	1333.75	0.15	1333.70	0.10	4.70	$ 321,491	0.98	$ 33,495	$ 354,986.64	7.01	$ 479,573	4.21	$ 144,153	$ 623,725.58
491	1324.09	1324.34	Residential	6194.34	$ 4,497,094	$ 2,248,547	1324.30	-0.05	1324.22	-0.13	1324.68	0.34	1324.67	0.32	3.49	$ 156,871	0.00	$ -	$ 156,871.29	13.62	$ 612,685	13.47	$ 302,961	$ 915,646.15
223	1340.02	1340.27	Residential	4310.09	$ 3,129,127	$ 1,564,564	23.32	-1.00	23.32	-1.00	188.13	-1.00	188.13	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
317	1346.67	1346.92	Residential	5732.43	$ 4,161,744	$ 2,080,872	1346.85	-0.06	1346.85	-0.06	1346.99	0.07	1346.99	0.07	3.74707028	$ 155,943	0	$ -	$ 155,943.49	6.2265625	$ 259,134	3.1171875	$ 64,865	$ 323,998.30
350	1325.39	1325.64	Residential	9207.28	$ 6,684,486	$ 3,342,243	1325.32	-0.32	1325.28	-0.36	1325.65	0.01	1325.64	0.00	2.55	$ 170,507	0.00	$ -	$ 170,506.61	3.99	$ 266,661	0.00	$ -	$ 266,661.37
36	1310.52	1310.77	Residential	5860.59	$ 4,254,790	$ 2,127,395	1310.41	-0.37	1310.41	-0.36	1310.51	-0.26	1310.51	-0.27	2.54	$ 108,073	0.00	$ -	$ 108,073.34	2.94	$ 125,026	0.00	$ -	$ 125,026.02
205	1344.40	1344.65	Residential	10715.30	$ 7,779,310	$ 3,889,655	1344.06	-0.59	1344.06	-0.59	1344.11	-0.54	1344.11	-0.54	1.6464844	$ 128,085	0	$ -	$ 128,085.13	1.85107424	$ 144,001	0	$ -	$ 144,000.81
105	1423.56	1423.81	Residential	7121.88	$ 5,170,483	$ 2,585,241	1423.11	-0.70	1423.11	-0.70	1423.19	-0.62	1423.19	-0.62	1.21679688	$ 62,914	0	$ -	$ 62,914.27	1.52734376	$ 78,971	0	$ -	$ 78,971.04
236	1335.02	1335.27	Residential	7463.86	$ 5,418,764	$ 2,709,382	772.25	-1.00	772.24	-1.00	1334.27	-1.00	1334.29	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
485	1320.88	1321.13	Residential	7138.89	$ 5,182,831	$ 2,591,415	1320.54	-0.59	1320.54	-0.59	1320.74	-0.39	1320.68	-0.45	1.66	$ 85,917	0.00	$ -	$ 85,916.56	2.20	$ 113,805	0.00	$ -	$ 113,804.64
276	1333.43	1333.68	Residential	582.30	$ 422,748	$ 211,374	1333.80	0.12	1333.76	0.09	1334.00	0.32	1333.98	0.31	6.59	$ 27,855	3.62	$ 7,662	$ 35,517.13	13.18	$ 55,707	12.85	$ 27,158	$ 82,864.18
232	1334.12	1334.37	Residential	6944.69	$ 5,041,848	$ 2,520,924	742.32	-1.00	742.32	-1.00	1334.19	-0.18	1334.21	-0.18	0	$ -	0	$ -	$ -	3.27734372	$ 165,239	0	$ -	$ 165,238.69
503	1335.00	1335.25	Residential	13617.09	$ 9,886,006	$ 4,943,003	1334.06	-1.00	1334.06	-1.00	1334.27	-0.98	1334.27	-0.98	0.00	$ -	0.00	$ -	$ -	0.08	$ 7,820	0.00	$ -	$ 7,819.99
64	1335.75	1336.00	Residential	8714.23	$ 6,326,533	$ 3,163,267	1335.57	-0.44	1335.57	-0.44	1335.61	-0.39	1335.61	-0.39	2.25	$ 142,440	0.00	$ -	$ 142,439.67	2.43	$ 153,993	0.00	$ -	$ 153,993.00
182	1332.38	1332.63	Residential	11920.23	$ 8,654,087	$ 4,327,044	228.28	-1.00	228.27	-1.00	888.27	-1.00	982.05	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
430	1362.52	1362.77	Residential	9532.75	$ 6,920,775	$ 3,460,388	1360.53	-1.00	1360.54	-1.00	1360.63	-1.00	1360.63	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
184	1331.65	1331.90	Residential	7792.51	$ 5,657,361	$ 2,828,681	1331.47	-0.43	1331.47	-0.43	1331.63	-0.27	1331.64	-0.27	2.29785156	$ 129,998	0	$ -	$ 129,997.76	2.9350586	$ 166,047	0	$ -	$ 166,046.86
204	1341.13	1341.38	Residential	1620.13	$ 1,176,216	$ 588,108	1341.03	-0.36	1341.03	-0.36	1341.13	-0.25	1341.14	-0.25	2.5791016	$ 30,336	0	$ -	$ 30,335.79	2.99560548	$ 35,235	0	$ -	$ 35,234.78
315	1338.98	1339.23	Residential	8432.94	$ 6,122,312	$ 3,061,156	1339.05	-0.18	1339.05	-0.18	1339.27	0.04	1339.28	0.04	3.29980468	$ 202,024	0	$ -	$ 202,024.33	5.1865234	$ 317,535	1.66113276	$ 50,850	$ 368,385.00
449	1326.30	1326.55	Residential	512.23	$ 371,880	$ 185,940	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
125	1431.44	1431.69	Residential	10791.68	$ 7,834,763	$ 3,917,382	1430.37	-1.00	1430.37	-1.00	1430.49	-1.00	1430.49	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
261	1344.98	1345.23	Residential	31570.81	$ 22,920,407	$ 11,460,203	1344.21	-1.00	913.11	-1.00	1344.65	-0.58	1344.54	-0.69	0.00	$ -	0.00	$ -	$ -	1.25	$ 285,498	0.00	$ -	$ 285,497.84
386	1324.50	1324.75	Residential	4437.01	$ 3,221,266	$ 1,610,633	228.38	-1.00	228.38	-1.00	1324.11	-0.64	1324.10	-0.65	0.00	$ -	0.00	$ -	$ -	1.40	$ 45,095	0.00	$ -	$ 45,094.58
414	1397.75	1398.00	Residential	6393.90	$ 4,641,974	$ 2,320,987	1395.84	-1.00	1395.84	-1.00	1396.06	-1.00	1396.06	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
229	1338.56	1338.81	Residential	4433.88	$ 3,218,996	$ 1,609,498	1338.74	-0.07	1338.74	-0.07	1338.92	0.11	1338.92	0.11	3.7319336	$ 120,131	0	$ -	$ 120,130.81	7.28125	$ 234,383	4.59375	$ 73,936	$ 308,319.50
431	1356.48	1356.73	Residential	3025.96	$ 2,196,849	$ 1,098,424	123.92	-1.00	123.92	-1.00	631.20	-1.00	631.20	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
509	1325.09	1325.34	Residential	15430.55	$ 11,202,578	$ 5,601,289	1324.71	-0.63	1324.71	-0.63	1324.78	-0.56	1324.78	-0.56	1.49	$ 166,398	0.00	$ -	$ 166,397.67	1.75	$ 196,100	0.00	$ -	$ 196,099.82
440	1326.41	1326.66	Residential	5519.16	$ 4,006,909	$ 2,003,455	0.00	-1.00	0.00	-1.00	1326.24	-0.42	1326.24	-0.42	0.00	$ -	0.00	$ -	$ -	2.31	$ 92,718	0.00	$ -	$ 92,718.47
402	1327.14	1327.39	Residential	1014.49	$ 736,520	$ 368,260	481.85	-1.00	481.85	-1.00	1326.17	-1.00	1326.17	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
542	1337.79	1338.04	Residential	1862.82	$ 1,352,407	$ 676,203	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
416	1398.89	1399.14	Residential	5128.78	$ 3,723,492	$ 1,861,746	1389.92	-1.00	1389.92	-1.00	1390.58	-1.00	1390.58	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
569	1321.58	1321.83	Residential	6215.34	$ 4,512,337	$ 2,256,168	1321.17	-0.67	1321.17	-0.67	1321.20	-0.64	1321.20	-0.64	1.32	$ 59,709	0.00	$ -	$ 59,709.14	1.45	$ 65,239	0.00	$ -	$ 65,239.40
384	1326.34	1326.59	Residential	13713.92	$ 9,956,308	$ 4,978,154	1326.19	-0.40	1326.19	-0.40	1326.23	-0.36	1326.23	-0.36	2.42	$ 240,497	0.00	$ -	$ 240,497.35	2.56	$ 254,741	0.00	$ -	$ 254,741.48
66	1341.15	1341.40	Residential	7401.01	$ 5,373,131	$ 2,686,565	1341.20	-0.20	1341.20	-0.20	1341.30	-0.10	1341.30	-0.10	3.20263672	$ 172,082	0	$ -	$ 172,081.86	3.61328128	$ 194,146	0	$ -	$ 194,146.33
134	1653.63	1653.88	Residential	8993.07	$ 6,528,966	$ 3,264,483	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
94	1414.71	1414.96	Residential	1163.57	$ 844,755	$ 422,378	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
87	1398.25	1398.50	Residential	724.88	$ 526,260	$ 263,130	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
420	1364.99	1365.24	Residential	4334.78	$ 3,147,053	$ 1,573,527	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
85	1347.99	1348.24	Residential	4822.15	$ 3,500,880	$ 1,750,440	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
294	1346.60	1346.85	Residential	349.86	$ 253,997	$ 126,998	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
243	1342.10	1342.35	Residential	3590.12	$ 2,606,425	$ 1,303,213	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
471	1339.29	1339.54	Residential	3984.20	$ 2,892,527	$ 1,446,264	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0.00	$ -	$ -	0	$ -	0.00	$ -	$ -
473	1337.74	1337.99	Residential	5738.70	$ 4,166,293	$ 2,083,146	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
70	1337.13	1337.38	Residential	428.49	$ 311,081	$ 155,540	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
466	1333.18	1333.43	Residential	4856.25	$ 3,525,640	$ 1,762,820	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
247	1330.67	1330.92	Residential	324.60	$ 235,659	$ 117,830	1329.61	-1.00	1329.61	-1.00	0.00	-1.00	1331.19	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
486	1328.38	1328.63	Residential	10080.08	$ 7,318,139	$ 3,659,070	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
418	1326.27	1326.52	Residential	642.45	$ 466,418	$ 233,209	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
577	1325.04	1325.29	Residential	6459.08	$ 4,689,290	$ 2,344,645	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
273	1343.59	1343.84	Residential	2568.08	$ 1,864,428	$ 932,214	64.58	-1.00	64.58	-1.00	86.11	-1.00	86.12	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
562	1318.27	1318.52	Residential	6529.13	$ 4,740,151	$ 2,370,076	0.00	-1.00	0.00	-1.00	68.31	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
201	1336.36	1336.61	Residential	10297.53	$ 7,476,003	$ 3,738,002	153.83	-1.00	153.83	-1.00	153.83	-1.00	153.84	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
245	1340.43	1340.68	Residential	941.45	$ 683,496	$ 341,748	0.00	-1.00	0.00	-1.00	213.48	-1.00	213.49	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
305	1341.91	1342.16	Residential	6338.38	$ 4,601,667	$ 2,300,833	216.16	-1.00	216.16	-1.00	216.17	-1.00	216.17	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
372	1326.69	1326.94	Residential	1276.52	$ 926,755	$ 463,378	0.00	-1.00	0.00	-1.00	206.81	-1.00	206.82	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
226	1098.42	1098.67	Residential	691.10	$ 501,735	$ 250,868	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
6	1318.58	1318.83	Residential	8429.50	$ 6,119,817	$ 3,059,909	220.78	-1.00	220.78	-1.00	220.79	-1.00	220.79	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
513	1335.01	1335.26	Residential	526.95	$ 382,565	$ 191,282	0.00	-1.00	0.00	-1.00	252.12	-1.00	252.12	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
47	1318.51	1318.76	Residential	5281.01	$ 3,834,015	$ 1,917,007	349.96	-1.00	349.96	-1.00	349.97	-1.00	349.97	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
31	1318.31	1318.56	Residential	924.64	$ 671,292	$ 335,646	175.74	-1.00	175.73	-1.00	392.23	-1.00	392.23	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
175	1346.66	1346.91	Residential	1148.33	$ 833,687	$ 416,843	0.00	-1.00	0.00	-1.00	444.16	-1.00	444.16	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
248	1340.61	1340.86	Residential	2664.64	$ 1,934,529	$ 967,265	0.00	-1.00	0.00	-1.00	442.03	-1.00	442.04	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
250	1341.47	1341.72	Residential	7701.93	$ 5,591,604	$ 2,795,802	0.00	-1.00	0.00	-1.00	460.08	-1.00	460.08	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
576	1331.62	1331.87	Residential	617.80	$ 448,524	$ 224,262	505.16	-1.00	505.17	-1.00	505.22	-1.00	505.23	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
570	1320.14	1320.39	Residential	11790.86	$ 8,560,166	$ 4,280,083	506.07	-1.00	505.97	-1.00	506.25	-1.00	506.20	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
523	1326.63	1326.88	Residential	7607.83	$ 5,523,283	$ 2,761,642	524.98	-1.00	524.98	-1.00	525.04	-1.00	525.05	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
202	1275.49	1275.74	Residential	2124.08	$ 1,542,082	$ 771,041	0.00	-1.00	0.00	-1.00	477.18	-1.00	477.19	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
9	763.59	763.84	Residential	417.29	$ 302,950	$ 151,475	0.00	-1.00	0.00	-1.00	0.00	-1.00	0.00	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -

10-Year and 100-Year Proposed Building Damages in Area A

															Proposed									
Building ID	HAG	Finished Floor Elevation (ft)	Land Use Type	Building Area (sf)	Replace Cost $ ($726/SF-Res)	Content Replacement Value ($) 1/2 of Replacement Cost	10yr Exist WSEL (ft)	10yr Exist Flow Depth (ft)	10yr Prop WSEL (ft)	10yr Prop Flow Depth (ft)	100yr Exist WSEL (ft)	100yr Exist Flow Depth (ft)	100yr Prop WSEL (ft)	100yr Prop Flow Depth (ft)	10yr Building Damage (%)	10yrBuilding Damage Cost ($)	10yr Content Damage (%)	10yr Content Damage Cost ($)	10yr Total Damage Cost ($)	100yr Building Damage (%)	100yrBuilding Damage Cost ($)	100yr Content Damage (%)	100yr Content Damage Cost ($)	100yr Total Damage Cost ($)
52	1346.47	1346.72	Residential	7442.51	$ 5,403,259	$ 2,701,630	149.36	-1.00	149.36	-1.00	599.70	-1.00	599.70	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
136	1341.26	1341.51	Residential	8006.87	$ 5,812,987	$ 2,906,493	266.48	-1.00	266.48	-1.00	623.67	-1.00	623.66	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
357	1322.47	1322.72	Residential	4760.72	$ 3,456,285	$ 1,728,142	0.00	-1.00	0.00	-1.00	618.21	-1.00	618.20	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
23	1316.47	1316.72	Residential	5702.06	$ 4,139,693	$ 2,069,847	619.59	-1.00	619.59	-1.00	619.65	-1.00	619.64	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
137	1343.10	1343.35	Residential	12613.34	$ 9,157,283	$ 4,578,641	692.83	-1.00	692.83	-1.00	692.84	-1.00	692.84	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
475	1322.99	1323.24	Residential	4541.68	$ 3,297,259	$ 1,648,629	83.56	-1.00	83.56	-1.00	688.76	-1.00	688.75	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
249	1339.78	1340.03	Residential	5162.03	$ 3,747,637	$ 1,873,818	758.09	-1.00	758.09	-1.00	758.09	-1.00	758.09	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
1	1317.42	1317.67	Residential	1455.68	$ 1,056,823	$ 528,411	747.59	-1.00	747.60	-1.00	747.62	-1.00	747.63	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -
494	1321.28	1321.53	Residential	1256.14	$ 911,959	$ 455,980	754.22	-1.00	754.23	-1.00	754.23	-1.00	754.24	-1.00	0	$ -	0	$ -	$ -	0	$ -	0	$ -	$ -

XXI. APPENDIX I – GRANT FUNDING INFORMATION

TOWN OF PARADISE VALLEY FUNDING OPPORTUNITY MATRIX
MAY 20, 2025

Kimley

#	Grant Name	Agency	Funding Max	Required Match	Date Open	Date Due	Priorities	Types of Projects	Link to Site
1	**Pre-Disaster Mitigation Grant Program**	Federal Emergency Management Agency - FEMA	In FY24 NOFO, up to $10 Million awarded.	Yes. 75%/25% 25% cash, donated or third-party in-kind services, materials, or any combination. Cost share for the PDM program is adjusted to 90% federal and 10% nonfederal for the following communities: • Local governments meeting the definition of small impoverished community • Federally recognized tribes meeting the definition of small impoverished community	For FY2024 application opening date was May 22, 2024. Has happened annually but has not opened yet (most likely due to the changes at the federal level regarding FEMA).	For FY2024, the application closing date was June 28, 2024	The Pre-Disaster Mitigation (PDM) Grant Program makes federal funds available to state, local, tribal, and territorial governments to plan for and implement sustainable cost-effective measures designed to reduce the risk to individuals and property from future natural hazards, while also reducing reliance on federal funding from future disasters.	• Capability and Capacity-Building activities – activities that enhance the knowledge, skills, and expertise of the current workforce to expand or improve the administration of mitigation assistance. This includes activities in the following sub-categories: project scoping, hazard mitigation planning and planning-related activities, and other activities; • Hazard Mitigation Projects – cost-effective projects designed to increase resilience and public safety; reduce injuries and loss of life; and reduce damage and destruction to property, critical services, facilities, and infrastructure (including natural systems) from a multitude of natural hazards, including drought, wildfire, earthquakes, extreme heat, and the effects of climate change; • Management Costs – financial assistance to reimburse the recipient and subrecipient for eligible and reasonable indirect costs, direct administrative costs, and other administrative expenses associated with a specific mitigation measure or project.	https://www.fema.gov/grants/mitigation/learn/pre-disaster
2	**Hazard Mitigation Grant Program (HMGP)**	Federal Emergency Management Agency (FEMA)	Varies	Yes. 75% Grant 25% Match Required	Funding is historically available following a Presidentially-declared disaster	Varies	FEMA's Hazard Mitigation Grant Program provides funding to state, local, tribal and territorial governments so they can develop hazard mitigation plans and rebuild in a way that reduces, or mitigates, future disaster losses in their communities. This grant funding is available after a presidentially declared disaster. In this program, homeowners and businesses cannot apply for a grant. However, a local community may apply for funding on their behalf. All state, local, tribal and territorial governments must develop and adopt hazard mitigation plans to receive funding for hazard mitigation project application.	Projects that involve: 1. Protection or purchasing public or private property that experienced, or is in danger of experiencing, repetitive damage, 2. Purchasing and removing a flood-prone property from an individual, 3. Developing and adopting hazard mitigation plans, which are required for state, local, tribal and territorial governments to receive funding for their hazard mitigation projects, or 4. Using aquifer storage and recovery, floodplain and street restoration, flood diversion and storage, or green infrastructure methods that may reduce the impacts of flood and drought. Projects that include long-term efforts to reduce the impacts of future disasters. Examples include flood mitigation projects.	https://www.fema.gov/grants/mitigation/learn/hazard-mitigation
3	Safeguarding Tomorrow Revolving Loan Fund Program (RLF) - Congressional spending	Federal Emergency Management Agency (FEMA)	25%	Capitalization grant recipients must deposit an amount that is at least 10% of the amount of the grant into the loan fund, as a condition of receiving funding.	5/1/2025	6/1/2025	The Safeguarding Tomorrow Revolving Loan Fund (RLF) program is authorized under Section 205 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to provide capitalization grants to states, eligible federally recognized tribes, territories and the District of Columbia to establish revolving loan funds that provide hazard mitigation assistance for local governments to reduce risks from natural hazards and disasters. These low-interest loans will allow jurisdictions to reduce vulnerability to natural disasters, foster greater community resilience and reduce disaster suffering. Eligible entities are: - States - Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and the District of Columbia - Federally recognized tribes that received a direct major disaster declaration are eligible to apply for funding as an entity in this new program. Tribal entities may provide a loan to any authorized tribal organization, including a sub-component within their respective governmental structures. Additionally, Indian tribes located within a participating entity (such as a state or territory) may also apply for a loan under a participating entity's revolving loan fund. The priorities of the Safeguarding Tomorrow RLF program are to: Empower Entities. FEMA will collaborate with eligible entities to help them increase their capacity and capability, through focused engagement activities leading up to the application period and providing increased technical assistance during the Year 1 application period. Create innovative funding solutions. Applicants can leverage loans for non-federal cost share with other FEMA Hazard Mitigation Assistance programs, helping underserved communities access additional funding resources. Deliver equitable investments and increased access. A goal of the Safeguarding Tomorrow RLF program is that 40% of the overall benefits generated by the entity loan funds flow to underserved communities. Reduce grant application complexity. The goal of launching this effort is to reduce program complexity by breaking down barriers and increasing access to mitigation funding.	The Safeguarding Tomorrow RLF program complements and supplements FEMA's Hazard Mitigation Assistance grant portfolio to support mitigation projects at the local government level and increase the nation's resilience to natural hazards.	https://www.fema.gov/grants/mitigation/learn/storm-rlf
4	Flood Mitigation Assistance (FMA) Program	Federal Emergency Management Agency (FEMA)	$30 million for Community Flood Mitigation Projects Individual Project $300,000 Community Project $900,000	25% non-federal funds required as local match	Application Opening for FY2023 was October 16, 2023. Has happened annually but has not opened yet (most likely due to the changes at the federal level regarding FEMA).	Application deadline for FY2023 was February 29,2024 on FEMA GO Portal	The Flood Mitigation Assistance grant program is a competitive program that provides funding to state, territory and local governments and, federally recognized Tribal Nations. Since the National Flood Insurance Reform Act of 1994 was signed into law, funds are used for projects to reduce or eliminate the risk of repetitive flood damage to buildings insured by the National Flood Insurance Program.	Flood Mitigation Assistance funds may be used for projects such as Project Scoping; Technical Assistance; Community Flood Mitigation Projects; Individual Structure/Property-Level Flood Mitigation Projects; and Management Costs. Types of Projects/ Activities: Localized flood control, floodwater storage and diversion, floodplain and stream restoration, stormwater management, wetland restoration / creation.	https://www.fema.gov/grants/mitigation/learn/flood-mitigation-assistance/after-you-apply/previous-fiscal-year-subapplication-statuses/fy22-status

TOWN OF PARADISE VALLEY FUNDING OPPORTUNITY MATRIX
MAY 20, 2025

Kimley

#	Grant Name	Agency	Funding Max	Required Match	Date Open	Date Due	Priorities	Types of Projects	Link to Site
5	**Community Development Block Grant Program (CDBG Annual Competition) (HUD Funds)**	U.S. Department of Housing and Urban Development (HUD)	Competitive Fund. Up to $450,000 Community Enhancement Fund. Up to $250,000. Planning Fund. Unlisted. Economic Development Fund. Up to $250,000	Generally no required match for entitlement communities; however, states may need to provide a dollar-for-dollar match if they exceed $100,000 in administrative costs, up to a maximum of 3% of their total CDBG allocation.	*FY2024 applications opened September 2, 2025*	*FY2024 applications close on October 31, 2025*	All projects must meet one of the three national objectives: Benefit at least 51% of low and moderate-income persons. Aid in the prevention or clearance of slum and blight (meet an urgent need). Eligible grantees are as follows: Principal cities of Metropolitan Statistical Areas (MSAs) Other metropolitan cities with populations of at least 50,000 Qualified Urban Counties with populations of at least 200,000 (excluding the population of entitled cities) States and insular areas Eligibility for participation as an entitlement community is based on population data provided by the U.S. Census Bureau and metropolitan area delineations published by the Office of Management and Budget. HUD determines the amount of each entitlement grantee's annual funding allocation by a statutory dual formula which uses several objective measures of community needs, including the extent of poverty, population, housing overcrowding, age of housing and population growth lag in relationship to other metropolitan areas. Eligibility for participation as a state - 49 States and Puerto Rico participate in the State CDBG Program. HUD continues to administer the program for the non-entitled counties in the State of Hawaii because the State has permanently elected not to participate in the State CDBG Program. HUD distributes funds to each State based on a statutory formula which takes into account population, poverty, incidence of overcrowded housing, and age of housing. States participating in the CDBG Program award grants only to non-entitlement Units of General Local Government (UGLG).	CDBG funds may be used for activities which include, but are not limited to: - Acquisition of real property - Relocation and demolition - Rehabilitation of residential and non-residential structures - Construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes - Public services, within certain limits - Activities relating to energy conservation and renewable energy resources - Provision of assistance to profit-motivated businesses to carry out economic development and job creation/retention activities Each activity must meet one of the following national objectives for the program: benefit low- and moderate-income persons, prevention or elimination of slums or blight, or address community development needs having a particular urgency because existing conditions pose a serious and immediate threat to the health or welfare of the community for which other funding is not available. Generally, the following types of activities are ineligible: - Acquisition, construction, or reconstruction of buildings for the general conduct of government - Political activities - Certain income payments - Construction of new housing (with some exceptions)	https://www.hud.gov/hud-partners/community-cdbg#eg
6	**Water Infrastructure Finance and Innovation Act Program (WIFIA)**	U.S. Environmental Protection Agency (EPA)	Varies	Loan	Rolling	Continuous review cycle. No fixed deadline.	Like a bank, the WIFIA program has funding available on an ongoing basis. This allows prospective borrowers to request financing on their schedule. A rolling selection process allows EPA to provide year-round access to WIFIA funding and quicker selection decisions to prospective borrowers. In addition, under this iterative, rolling selection process, the WIFIA program can provide technical assistance to prospective borrowers that need support to complete their Letter of Interest (LOI) package. In the most recent Notices of Funding Availability, the WIFIA Program announced availability of an estimated $7.5 billion—$6.5 billion for WIFIA and $1 billion for SWIFIA—in financing to support approximately $15 billion in water infrastructure projects.	Since 2018, the WIFIA program has provided billions of dollars in loans to communities across the country and has an active pipeline of future projects. These projects will help mitigate the impacts of drought, replace lead service lines, manage stormwater, address PFAS and other emerging contaminants, and modernize aging infrastructure.	https://www.epa.gov/wifia/wifia-available-funding
7	**Corps Water Infrastructure Financing Program (CWIFP)***	U.S Army Corps of Engineers	CWIFP can provide credit assistance of up to 49% of the total project costs and up to 80% of project costs in some cases.	Loan	Open	Once a completed application is received, USACE will work with the applicant to expeditiously as possible move towards issuance of a loan.	The Corps Water Infrastructure Financing Program (CWIFP) is the U.S. Army Corps of Engineers' (Corps) new credit assistance program, also authorized by WIFIA, for non-federal dam safety projects. To be eligible for CWIFP credit assistance, a prospective borrower must be either a Local, State or Tribal Government, a Private Corporation, or a State Revolving Fund Program. Additionally multiple entities may apply for a single project under a joint application.	*Long-term, low cost credit assistance for water resource infrastructure projects **(currently limited to dam safety projects that are non-federally owned, operated, and maintained)** Funding of up to 49% of project costs (can fund up to 80% of project costs in some cases) Big impact to infrastructure with low cost and risk to taxpayers Available to individual projects or a group of projects with eligible costs in excess of $20 million Accelerates construction Local control and ownership of the project are maintained. Note: This opportunity is typically available for other water infrastructure projects. Has now been limited to just DAM projects, possibly because of budget restructuring. Keep in mind for future potential applicants. Eligible Costs: - Development-phase activities - Construction, reconstruction, rehab, and replacement activities. - Acquisition of property used to mitigate environmental impacts of eligible projects. - Capitalized interest, reserve funds, issuance costs, and other project carrying costs during construction. CWIFP is available for credit assistance to dam safety projects that support: - Flood damage reduction, hurricane, and storm damage reduction - Environmental restoration - Coastal or inland harbor navigation improvement, or inland and intracoastal waterways navigation improvement. CWIFP focuses on projects that are not federally authorized. Non-federal projects that have received federal appropriations may be eligible under certain circumstances.	https://www.usace.army.mil/Missions/Civil-Works/Infrastructure/revolutionize/CWIFP/

TOWN OF PARADISE VALLEY FUNDING OPPORTUNITY MATRIX
MAY 20, 2025

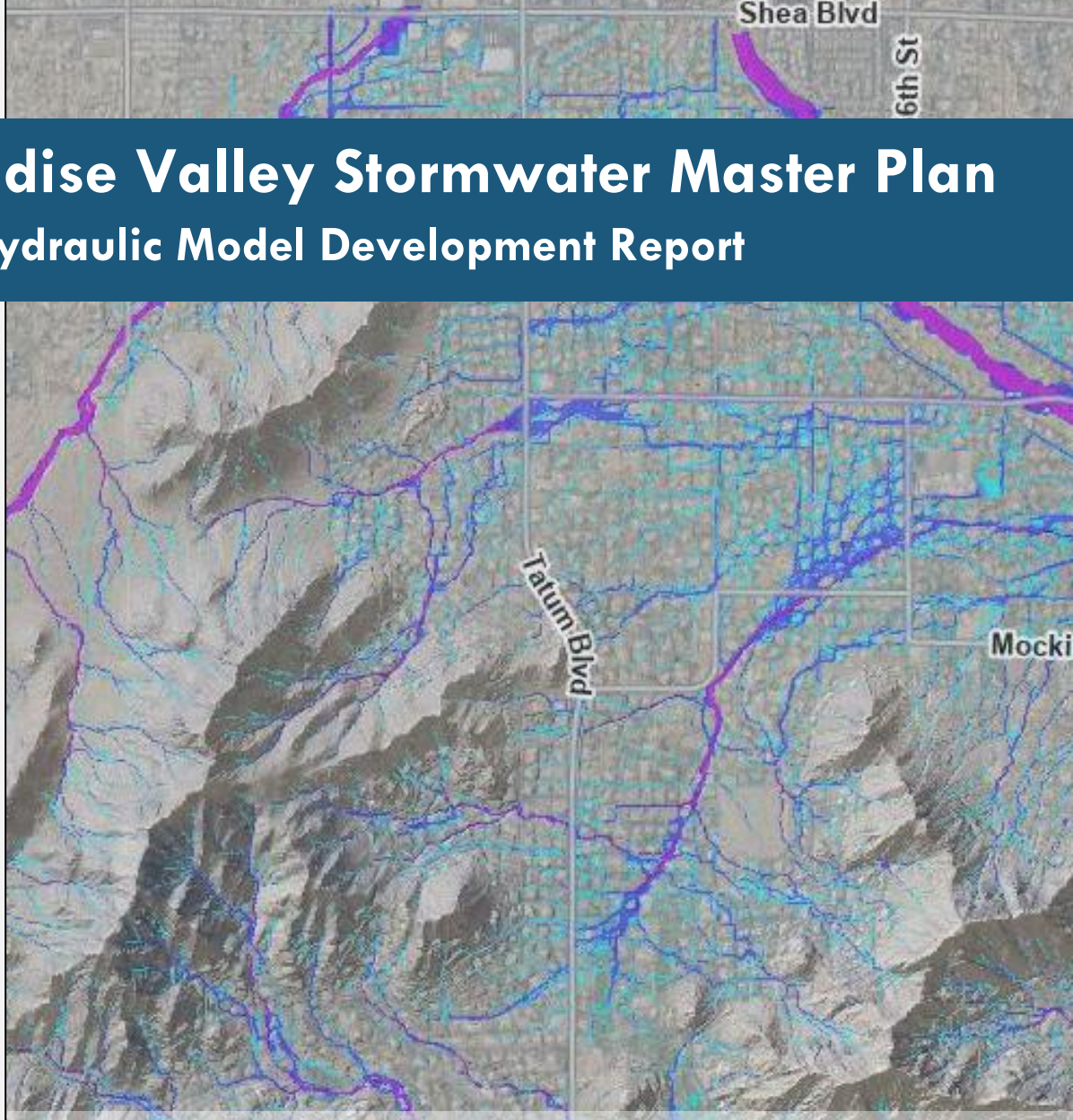
Kimley

#	Grant Name	Agency	Funding Max	Required Match	Date Open	Date Due	Priorities	Types of Projects	Link to Site
8	**Fiscal Year 2023 Public Works and Economic Adjustment Assistance (PWEAA) Application Submission and Program**	U.S Economic Development Administration (EDA)	Generally funds 50% but may fund up to 80%. In the past, the average size of a Public Works investment has been approximately $1.4 million. In FY2024, EDA expects investments ranging from $600,000 to $5 million. The average size of an EAA investment has been approximately $650,000, and EDA expects to make investments ranging from $150,000 to $2.5 million in FY2024. ACC, NCC, and BCC awards generally have ranged from $500,000 to $3 million for implementation projects and from $100,000 to $350,000 for planning activities. EDA anticipates making similar sized awards, subject to the availability of funding.	20% to 50%	Opened in 2023	There are no application submission deadlines. Applications will be accepted on an ongoing basis until the publication of a new PWEAA NOFO, cancellation of this PWEAA NOFO, or all available funds have been expended.	The Economic Development Administration's (EDA's) mission is to lead the Federal economic development agenda by promoting innovation and competitiveness, preparing American regions for economic growth and success in the worldwide economy. EDA fulfills this mission through strategic investments and partnerships that create the regional economic ecosystems required to foster globally competitive regions throughout the United States. EDA supports development in economically distressed areas of the United States by fostering job creation and attracting private investment. Under this NOFO, EDA solicits applications from applicants in order to provide investments that support construction, non construction, planning, technical assistance, and revolving loan fund projects under EDA's Public Works program and EAA program (which includes Assistance to Coal Communities, Nuclear Closure Communities, and Biomass Closure Communities). Grants and cooperative agreements made under these programs are designed to leverage existing regional assets and support the implementation of economic development strategies that advance new ideas and creative approaches to advance economic prosperity in distressed communities, including those negatively impacted by changes to the coal economy and nuclear power plant closures.	Water and sewer improvement projects included in this. Agency will fund a wide range of projects excluding the following: Some projects are generally ineligible under this NOFO, including projects that are primarily residential in nature (e.g., housing), projects to create community amenities (e.g., swimming pools, zoos, recreational centers), projects that support casinos or gaming, projects that support general governmental or public safety functions (e.g., buildings to house municipal government, firehouses, public safety equipment), and requests for funding to supplement operating budgets or replace lost revenue (including lost tax revenue). Applicants who are unsure whether their proposed project is eligible under this NOFO should consult the appropriate EDA Regional Office Point of Contact (POC) listed in section G.	https://www.eda.gov/funding/funding-opportunities/fiscal-year-2023-public-works-and-economic-adjustment-assistance
9	**Sewer Overflow and Stormwater Reuse Municipal Grants Program**	U.S Environmental Protection Agency	11/01/41	The federal share for awards shall be 80% of the total award. The state grant recipients are required to provide a non-federal cost share/match for the remaining 20% of the total award, unless reduced by EPA after verifying that the sub-award will support rural (population of 10,000 of less) and/or financially distressed communities as defined by the state.	05/09/24	States are under a Region and are allocated a certain amount of funding. For Arizona (Region 9), an allocation of $344,000 has been applied.	Funding for the planning, design and construction of critical stormwater infrastructure projects in communities including combined sewer overflows (CSO) and sanitary sewer overflows (SSO). Managing runoff remains a complex environmental challenge for local communities across the country, especially due to the rise in extreme weather events. The program can help facilitate the development of infrastructure capable of coping with the changing climate's impacts, such as increased precipitation events. **EPA allocates grant funding to states, the District of Columbia, and territories, which then provide sub-awards to eligible entities for projects that address infrastructure needs for CSOs, SSOs and stormwater management.** Projects under the program have many of the same program requirements as the CWSRF and, to the extent that eligible projects are available, at least 20% of a state's allocation must be used for green infrastructure, water conservation improvements, energy efficiency improvements or environmentally innovative activities that advance climate resilience and adaptation.	Eligible projects generally fall under three main categories: - Correcting CSOs. - Correcting SSOs. - Addressing stormwater and subsurface drainage needs. Examples of climate adaptation and resilience projects supported by this program include: Planning and design activities that increase the resilience of treatment works to manmade or natural disasters, such as extreme weather events and sea-level rise, including assessing future risks and vulnerabilities. Stormwater or subsurface drainage projects that develop or implement watershed pilot projects related to watershed-wide management, stormwater best practices, integrated water resource planning and forming watershed partnerships. Rainwater harvesting collection, storage, management and distribution systems. Green infrastructure solutions such as green roofs, green streets, bioretention/bioswales (e.g., rain gardens, tree boxes), permeable pavement and the replacement of gray infrastructure. Creating, protecting and restoring wetlands, shoreline and riparian areas. Nature-based solutions, such as the establishment or restoration of urban tree canopy. Watershed management activities related to integrated planning, partnership formation, wet weather discharge and stormwater best management practices.	https://www.epa.gov/resilient-investments/sewer-overflow-and-stormwater-reuse-municipal-grants-program
10	**Defense Community Infrastructure Program**	Department of Defense	No award can exceed $20 million or be less than $250,000	Grant recipients must agree to contribute not less than thirty percent (30%) of the total funding required for the community infrastructure project as a local cost share. For example, if the total project cost is $10 million, the required local cost share is $3 million for a $7 million Defense Community Infrastructure Program award. A proposal that does not commit to this required cost sharing, and is not subject to an exception below, will be deemed ineligible and removed from further consideration.	05/01/25	5pm PDT on June 23, 2025	Executive Summary: This Notice of Funding Opportunity Forecast (Forecast) forecasts potential funding from the Office of Local Defense Community Cooperation under the Defense Community Infrastructure Program to assist state and local governments, and not-for-profit, member-owned utilities, in addressing deficiencies in community infrastructure supportive of a military installation. For purposes of the Defense Community Infrastructure Program, "Community Infrastructure" includes projects related to transportation; schools; hospitals; police, fire, or emergency response, or other community support facilities; and utility projects (e.g., water, wastewater, telecommunications, electric and natural gas facilities). The facility or project itself must be owned by a state or local government, or a not-for-profit, member-owned utility. The facility addressed in the application must not be located on a military installation unless it is on property under the jurisdiction of a military department that is also subject to a real estate agreement (including a lease or an easement) held by an eligible community.	Eligible community infrastructure projects are any complete and usable transportation project; community support facility (e.g., school, hospital, police, fire, emergency response, or other community support facility); and utility infrastructure project (e.g., water, wastewater, telecommunications, electric, gas, or other utility infrastructure (with necessary cyber safeguards)) that: • are on land located off of a military installation or on property under the jurisdiction of a Secretary of a military department that is subject to a real estate agreement allowing the project or facility to be located on military property (including a lease or easement); • support a military installation; • are owned by a state, local government, or a not-for-profit, member-owned utility service; • are supported by the installation commander representing the installation benefitting from the proposed project; • are where ground-disturbing work has not yet commenced; and, • are construction-ready so that the project can be completed within five (5) years of grant award.	https://www.grants.gov/search-results-detail/358802

Town of Paradise Valley Stormwater Master Plan

Hydrologic and Hydraulic Model Development Report

April 2025



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Town of Paradise Valley Stormwater Master Plan

Hydrologic and Hydraulic Model Development Report

April 2025

Prepared for:

Town of Paradise Valley
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Expires 3/31/2026

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Appendix A Digital Submittal

Expires 3/31/2026

Abbreviations

ACDC	Arizona Canal Diversion Channel
ac-ft	acre-feet
ADMP	Area Drainage Master Plan
ADMS	Area Drainage Master Study
ADMS/P	Area Drainage Master Study & Plan
ALERT	Automated Local Evaluation in Real Time
FCDMC	Flood Control District of Maricopa County
HEC-RAS	Hydrologic Engineering Center River Analysis System
H&H	Hydrologic and Hydraulic
IBW	Indian Bend Wash
MIBW	Middle Indian Bend Wash
NOAA	National Oceanic and Atmospheric Administration
PRISM	Parameter-elevation Regressions on Independent Slopes Model
PVSWMP	Paradise Valley Stormwater Master Plan
SFC	Surface Feature Characterization
USGS	United States Geological Survey

1 INTRODUCTION

This document outlines the development of the hydrologic and hydraulic (H&H) components of the Town of Paradise Valley (Town) Storm Water Master Plan (SWMP). These components comprise the entirety of the existing condition H&H model development.

1.1 Study Purpose

The purpose of this study is to develop a Town-wide H&H model using the completed Flood Control District of Maricopa County (FCDMC) FLO-2D models as the starting point. The goal was to develop an integrated model that depicts the entirety of the Town of Paradise Valley (Town) limits. This model will then be leveraged to evaluate existing condition drainage issues throughout the Town, and it will further be used to evaluate the effectiveness of various conceptual flood mitigation strategies.

1.2 Study Location

The study area fully encompasses the 15.4 mi^2 boundary of the Town of Paradise Valley, Arizona. **Figure 1-1** depicts the location of the Town as it relates to the Phoenix Metropolitan area.

The study area is generally bounded by Shea Boulevard to the north and Scottsdale Road to the East. The western and southern boundaries are generally are bounded by the Piestewa Peak mountainous area and Camelback Mountain, respectively. Several notable peaks reside within the Town boundary itself, one example being Mummy Mountain.

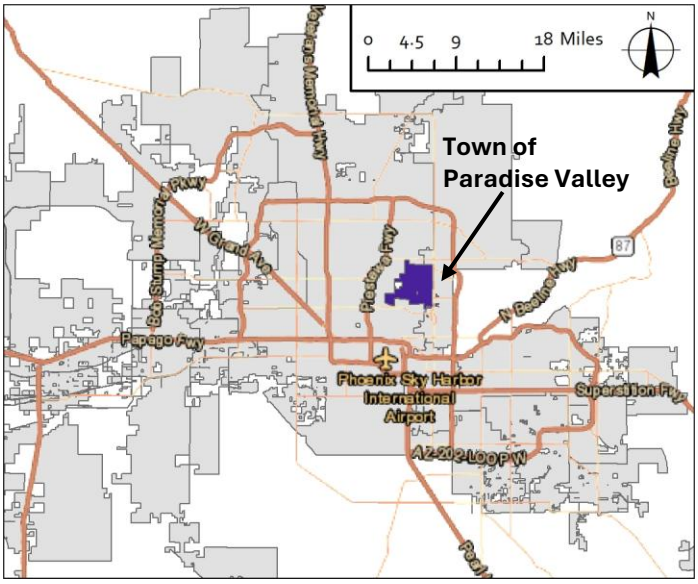


Figure 1-1. Study Location.

1.3 Consultant Team

The consultant team performing the overall SWMP study is led by Kimley Horn and Associates, Inc. (KHA) under Contract # CON-24-015-ENG. As part of the overall study, JE Fuller Hydrology & Geomorphology, Inc. (JE Fuller) performed the H&H model development tasks. Contact information for the consultant team is shown below in **Table 1-1**.

Table 1-1. Contact Information.

Consultant	Name	Role	Email	Phone
KHA	Geoff Brownell, PE	Project Manager	geoffrey.brownell@kimley-horn.com	602.944.5500
JE Fuller	Peter Acton, PE	Project Manager	peter@jefuller.com	480.222.5701

2 DATA COLLECTION AND MAPPING

This section outlines the data collection performed for this study.

2.1 Digital Data Collection

The location of the Town boundaries resides within the intersection of five Area Drainage Master Studies/Plans (ADMS/P) performed by the FCDMC. All five studies were performed using the FLO-2D modeling software. While the summation of the boundaries of the five models completely covers the Town boundaries, no singular study comprised more than half of the Town. Therefore, new model boundaries were developed, and input data for this new modeling relied heavily on the datasets used in the five ADMS studies. Data pertaining to each study was requested from the District by JE Fuller and the received data included both the entirety of the FLO-2D model input and output files as well as relevant geospatial data. The five studies are listed below in **Table 2-1**.

Table 2-1. ADMS/Ps Referenced in this Study.

Study Name	Abbreviation	Dates			Prime Consultant	Cell Size
		Topographic Data Capture	Model Development	Completed		[ft]
East Shea Corridor (Wilson, 2023)	E Shea	2007 - 2016	2016	2024	HELM-Wilson & Co., Inc.	15
Phoenix Metro (Wood Patel, 2021)	Metro	2018	2020	On-going	Wood Patel, Inc.	20
Cudia City Wash (Michael Baker, 2020)	Cudia	2015	2019	2020	Michael Baker International	15
Middle Indian Bend Wash (Kimley-Horn, 2019)	MIBW	2014	2015	2019	KHA	20
Lower Indian Bend Wash (Gavin & Barker, 2017)	LIBW	2007	2013	2017	Gavin & Barker, Inc.	20

Data leveraged from these five ADMS/Ps include inflow hydrographs, surface feature characterization (SFC) shapefiles (including building footprints), storm drain infrastructure, one-dimensional channels, and hydraulic structure (i.e., culverts).

A comprehensive soil coverage dataset was downloaded from the District website in March 2024, and precipitation datasets were also obtained from the District. This soil dataset represents the implementation of new Green and Ampt (GA) parameters that were developed by the FCDMC in late 2023. None of the five ADMS/Ps used this newer dataset.

2.2 Topographic Mapping

While much of the input data obtained from the previous ADMS modeling efforts were included in the present study, newer and more refined topography spanning the entirety of the new modeling domain was available. This dataset, obtained through the United States Geological Survey (USGS) 3D Elevation Program (3DEP) (Sanborn, 2021). The effective date of this data source is November 11th, 2020. This topographic dataset was used for the entirety of the current modeling effort.

2.3 Survey Data Collection

Survey data was provided by KHA to verify and obtain hydraulic structure properties.

2.4 Digital Projection Information

Geographical Information System (GIS) files were developed using the following projection information:

- Vertical Datum: The North American Vertical Datum of 1988 (NAVD88)
- Horizontal Datum: NAD 1983 HARN State Plane Arizona Central (WKID 2868)
- Units: International Feet

3 MODEL DEVELOPMENT

Hydrologic and hydraulic modeling for this study has been completed with the use of the FLO-2D PRO modeling software. This is a volume-conserving, two-dimensional (2D) flood routing model. The model routes flow (rainfall runoff and inflow hydrographs) over a grid comprised of square elements based upon topography (defined by the elevation of each grid element) and roughness parameters. This 2D modeling approach is highly suited for simulating the complex and distributary flow prevalent within the watersheds of this study. The FLO-2D model also incorporates significant storm drains, culverts, walls, and channels within the modeling area.

The choice of this modeling software for this study was also influenced by the existing regional modeling in the area (**Table 2-1**) that had all utilized FLO-2D, thereby simplifying the development of the present model.

The FLO-2D PRO version used in this study is build number 23.10.25 with an executable date of November 9th, 2023. The QGIS plugin version used to develop some model input files was released on August 17th, 2021, and is version 0.10.32.

3.1 Method Overview

The analysis was completed using FCDMC guidance and recommendations for model parameter estimation and development (FCDMC, 2016; FCDMC, 2020; FCDMC, 2021[a]; FCDMC, 2021[b]) as well as two-dimensional modeling techniques appropriate for the area. The QGIS plugin for developing FLO-2D model inputs was used to create spatially-varied input files for topography, infiltration, precipitation, and Manning's *n*. Other input datasets were developed using in-house custom scripting.

This study included developing datasets for the 2-Year, 10-Year, and 100-Year recurrence intervals. Both the 6-Hour and 24-Hour durations were modeled (for the 100-Year event), and the controlling duration was selected based on an evaluation of the results. The 2-Year and 10-Year events were then modeled with the controlling duration only.

3.2 Model Domain and Sub-Models

The goal of this modeling effort was to develop a Town-Wide FLO-2D model (also termed PV model in this document) that will be used to develop and assess various flood reduction measures throughout the Town. That said, the entirety of the Town boundary needed to be incorporated into the model domain. Further, a cell size of 10 feet was desired, as this finer resolution (as compared to previous FLO-2D studies listed in **Table 2-1**) as it provides a more resolved and realistic depiction of flow paths and depths. While FLO-2D can be used to model extremely large areas with very fine detail, there is an upper limit to the number of cells in a model before model runtimes become exponentially long. This issue can be easily circumvented by delineating the study area into sub-models that run independently of each other.

The model area was delineated into two separate sub-models, termed "NORTH" and "SOUTH". These delineations are simply model constructs that make it easier and facilitate running larger models. In this paradigm, sub-models that are upstream must be executed first, and the outflow from the upstream model becomes inflow into the downstream model. For the PV model, the SOUTH model is upstream of the NORTH model. Statistics for each sub-model is shown in

Table 3-1, and **Figure 3-1** below depicts the two sub-model boundaries that comprise the overall PV model.

Table 3-1. Sub-model Statistics.

Sub-Model	Cell Size (ft)	# of Cells	Area (mi^2)
NORTH	10	3,143,855	11.28
SOUTH	10	2,943,125	10.56
Total		6,086,980	21.83

Model boundaries were drawn to include as much drainage area as possible within the current modeling area, as this minimizes the need for inflow hydrographs developed using other modeling methods (e.g., earlier version of the GA parameters) keeping in line with the study goal of developing a Town-wide comprehensive model. The result is that the PV modeling area is larger than the Town boundary itself, as it includes a significant amount of upstream tributary area. The boundary was also drawn to facilitate the inclusion of existing storm drain networks and channels and to allow for accurate headwater and tailwater calculations for culverts. Multiple iterations of delineations and review of results were performed to fine tune the model boundaries.

The Tatum Wash drainage area was included in the NORTH sub-model domain for several reasons. First, initial modeling indicates distributary flow as the wash transitions from undeveloped desert into more urbanized settings, with some fraction of the distributary flow crossing into the Town along the northwestern boundary of the Town. Secondly, model calibration (not included in this submittal) leverages both precipitation datasets and stage data collected at the Tatum basin. Including this area in the NORTH sub-model simplified the calibration effort and it provided more accurate inflow hydrographs.

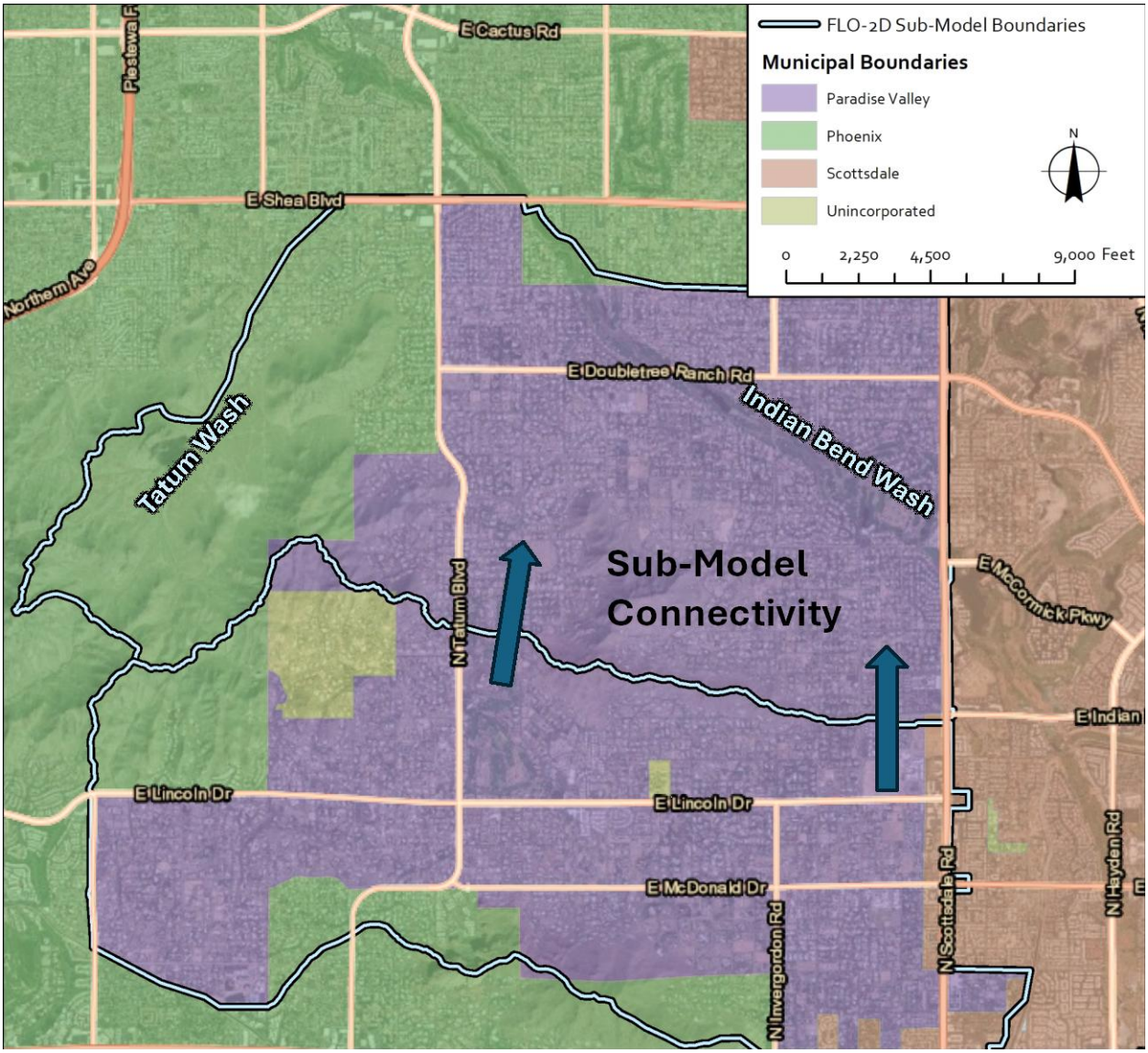


Figure 3-1. Sub-Model Boundaries and Connectivity.

3.3 Off-Site Model Inflows

The previous models were leveraged to account for inflows into the PV model. While the need for inflows from other models was minimized, the northern boundary of the PV model required offsite inflow to be included. The off-site models used to parameterize this inflow included both the MIBW and East Shea models. **Figure 3-2** below shows the spatial extents of where the offsite inflows are included in the context of the PV model boundary as well as the boundaries of the five off-site models. Several storm drain inflows from contributing studies were also identified and included.

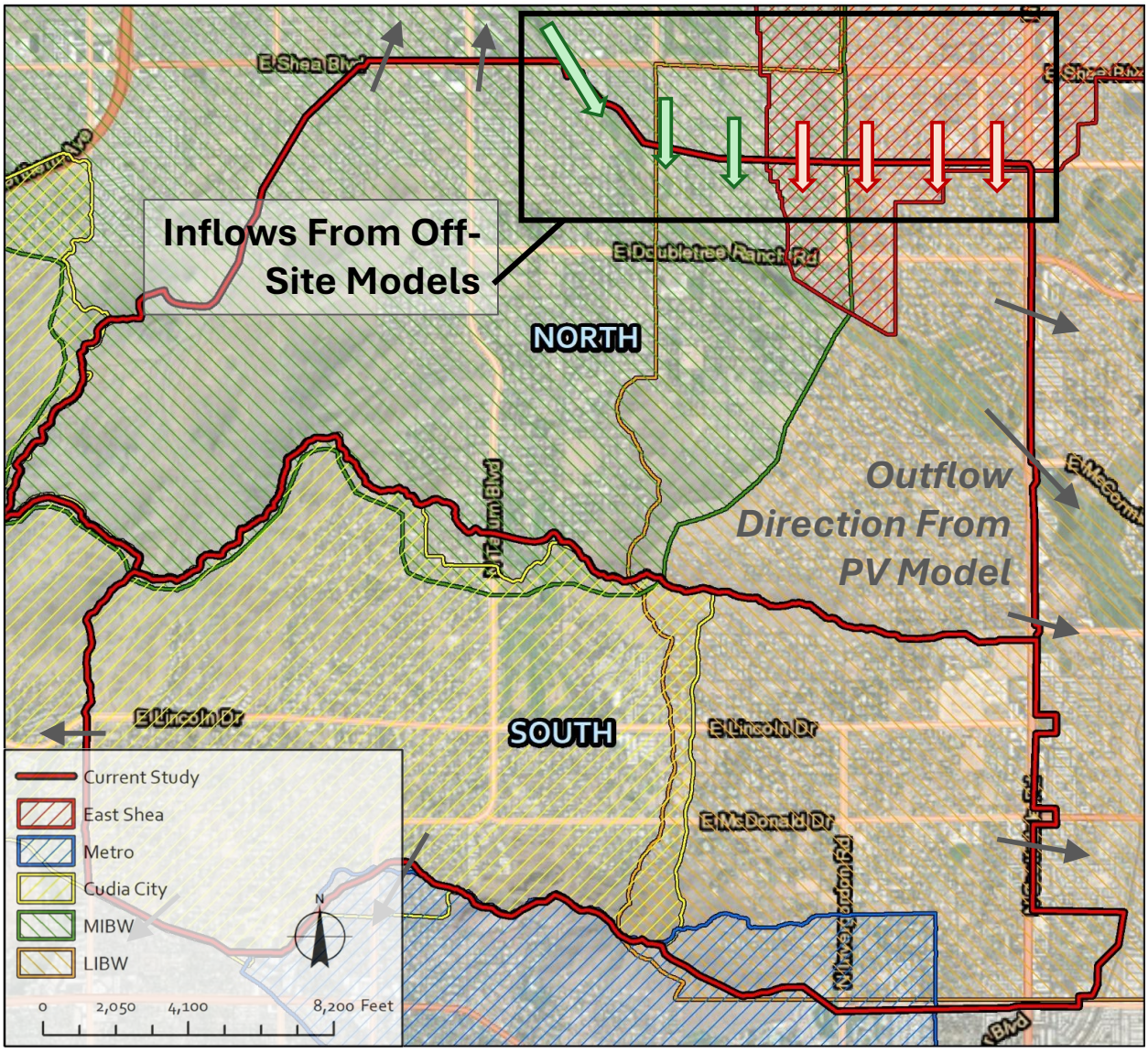


Figure 3-2. Offsite Model Boundaries and Inflows to Current Study.

The inflow hydrographs from the off-site models were obtained by using the original model files from each study (obtained from the FCDMC) and re-parameterizing the RAIN.DAT input files to develop models representing the 2-, 10-, and 100-year recurrence intervals for both the 6-hour and 24-hour durations. No other changes were made to the off-site model inflow files. For the MIBW model this required running two off-site models (MIBW-North and MIBW-South), while the East Shea Model only required one sub-model to be re-parameterized, as it is hydrologically detached from the other three sub-models. Since both studies overlap far into the PV model, new outflow nodes were placed in each off-site model domain directly on top of the upstream PV boundary to obtain hydrographs for each cell. Cells from the off-site models mapped to PV inflow cells to translate the outflow hydrographs from the offsite models into inflow hydrographs for the PV model. **Figure 3-3** depicts an example of how mapping was performed between an off-site model (with a larger grid size) and the PV model.

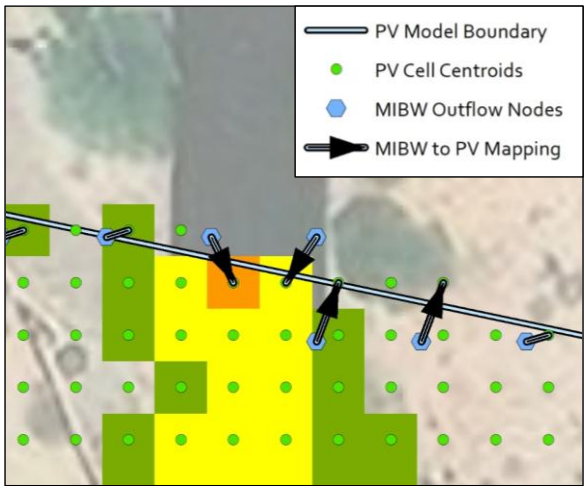


Figure 3-3. Off-site Model Mapping.

3.4 Surface Feature Characterization

The surface feature characterization (SFC) dataset defines the spatial land use for the model area. This polygon shapefile defines the extent of each land use category, and this dataset is used to develop FLO-2D input files pertaining to infiltration, blocked obstructions, and roughness parameters.

SFC datasets were generated as part of each study listed in **Table 2-1**, and these five datasets were all provided by the FCDMC. Each dataset was then merged to create one comprehensive, Town-wide SFC dataset. For areas overlapping SFC coverages the newest dataset was used. Given the varying dates of the development of each contributing SFC dataset, a close examination of the Town-wide SFC shapefile was performed against aerial datasets (dated 2024) to look for changes in land use since the underlying SFC development. Manual changes were made as necessary to update the SFC based on this newer aerial dataset.

The resulting, updated SFC dataset is shown below on **Figure 3-4**.

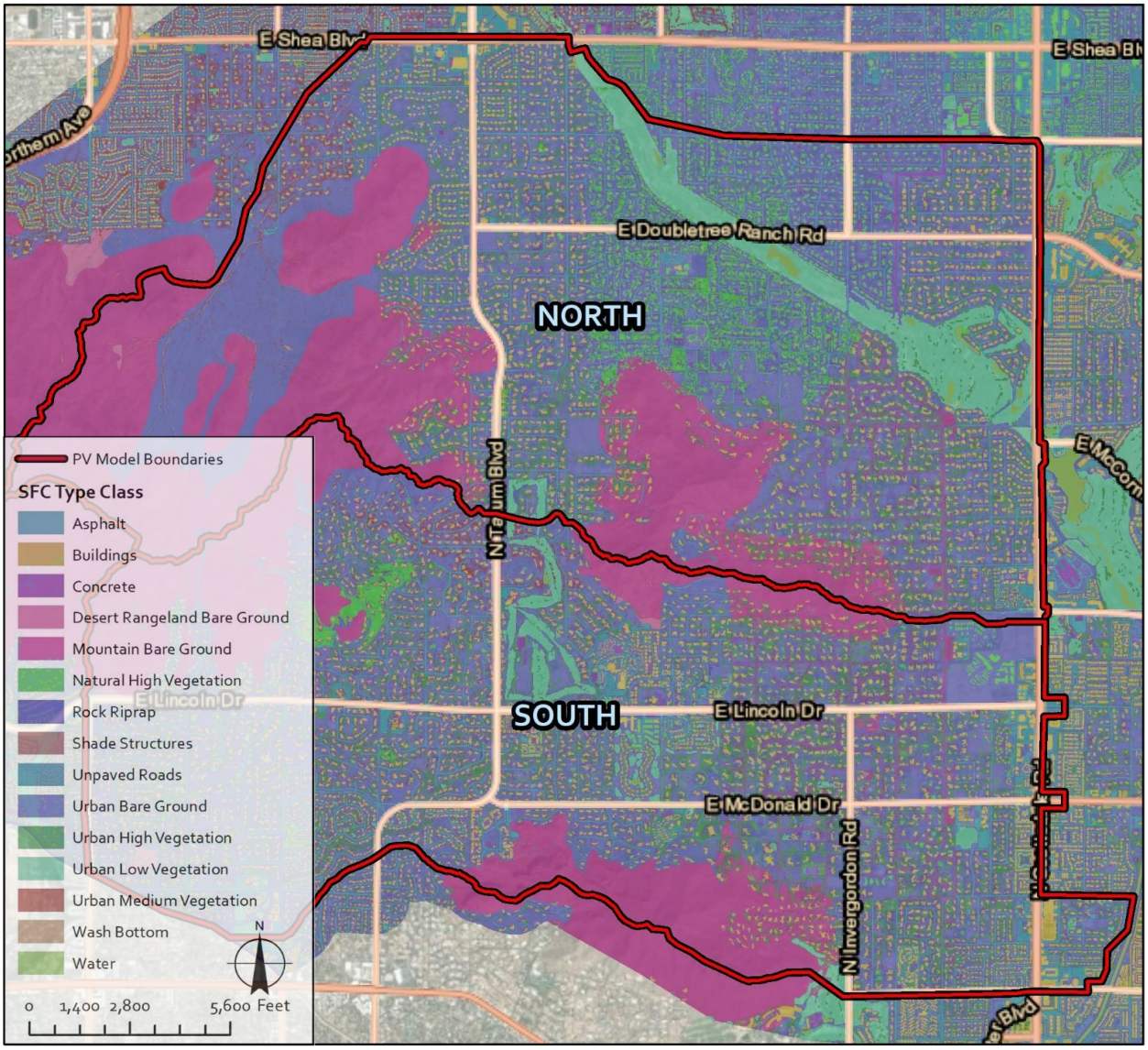


Figure 3-4. Merged and Updated SFC Dataset.

3.5 Development of Model Input Files

This section highlights the processes used to develop the FLO-2D input files.

3.5.1 Topography

3.5.1.1 Base Grid Elevation Assignment

The underlying topography for the model was developed by sampling the 10-foot model grid against the more resolved, 1-foot bare earth raster. Processes outlined in FCDMC (2021[b]) were used along with the QGIS plugin, as required by the District. A hill shade view of the topography in the study area is shown on **Figure 3-5** below.

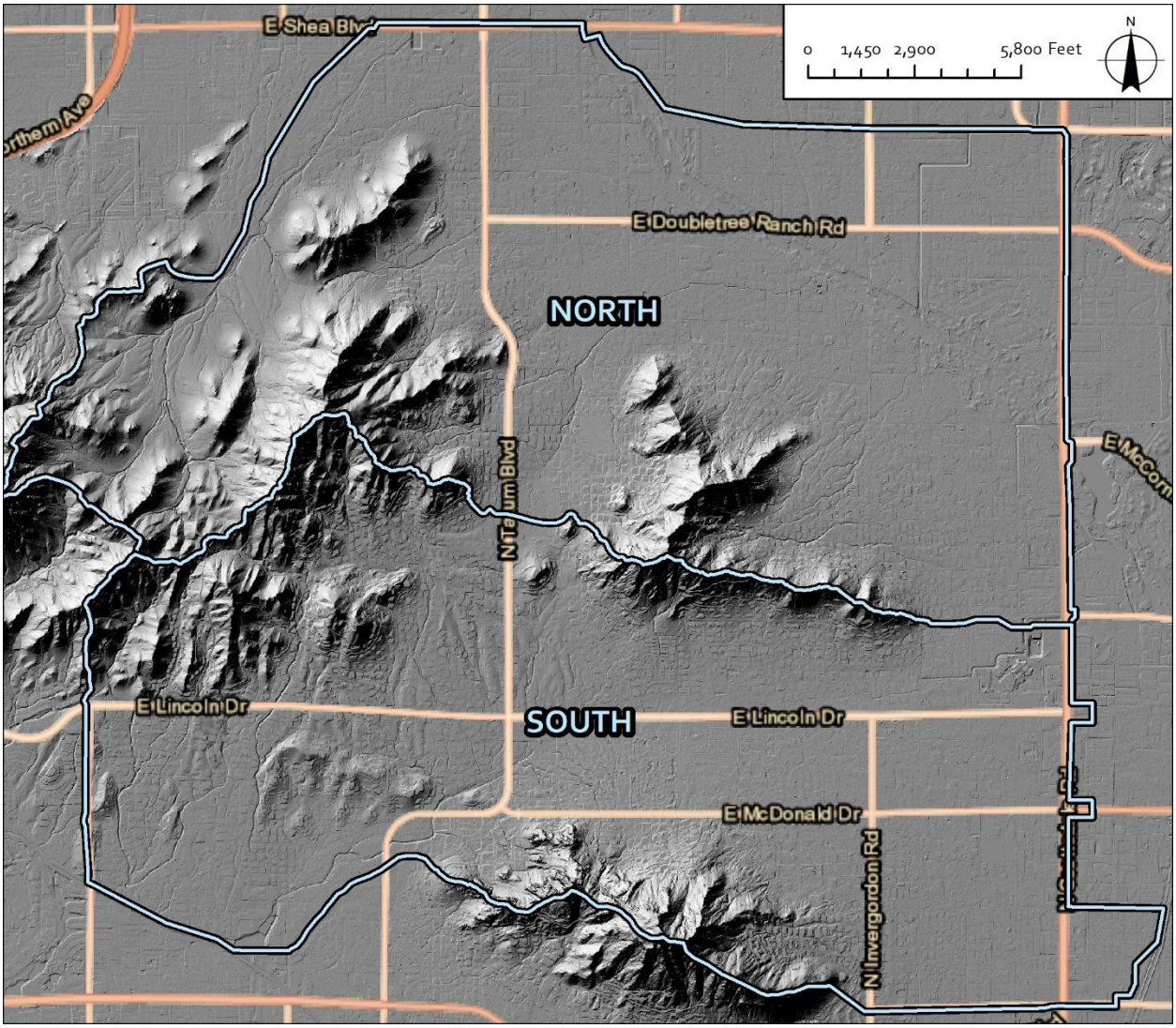


Figure 3-5. Hill Shade View of Study Area.

3.5.1.2 Elevation Adjustments

Elevation adjustments were made using a polygon shapefile to override elevations assigned in the rasterization of the source topography. This included establishing elevations for culvert and storm drain inverts along with changes to improve model stability. This shapefile is included in the digital deliverable.

3.5.2 Roughness

Roughness values in the model, represented by Manning's n values, were based on the SFC dataset discussed earlier in this report. Two spatially-varied input files were used in this model representing a depth-varying approach to assigning roughness. Both an n-value (MANNINGS_N.DAT) and an n-value corresponding to a shallow depth (SHALLOWN_SPATIAL.DAT) were used in this study. This differentiation allows FLO-2D to compute a time and depth-varied roughness value based upon the depth of water. In general, the n-value parameter corresponds to the roughness at a depth of three feet, and the shallow n-value applies to a depth of 0.5 feet. A logarithmic function is then used to compute roughness values in between these depths. The FLO-2D Data Input Manual can be referred to for more detailed information on this interpolation process.

Roughness value assignments by SFC category are listed below in **Table 3-2**.

Table 3-2. Roughness Values by SFC Category.

Class ID	Type Class	n	Shallow n
0	Natural High Vegetation	0.065	0.20
3	Urban High Vegetation	0.065	0.20
4	Urban Medium Vegetation	0.055	0.15
5	Urban Low Vegetation	0.045	0.12
6	Mountain Bare Ground	0.050	0.40
8	Desert Rangeland Bare Ground	0.040	0.25
9	Urban Bare Ground	0.035	0.13
12	Wash Bottom	0.035	0.15
13	Concrete	0.016	0.10
14	Asphalt	0.020	0.10
15	Buildings	0.024	0.12
16	Shade Structures	0.035	0.10
17	Water	0.040	0.10
21	Unpaved Roads	0.026	0.10
23	Rock Riprap	0.065	0.25

Increases in n-values in cases of deep ponding is applied in the development of FLO-2D modeling to improve model stability. Adjustments to n-values in ponded locations were made using criteria shown in **Table 3-3** below.

Table 3-3. Manning's n-value Adjustment for Ponded Depth.

Ponded Depth (ft)	Manning's n-value
5 - 8	0.08
8 - 10	0.1
10 - 15	0.2
Greater than 16	0.3

3.5.3 Precipitation

The RAIN.DAT input file defines the rainfall temporal and spatial distribution for the FLO-2D model. Two RAIN.DAT files were created to represent two design storms. Given the large scale of the modeling area, the 24-hour event may control in larger washes and channels, and the 6-hour event may control for smaller tributary watersheds throughout the modeling area. Both the 6-hour and 24-hour storm durations were run for the 100-year storm at the preliminary modeling phase, and a single duration was selected for use to perform the detailed modeling.

The rainfall depths were taken from the NOAA Atlas 14, Precipitation-Frequency Atlas of the United States, Volume 1: Semiarid Southwest (Arizona, Southeast California, Nevada, New Mexico, Utah) as provided on the FCDMC website for public download, and the temporal distributions were taken from the FCDMC Hydrology Manual. The SCS Type II pattern was used for the 24-hour duration, and the Maricopa County Pattern No. 1 was used for the 6-hour duration. The maximum and minimum rainfall depths for the study area are shown below in **Table 3-4**. The 24-hour and 6-hour distributions are also shown below on **Figure 3-6.**

Table 3-4. Precipitation Depths.

Event	Maximum	Minimum
	[in]	[in]
2-Year 6-Hour	1.176	1.121
10-Year 6-Hour	1.766	1.689
100-Year 6-Hour	2.691	2.581
100-Year 24-Hour	3.766	3.526

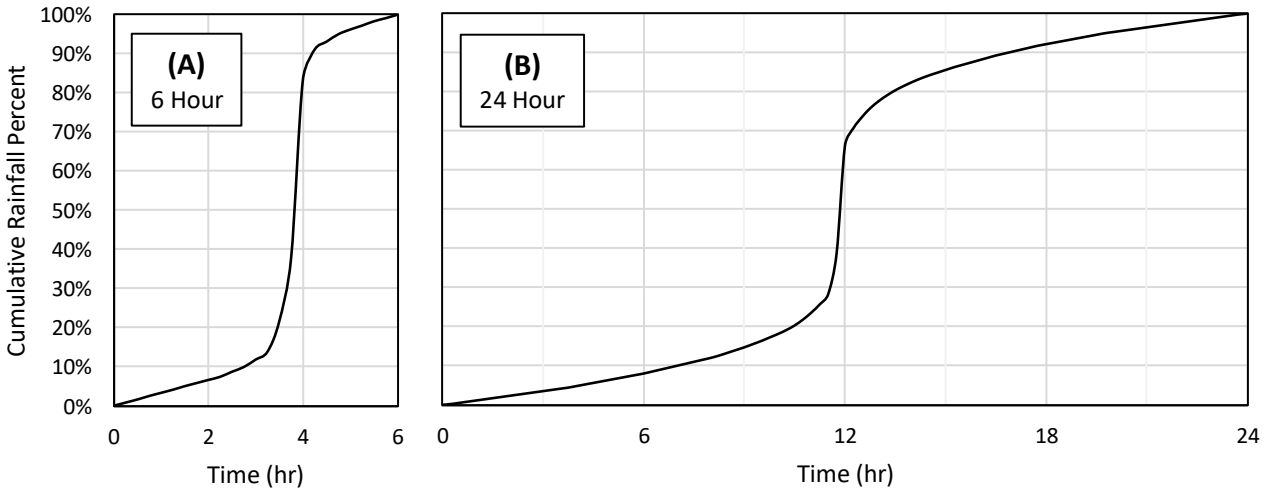


Figure 3-6. (A) Maricopa County 6-Hour Local Storm Temporal Distribution (Pattern No. 1) and (B) SCS Type II 24-Hour Temporal Distribution.

The RAIN.DAT model input files were developed using the QGIS plugin and the rasterized precipitation datasets obtained from the FCDMC. **Figure 3-7** below depicts the spatial distribution of the NOAA Atlas 14 precipitation statistics for the four modeled events. **Section 4.3** below highlights the selection of the controlling duration.

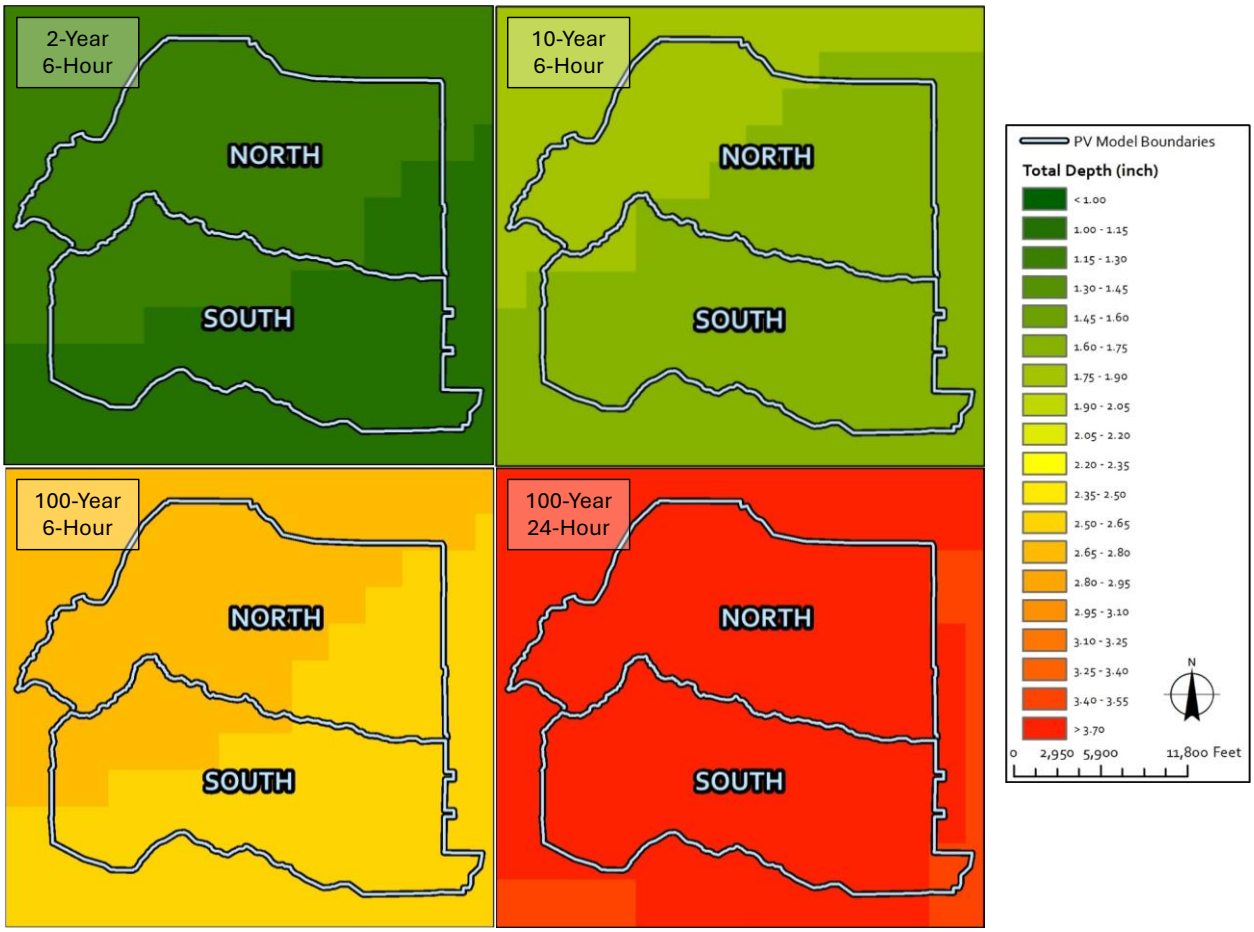


Figure 3-7. NOAA Atlas 14 Precipitation Datasets.

3.5.4 Infiltration

The INFIL.DAT file contains the infiltration parameters used in FLO-2D to calculate rainfall losses. The Green and Ampt method was used for this study as recommended by the District's Hydrology Manual. This method requires a number of inputs to be estimated from the land use and soil types within the study area.

Recent revisions to the District Hydrology Manual have simplified the approach to parameterizing the Green and Ampt infiltration model. Soils datasets provided by the District contain pre-computed Green-Ampt parameters, thereby eliminating the need to compute this dataset. Soil properties provided in this dataset used in the INFIL.DAT parameterization include hydraulic conductivity (XKSAT), rock outcrop (ROCKOUT), moisture deficit (DTHETA) for dry, normal, and saturated conditions, as well as capillary suction head (PSIF). Values by soil unit are shown below on in **Table 3-5**, and this coverage is shown on **Figure 3-8** below. The limiting depth variable was globally set at 4 inches for this submittal based upon District guidance (FCDMC, 2021[b]), and this value may be adjusted based upon a future model calibration phase. The second dataset used in developing INFIL.DAT is the SFC delineations. Properties of each land use used in the INFIL.DAT parameterization include initial abstraction (IA), percent impervious (RTIMP), development type (Type) and initial saturation condition (InitSat). Values by SFC category are shown below in **Table 3-6**.

The QGIS plugin directly computes the INFIL.DAT file for each sub-model simply by pointing the software to the two FCDMC shapefiles (SFC and soils).

Table 3-5. Soil Unit Infiltration Values.

Soil ID	Description	Rock Outcrop	XKSAT (2006)	PSIF (2006)	DTheta, Dry	DTheta, Normal	Limiting Depth
		[%]	[in / hr]	[in]			[ft]
AZ645109	Schenco-Rock outcrop complex 25 to 60 percent slopes	25	0.069	16.539	0.266	0.135	0.333
AZ64550	Estrella loams	0	0.254	14.129	0.298	0.167	0.333
AZ645113	Tremant gravelly loams	0	0.196	14.727	0.299	0.171	0.333
AZ64568	Gunsight-Cipriano complex 1 to 7 percent slopes	0	0.14	9.438	0.279	0.174	0.333
AZ64555	Gilman loams	0	0.121	16.899	0.263	0.132	0.333
AZ64598	Pinamt-Tremant complex 1 to 10 percent slopes	0	0.12	11.336	0.269	0.158	0.333
AZ655Es	Estrella loam	0	0.156	14.967	0.277	0.147	0.333
AZ655PvC	Pinamt very gravelly loam 3 to 5 percent slopes	0	0.072	16.7	0.267	0.137	0.333
AZ655Ro	Rock land	70	0.01	18.18	0.195	0.063	0.333
AZ655Va	Valencia sandy loam	0	0.65	4.603	0.315	0.235	0.333
AZ655LaA	Laveen loam 0 to 1 percent slopes	0	0.137	16.7	0.267	0.137	0.333
AZ655Ru	Rough broken land	70	0.01	18.18	0.195	0.063	0.333
AZ655CeC	Cavelt gravelly loam 1 to 5 percent slopes	0	0.125	15.714	0.276	0.149	0.333
AZ655Mv	Mohall loam MLRA 40	0	0.152	15.372	0.274	0.142	0.333
AZ655AoB	Antho gravelly sandy loam 1 to 3 percent slopes	0	0.577	4.631	0.331	0.248	0.333
AZ655LaB	Laveen loam 1 to 3 percent slopes	0	0.137	16.7	0.267	0.137	0.333
AZ655TrB	Tremant gravelly loam 1 to 3 percent slopes	0	0.087	10.015	0.234	0.133	0.333
AZ655Gm	Gilman loam	0	0.121	16.899	0.263	0.132	0.333
AZ655RiB	Rillito gravelly loam 1 to 3 percent slopes	0	0.219	14.461	0.303	0.176	0.333

Table 3-6. Infiltration Properties by SFC Category.

Class ID	Type Class	IA	RTIMP	Type	InitSat
		[in]	[%]		
0	Natural High Vegetation	0.10	0	Natural	Dry
3	Urban High Vegetation	0.10	0	Urban	Normal
4	Urban Medium Vegetation	0.10	0	Urban	Normal
5	Urban Low Vegetation	0.10	0	Urban	Normal
6	Mountain Bare Ground	0.25	0	Natural	Dry
8	Desert Rangeland Bare Ground	0.35	0	Natural	Dry
9	Urban Bare Ground	0.20	0	Urban	Dry
12	Wash Bottom	0.10	0	Natural	Dry
13	Concrete	0.05	98	Urban	Normal

Class ID	Type Class	IA	RTIMP	Type	InitSat
		[in]	[%]		
14	Asphalt	0.05	95	Urban	Normal
15	Buildings	0.05	95	Urban	Normal
16	Shade Structures	0.05	98	Urban	Normal
17	Water	0.00	100	Urban	Saturated
21	Unpaved Roads	0.10	50	Urban	Dry
23	Rock Riprap	0.25	95	Natural	Dry

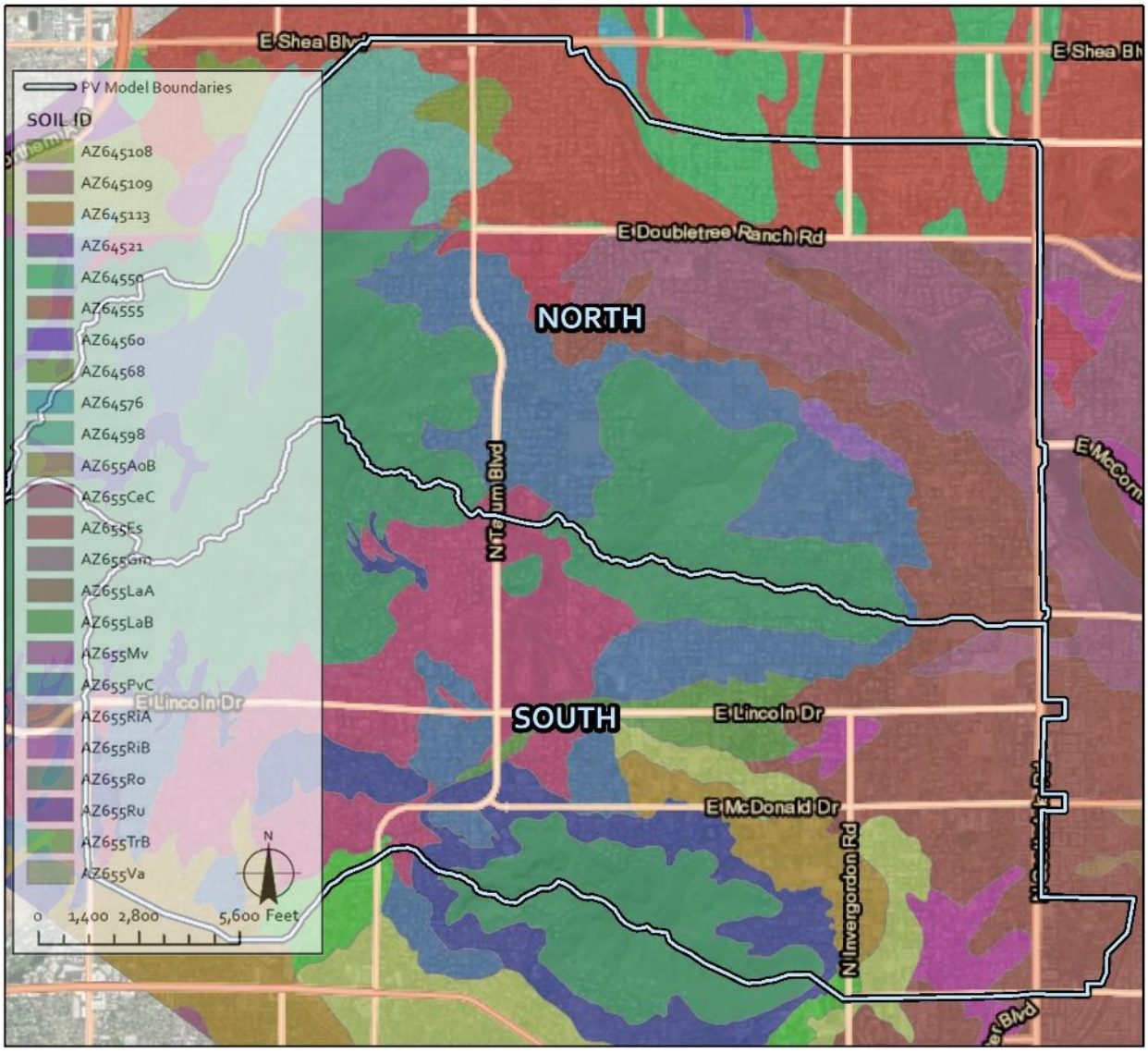


Figure 3-8. Soil Survey in Study Area.

3.5.5 Inflow and Outflow

Inflow hydrographs were used to transfer flow from an upstream sub-model to a downstream sub-model (namely, from the SOUTH sub-model to the NORTH sub-model). The inflow hydrographs are automatically written by FLO-2D during model execution of the upstream sub-models. The OUTCHAR field of the upstream OUTFLOW.DAT file was altered in order to capture flow moving out of the upstream model as well as organize the outflows into INFLOW.DAT files for the downstream sub-model. FLO-2D allows for a single sub-model to branch into up to nine separate sub-models, and there is no limit on how many sub-models can be collected into a single downstream sub-model.

3.5.6 Floodplain Cross-Sections

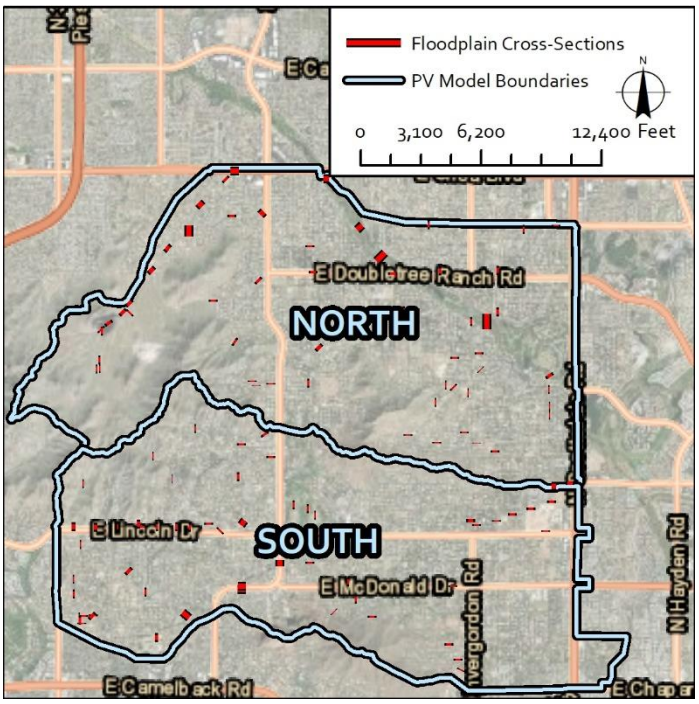


Figure 3-9. Floodplain Cross-Section Locations.

Floodplain cross-sections were developed and included in the FPXSEC.DAT file to query flow hydrographs and peak discharges from the FLO-2D model at key locations within the study area. A total of 121 floodplain cross-sections have been placed throughout the two model domains, and **Figure 3-9** visualizes the locations and density. Cross-sections were placed at locations of major flow concentration, flow transfer location between sub-models, areas of interest to the Town, and areas to assist in identifying model stability. Shapefiles containing information found in HYCROSS.OUT are provide for each sub-model including the peak discharge, volume, and id for each floodplain cross-section.

3.5.7 Blocked Obstructions

Blocked obstructions were included in the model to simulate the hydraulic effects of buildings on routing using the areal reduction factor (ARF) routine in FLO-2D. Building footprints were extracted from the general surface feature characterization shapefile from which a global area-weighted 10-foot blocked obstruction raster was created. This raster was then used to compute the percentage of area obstructed by buildings and assigned to area reduction factors (ARF) for each grid in both sub-models. Width Reduction Factors (WRFs) were not incorporated in the model development.

Further, the FLO-2D model will provide a revised ARF.DAT file (termed 'ARF.BAC') that rounds up ARF values to 1.0 when the prescribed value for a given cell is greater than 0.85. This is done automatically by the model to improve model stability. The revised .BAC file was then used in subsequent model runs. Also, where model boundaries cross ARF cells (i.e., buildings), outflow cells were removed to prevent conflicts between ARF, OUTFLOW, and INFLOW cells. However, if the ARF value for a given cell was less than 0.15, the ARF cell was removed, and the OUTFLOW cell was retained.

3.5.8 Property Walls

Walls and wall openings were not defined in this modeling effort, and the LEVEE.DAT input file was not included.

3.5.9 Culverts

Culverts were modeled using the HYSTRUC.DAT input file. A single shapefile (provided in the appendix) provides locations and attributes for all hydraulic structures in both sub models. Data from this shapefile was then directly used to automatically generate the HYSTRUC.DAT shapefiles for both sub models. This file is particularly useful when reviewing and modifying the hydraulic structures. A total of 241 culverts were included in this model with 280 separate hydraulic structure objects (**Figure 3-10**). This results where multiple objects may be used to simulate a single physical culvert, particularly when the culvert is wider than one FLO-2D model cell.

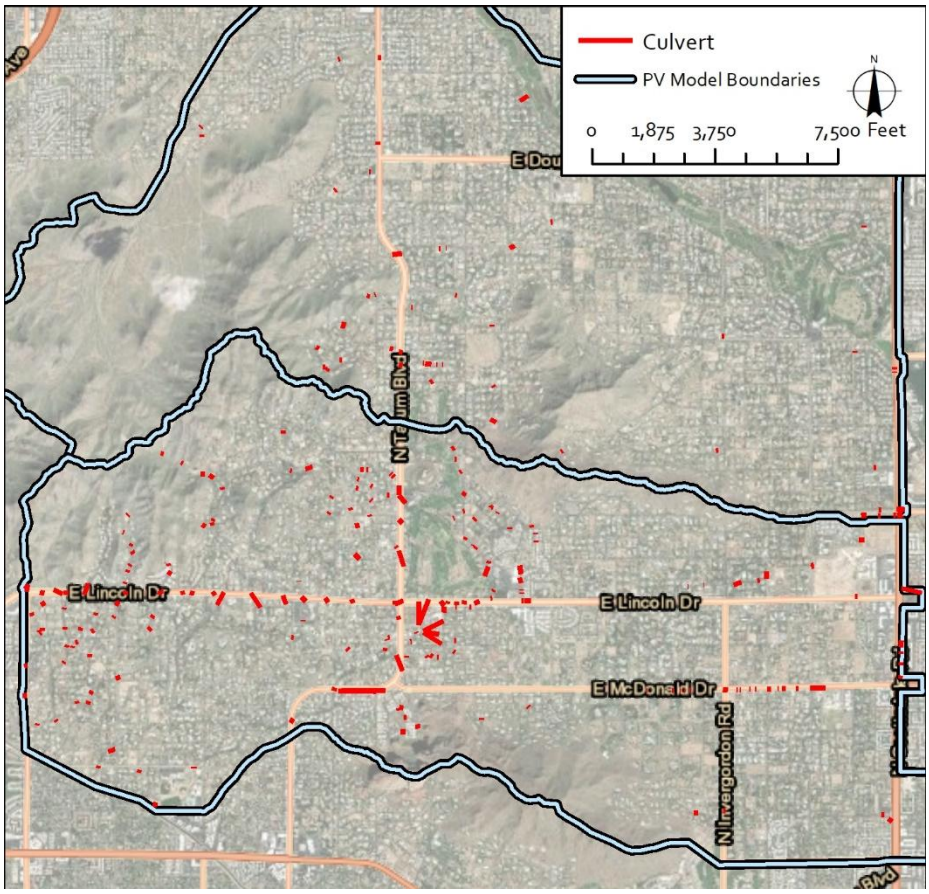


Figure 3-10. Hydraulic Structure Locations.

Hydraulic structures were included in each of the five contributing studies, and a proprietary process was developed to bring this data into the current study. In general, hydraulic structures from each study were mapped from local coordinates (i.e., cell centroids) to global coordinates (i.e., northing and easting) and then re-mapped to local coordinates of the current study. Most culverts imported this way were parameterized using rating tables, however some leveraged the generalized culvert equations. No modifications to imported culverts were made in this study with the exception of several structures where additional hydraulic structure objects were added to wider culverts to address the smaller cell size of this study. A significant portion of the total culvert count was developed in this study, and in all cases, new structures added to the model utilized the generalized culvert equations. Sources of data included the Town GIS database, aerial imagery, and field survey. Elevations for inlets and outlets were adjusted as necessary to reflect the elevations found in the high-resolution topographic dataset.

3.5.10 Storm Drains

3.5.10.1 Input Data Development

Storm drain model components were developed based on the storm drain systems modeled in previous studies (see **Table 2-1**), with additional storm drain systems along Indian Bend Road incorporated in this study due to their hydraulic significance. The storm drain systems were incorporated into the FLO-2D model through its SWMM module. The SWMM model input parameters for nodes (e.g., inlet type, inlet size, inlet maximum depth) and conduits (e.g., Manning's n-values, lengths, shape) were adopted directly from the previous studies for any storm drain systems modeled in those studies. The SWMM model input is documented in the SWMM.INP, SWMMFLORT.DAT, and SWMMOUTF.DAT files.

Since the previous studies were completed at different times and the SWMM module has undergone significant revisions over time, some minor modifications were made to the SWMM components in each ADMS before they could be combined into the final model. For example, the conduit offset input parameter in the MIBW model used an actual elevation rather than the offset from the node invert that was used in the other ADMSs. This was adjusted to use the offset to be consistent with other systems. Another example is that the original LIBW storm drains used sub catchments to denote inlets that were connected to the FLO-2D grid surface. Sub catchments became unnecessary in later versions of the SWMM module, so these were removed from the LIBW systems that were imported to the full PV SWMP model.

Additional systems along Indian Bend Road and Lincoln Drive that were not included in the previous ADMSs was developed based on data provided by KHA.

As a result, a total of 372 inlets and approximately 15 miles of storm drain conduits were modeled using SWMM and are shown in **Figure 3-11**. Detailed information on SWMM components (number of inlets, manholes, and outfalls and total length of pipes) by sub-models are summarized in **Table 3-7**.

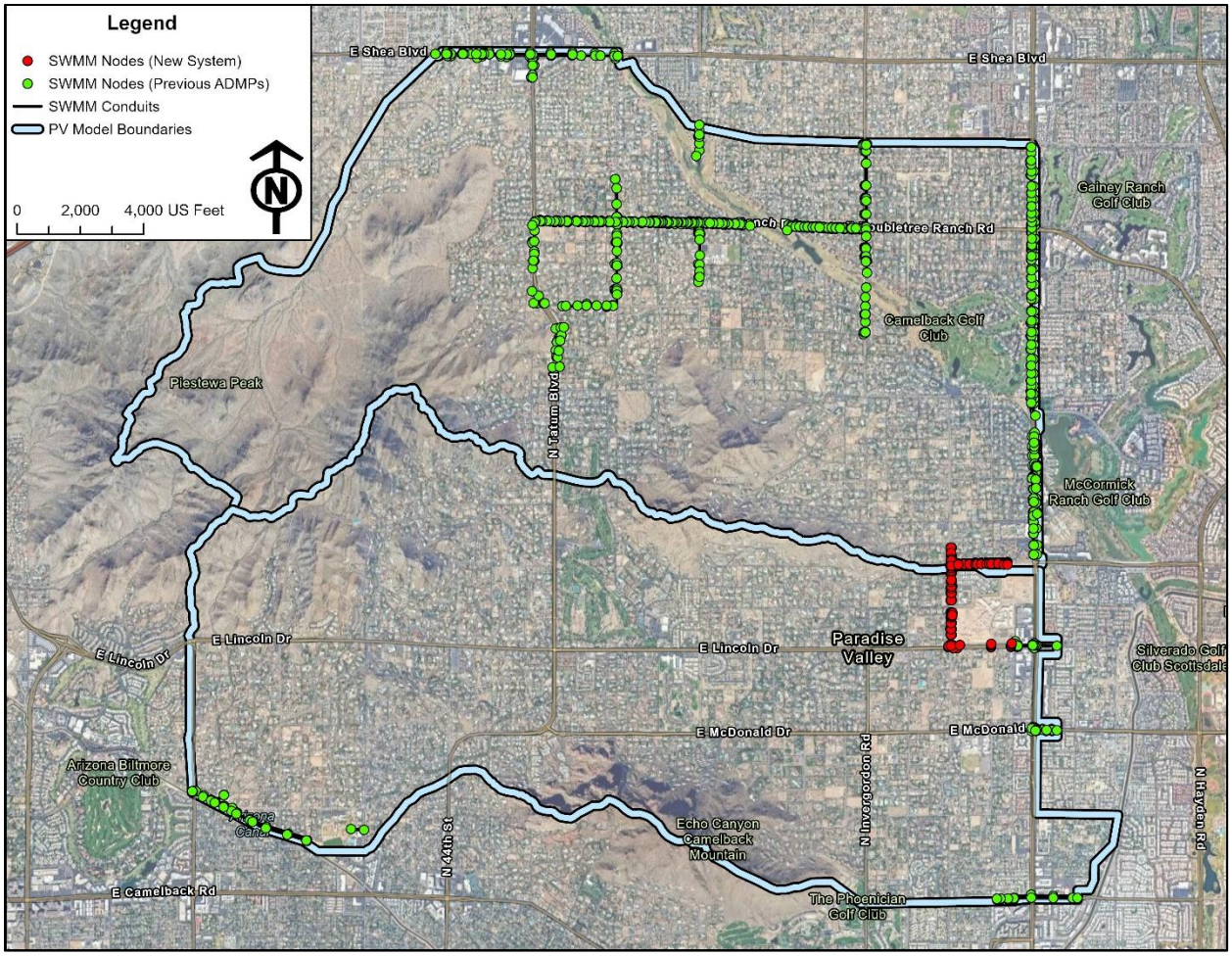


Figure 3-11. A Map of SWMM Components

Table 3-7. SWMM Component by FLO-2D Sub-Models

Sub-Model	Number of Inlets	Number of Manholes	Number of Outfalls	Total Length of Pipes (Mile)
North	296	6	14	11.6
South	76	20	11	2.9

3.5.10.2 Inlets

The curb opening inlets were modeled as Type 2 inlets (Curb Opening Inlet with Sag) with an 8-inch curb height, the minimum curb height described in Uniform Standard Details for Public Construction by Maricopa Association of Governments (2023) and a 0.5-ft of sag width. The sizes of inlets were obtained from the as-built drawings. If no information on inlet sizes is available in the as-built drawings, measurements were taken using Google street view and ArcMap. For the curb-opening inlets, the weir coefficient of 2.3 was used as suggested in the FLO-2D Storm Drain Manual (FLO-2D Software, Inc., 2021).

Grate inlets are modeled as Type 3 inlets, which are defined as grate (gutter) inlets. For the FLO-2D model inputs, the perimeter and area for the grates are based on as-built drawings. It should be noted that since these grates are not against a curb and are typically within depressed swales, all four sides of the grate

configuration were included in the grate perimeter. The weir coefficient of 3.0 was used as recommended in the FLO-2D Storm Drain Manual for the grate inlets.

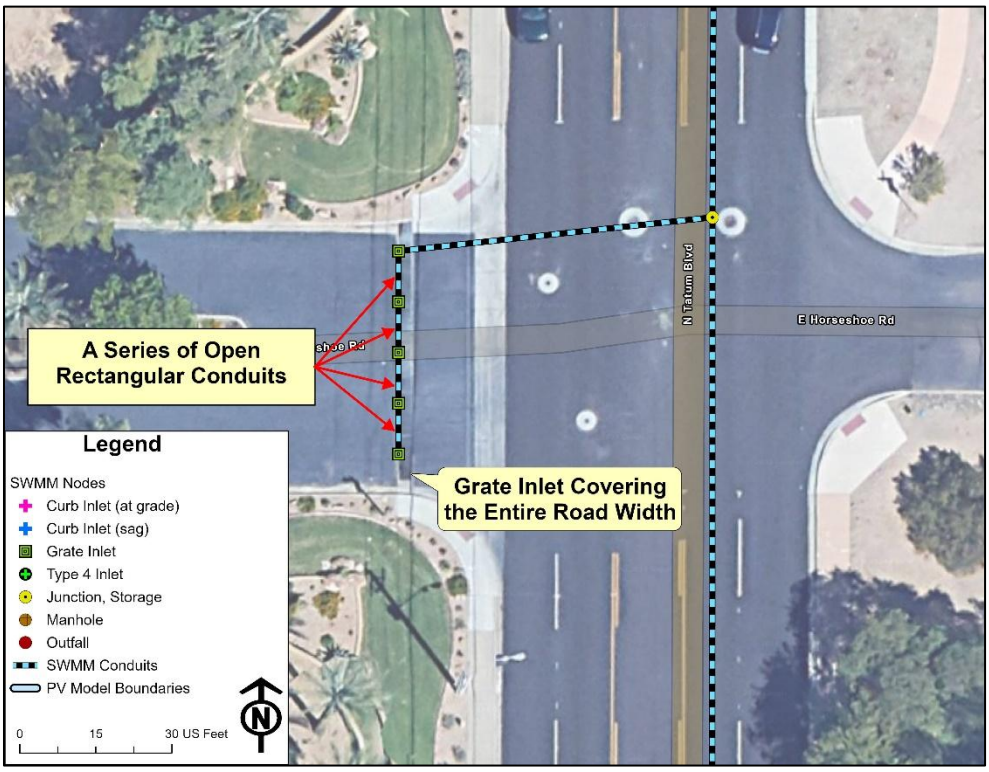


Figure 3-12. Grate Inlet Modelled with a Series of Open Rectangular Conduits at East Horseshoe Road and North Tatum boulevard

Several grate inlets could not be accurately modeled using the 10-ft FLO-2D grid because their lengths were much greater than the grid size, as shown in **Figure 3-12**. To address this, the length of the grate inlet was divided by the number of grid cells it intersected, and this adjusted length was assigned to each grid cell. The grate inlets were then represented as a series of open rectangular conduits, with depths matching the maximum depth of the grate inlets and lengths equal to the grid size of 10 ft.

Manholes can act as inlets in FLO-2D once the manhole lid is popped. While most manholes are called out as having a solid lid in the plans, several manholes are called out as having grated lids. These grated lids have a surcharge depth set to 0.01-ft so that flow can enter/exit with minimal surcharge. The remaining manholes with solid lids have a surcharge depth of 0.69-ft which is based on a manhole lid weight of 210-lbs per MAG detail 423-2, manhole diameter of 2.5-ft, and the surcharge depth equation per the FLO-2D Storm Drain Reference Manual.

Junctions were modeled in FLO-2D SWMM where lateral pipes connect directly to the storm drain main. These locations are simply junctions and do not receive or deliver flow to the FLO-2D surface grid.

Vertical opening inlets with a culvert entrance can be modeled using an inflow discharge defined by a rating table and are modeled as Type 4 inlets, which are characterized as inlets with variable geometry. A rating curve for each inlet must be supplied for Type 4 inlets. The rating tables for these inlets were created using the inlet control equation described in Hydraulic Design of Highway Culverts report by U.S. Department of Transportation Federal Highway Administration (Schall, Thompson, Zerges, Kilgore, & Morris, 2012).

Combination inlets usually consist of a curb opening inlet with a grate inlet, although other combinations are possible. Within the study area, multiple combination inlets were observed and modeled as Type 4 rating table in the FLO-2D model. The rating tables for the combination grate/curb inlets were based on calculations with the weir and orifice equations similar to how a typical curb (or grate) inlet is calculated in the FLO-2D SWMM component. The maximum weir depth for when the weir equation is calculated based on the geometry of the inlet. Similarly, the minimum depth for when the orifice equation controls is calculated based on the inlet geometry, and the discharges between these two depths are calculated based on linear interpolation. The grate and curb discharges are calculated separately, and the two sets of discharges are combined into one rating table which is applied to the combination inlet as a Type 4 inlet in the FLO-2D SWMM model.

3.5.10.3 Conduits

Information on the storm drain conduits (e.g., diameter, shape, length, material, and invert elevations) was obtained from the previous studies and incorporated into the existing FLO-2D SWMM.INP input file. Per the recommendations in the FLO-2D Storm Drain Manual, it is advised to have a minimum pipe length equal to or greater than the size of the FLO-2D grid element side. This precaution helps prevent excessive volume conservation errors. Consequently, a minimum pipe length of 10 ft was implemented for this purpose in this study.

The additional storm drain system along Indian Bend Road primarily consists of rubber-gasketed reinforced concrete pipes (RGRCP), with a few corrugated metal squash pipes. For these conduits, a Manning's n value of 0.012 was used.

3.5.10.4 Outfalls

Outfall in the FLO-2D SWMM component refers to a point where main storm drain flow is discharged from the stormwater network back to the FLO-2D grid surface. Outfalls are located in natural/manmade channels, reservoirs, basins, or underground storage. In the study area, several underground outfalls that have a connection to drywells and the ground surface through a grate were identified. The FLO-2D cell elevation was adjusted to match the invert elevation of the storm drain outfall. Therefore, the storm drain discharged to the adjusted cell, the water ponded in that cell and overflowed into surrounding cells once the ponded depth reached a sufficient level.

3.5.11 One Dimensional Channels

The one-dimensional (1D) Channel option was applied to locations deemed hydraulically significant or where channel capacity could not be adequately captured by the FLO-2D grid cell size and elevation interpolation. The modeled segments include 3,600 feet in the North model, 2,700 feet in the South model, with a total of approximately 6,000 feet in length.

The 1D channel geometry incorporates natural cross-sections sampled from topographic data (**Section 2.2**). These channels were modeled as 1D channels in earlier studies, and the Manning's n values for the channel segments were derived from those studies. The north channel segment is an engineered, concrete-lined channel with Manning's n values ranging from 0.016 to 0.03. In contrast, the south channel segment is a natural channel, where Manning's n values range from 0.02 to 0.076. The 1D channels are shown in **Figure 3-13**.

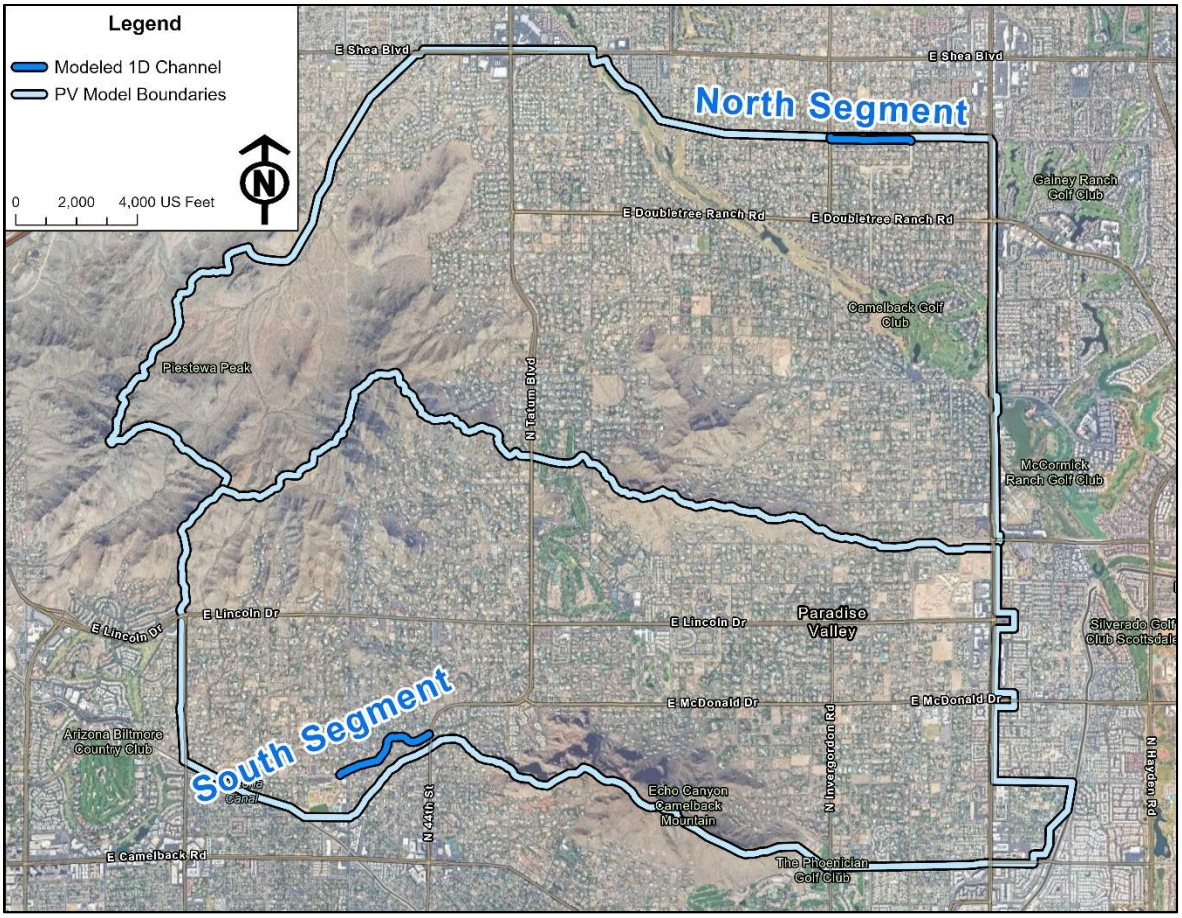


Figure 3-13. 1D Channels

3.5.12 Model Control Files

A model runtime of 12 and 18 hours was used for the 6-hour and 24-hour durations, respectively. This allowed for adequate time to capture the peak of the hydrograph as observed in HYCROSS.OUT. Further iterations and refinement of this modeling may require a longer simulation time. A global limiting Froude number (FROUDL) of 0.95 was set in CONT.DAT. A TOLGLOBAL value of 0.004 feet was used per District guidelines, and this value was subtracted from the initial abstraction value in INFIL.DAT. The floodplain Courant number was set to 0.60, and the TIMEACCEL parameter was set to 0.1. Both DEPTOL and WAVEMAX were set to 0.0.

3.5.13 Special Modeling Considerations and Solutions

There are no special modeling considerations in the model at this stage of model development.

3.6 Model Warnings and Error Messages

The following warnings and error messages are reported in the FLO-2D output file ERROR.CHK. Some messages are repeated multiple times if the applicable situation occurs multiple times during a simulation. For example, the warning message appears quite often that the downstream water surface is higher than the upstream water surface for a hydraulic structure. Each warning is only discussed once in the list below. The warnings that were reported for both final sub-model runs include the following:

- WARNING: THE IMPERVIOUS AREA REPRESENTED BY THE RTIMP PERCENTAGE IS LESS THAN THE ARF VALUE FOR AT LEAST ONE GRID ELEMENT. THE IMPERVIOUS AREA ASSIGNED BY THE RTIMP VARIABLE MUST INCLUDE THE BUILDING AREA, STREET AND ALL OTHER IMPERVIOUS AREAS WITHIN THE GRID ELEMENT. IF THE RTIMP PARAMETER IS LESS THAN THE BUILDING ARF VALUE, YOU MAY HAVE GLOBALLY UNDERESTIMATED THE RTIMP PARAMETER. FOR THIS SIMULATION THE RTIMP IS RESET TO THE ARF VALUE, HOWEVER, YOU SHOULD REVIEW ALL THE RTIMP ASSIGNMENTS.
    - This message occurs because the maximum RTIMP assigned to grid elements in the INFIL.DAT file is 98 percent for impervious surfaces (e.g. roof tops, concrete). However, FLO-2D assigns an RTIMP of 100 percent to grid elements that have an ARF value of 1.0 (completely blocked) at runtime and there is currently no control for this. Therefore, a slight increase in rainfall runoff will occur on roofs for example. This error is considered conservative but will likely be imperceptible in the model results.
- *** THERE ARE DRY OUTFLOW NODES FOR THE FOLLOWING DOWNSTREAM GRID SYSTEM: 1*** GRID CELL: XXXXXX ***
    - This warning is due to the placement of outflow nodes along long portions of the model boundaries. These nodes are located along peaks and ridges that receive no contributing runoff
- WARNING: THE HYDRAULIC STRUCTURE OUTFLOW NODE: XXXXXXX IS REPEATED MORE THAN ONCE WITHOUT ASSIGNING A D-LINE CONVEYANCE CAPACITY LIMITATION. EITHER REVISE THE OUTFLOW NODES OR ADD A D-LINE
    - This is a valid assumption, as in these cases there are adjacent outlets.
- NOTE: THE HYDRAULIC STRUCTURE LOCATED AT THE END OF THE CHANNEL SEGMENT ELIMINATES THE CHANNEL ELEMENT: 2219312 FROM HAVING OUTFLOW TO THE FLOODPLAIN AT END OF THE CHANNEL SEGMENT. ALL THE CHANNEL FLOW WILL ENTER THE CULVERT
    - This is understood to be a limitation of the model, and it was assumed that the structure was appropriately sized for the channel. This approach mimics how the previous study parameterized this location.
- REVIEW THE EVACUATEDCHAN.OUT FILE FOR COMPLETE EVACUATION OF VOLUME IN THE LISTED CHANNEL ELEMENTS - IMPROVE ROUTING STABILITY BY REDUCING THE OUTFLOW FROM THE CHANNEL ELEMENT
    - The EVACUATEDCHAN.OUT file only lists one node, and no obvious channel instabilities were detected.
- NOTE: THE FOLLOWING INTERIOR CHANNEL ELEMENT ELEVATIONS WERE RESET TO THE CHANNEL BED ELEVATION FOR THE UPSTREAM OR DOWNSTREAM END OF THE CHANNEL SEGMENT TO EXCHANGE FLOW BETWEEN THE FLOODPLAIN AND CHANNEL TERMINUS. THE FLOODPLAIN GRID ELEMENT ELEVATIONS UPSTREAM OR DOWNSTREAM OF THE END OF THE CHANNEL SHOULD ALSO BE ADJUSTED TO ALLOW FLOW INTO THE CHANNEL OR FROM THE CHANNEL BASED ON THE CHANNEL BED ELEVATION (SEE PROFILES PROGRAM FOR BED ELEVATION):
    - Checks were made to ensure a smooth transition between the floodplain the channel.
- WARNING: THE FOLLOWING HYDRAULIC STRUCTURES HAVE ARF VALUES IN EITHER THE INLET OR OUTLET ELEMENTS: (THIS WOULD ONLY BE A PROBLEM IF THE REMAINING SURFACE AREA WAS RELATIVELY SMALL (< 50%).)
    - This error was printed in the CHK file, but no nodes were identified.

4 MODEL RESULTS

4.1 Overview

Runoff in the study area generally flows to the northeast in the NORTH model, except for the northeastern corner on the north side of IBW, where runoff flows to the south into IBW. The western half of the SOUTH sub-model flows to the southwest towards the Arizona Canal Diversion Channel (ACDC), while the eastern half flows toward IBW. The valley floor is marked by extensive amounts of shallow, distributary flow.

4.2 Hydrologic and Hydraulic Results

The digital deliverable includes rasterized datasets for model inputs and outputs, and a brief overview of the general flow paths can be seen in the 100-year 6-hour results on **Figure 4-1** below.

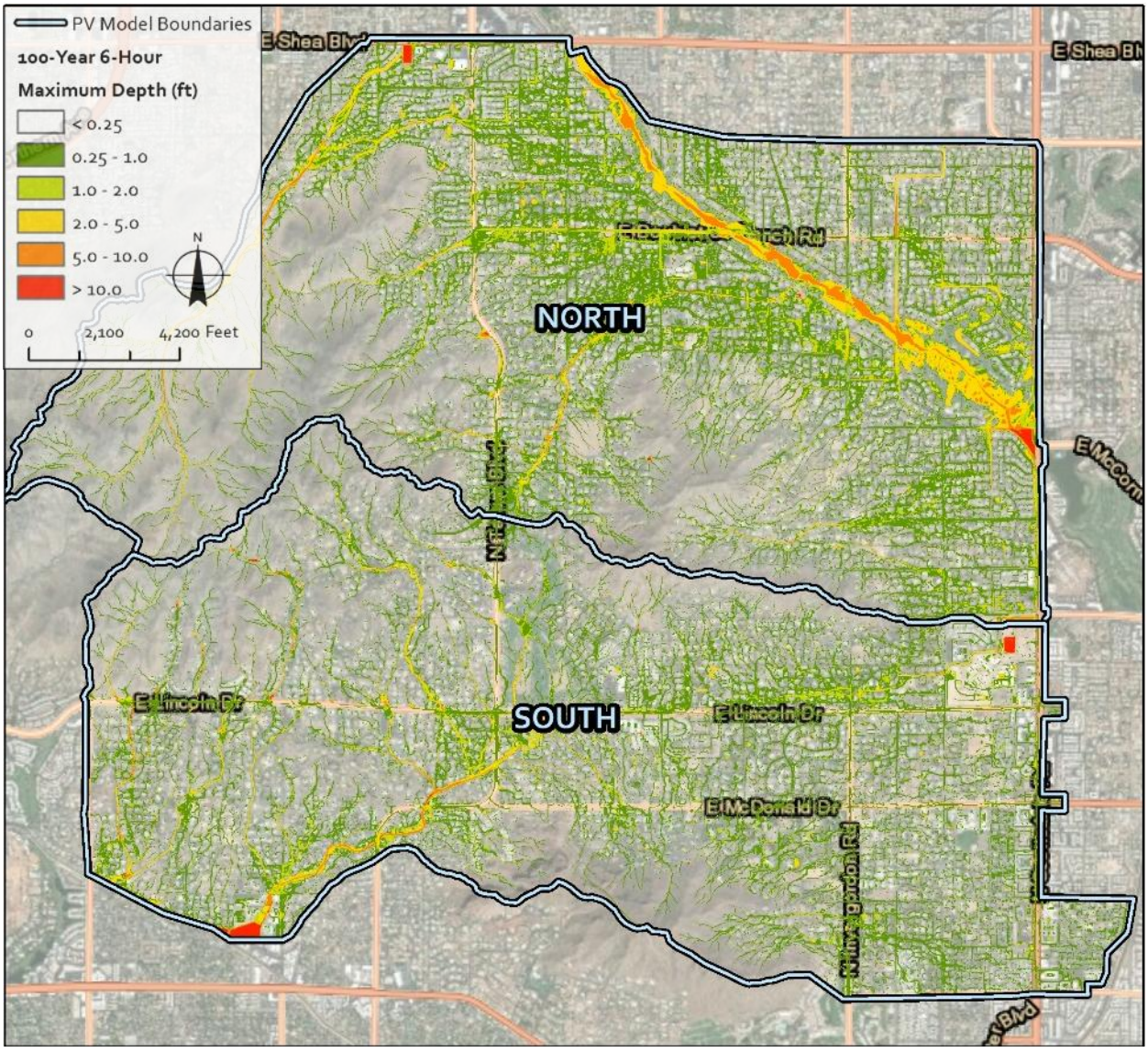


Figure 4-1. Preliminary Maximum Depth Results for the 100-Year 6-Hour Event.

4.3 Controlling Duration

An analysis was performed to determine the controlling duration to use for the remainder of this study. Both the 6-hour and 24-hour durations were simulated at the 100-Year recurrence interval, and a comparison of some results for peak discharge from these simulations was performed to determine which duration generally controls. It should be noted that this comparison was made early in the study, prior to the development of more detailed modeling features (e.g., culverts, storm drains, etc.). The comparisons of discharges were generally made upstream of significant hydraulic features.

Peak discharges from identical locations and from both durations were plotted against each other on **Figure 4-2** below. Values that fall below the 1:1 indicate points where the 6-hour duration yields a higher flow rate, and values that fall above the line represent points where the 24-hour result is greater. The comparison points span a wide range of small to large watersheds in the study area, and it also includes several points along Indian Bend Wash. Nearly all comparison points indicate the 6-hour event yields a higher peak flow rate. The comparison on larger, axial watercourses (namely Indian Bend Wash) suggests a 24-hour controlling duration, and this is expected given that the watershed size is much larger than the other comparison points. Given that the purpose of the overall SWMP study is to identify drainage solutions throughout the Town (i.e., focusing on smaller drainage areas and less on IBW), the 6-hour duration was selected as the controlling duration. The 2-year and 10-year recurrence intervals were then analyzed solely with this duration.

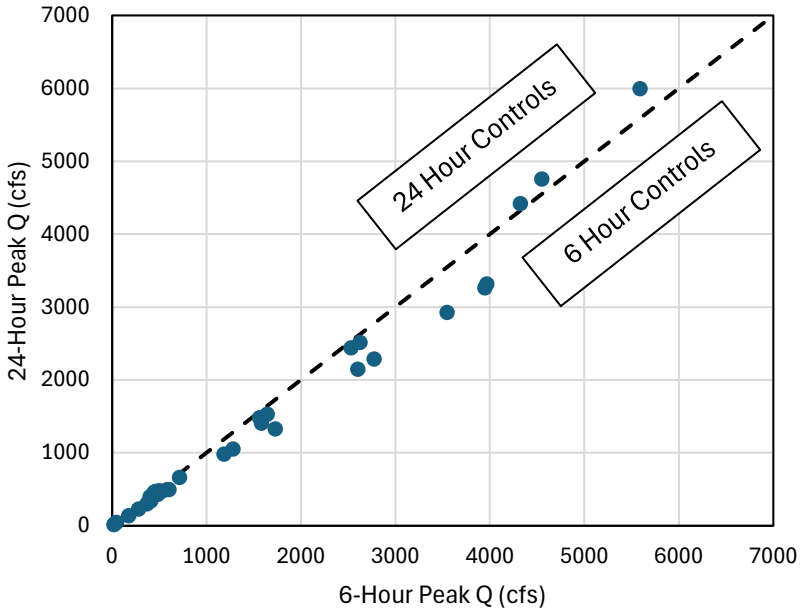


Figure 4-2. 6-Hour vs. 24-Hour Peak Discharge Comparison.

4.4 Infiltration Loss Summary

The loss due to infiltration of the rainfall volume is summarized in **Table 4-1**. As expected, the loss percentage due to infiltration is higher for lower-magnitude events. The loss rates seen below are considered reasonable based upon experience in similar watersheds.

Table 4-1. Infiltration Loss Summary.

Duration	Recurrence Interval	Sub-Model	Maximum Point Precipitation [in]	Precipitation Volume [ac-ft]	Inflow Volume [ac-ft]	Infiltration and Interception Volume [ac-ft]	Loss Percentage (of Precipitation Only)
6-Hour	100-Year	SOUTH	2.691	1,483	0	332	22.4%
		NORTH	2.691	1,598	1,809	409	25.6%
	10-Year	SOUTH	1.766	972	0	327	33.6%
		NORTH	1.766	1,049	811	400	38.1%
	2-Year	SOUTH	1.176	647	0	308	47.6%
		NORTH	1.176	698	437	370	53.0%

5 MODEL CALIBRATION AND VERIFICATION

This section documents the calibration efforts that were performed. Thereafter the final results are placed in the context of other studies and hydrologic approaches.

5.1 Calibration

The model calibration effort focused on gage data that was collected by the District at the Tatum Basin Inflow (ID # 58007) flood warning stream gage. This gaging station is located just upstream of the Tatum Basin within Tatum Wash, and it was installed in 1994 and has been continuously active and maintained since. This station consists of a pressure transducer sensor mounted to the vertical concrete channel wall, and the station uses the ALERT2 telemetry protocol for real-time data reporting. The contributing drainage area at this location is 2.17 mi^2. This gaging location is shown in **Figure 5-1**.

Figure 5-1. Tatum Basin Inflow Gage. Source: FCDMC ALERT Website.

The location of the gage in relation to the contributing drainage area and the study model boundaries is shown below on **Figure 5-4**.

5.1.1 Historical Flow Events

As of December 2024, a total of thirty-six flow events have been recorded by this gaging station ranging in peak discharges between 8 cfs and 1,688 cfs. Three of these events were chosen to include in the calibration effort for this study:

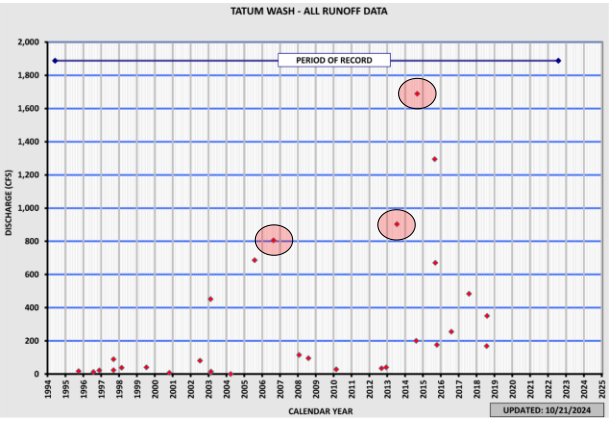


Figure 5-2. Runoff Event History. Source: FCDMC ALERT Website.

- August 24, 2006 808 cfs
- July 21, 2013 903 cfs
- September 8, 2014 1,688 cfs

Figure 5-2 to the left shows the magnitude of peak flow rates of thirty-six events, and the three used in this study are circled. The 2014 event was a notable flooding event in the Paradise Valley area, with extreme runoff resulting in significant Town-wide flooding issues. The other two events were selected as they represent lower-magnitude runoff events that may better depict hydrologic conditions used in the sizing of stormwater infrastructure. The precipitation recurrence interval for each of the three events was determined using NOAA Atlas 14 precipitation data for the calibration watershed (statistics obtained with coordinates of 33.5547°, -112.0052°). Spatially-distributed precipitation datasets on a five-minute interval for each event were provided by the District. Four locations were selected within the calibration watershed that generally span the extent of the basin to extract precipitation hyetographs. This data was then plotted for each event, averaged across the four locations, and the approximate precipitation duration was determined (**Figure 5-3**). Using the average depth and duration, a precipitation recurrence interval was then calculated for the three events (**Table 5-1**).

Both the 2006 and 2013 events were similar in magnitude and duration and were less than a 10-year event. The 2014 event exhibited significantly higher precipitation and subsequently was calculated as a 750-year precipitation event for this basin. Lastly, it should be noted that precipitation recurrence interval is not necessarily tied to runoff recurrence interval, as carrying hydrologic methods (e.g., loss methods, routing options, software, etc.) can yield significantly different flow rates.

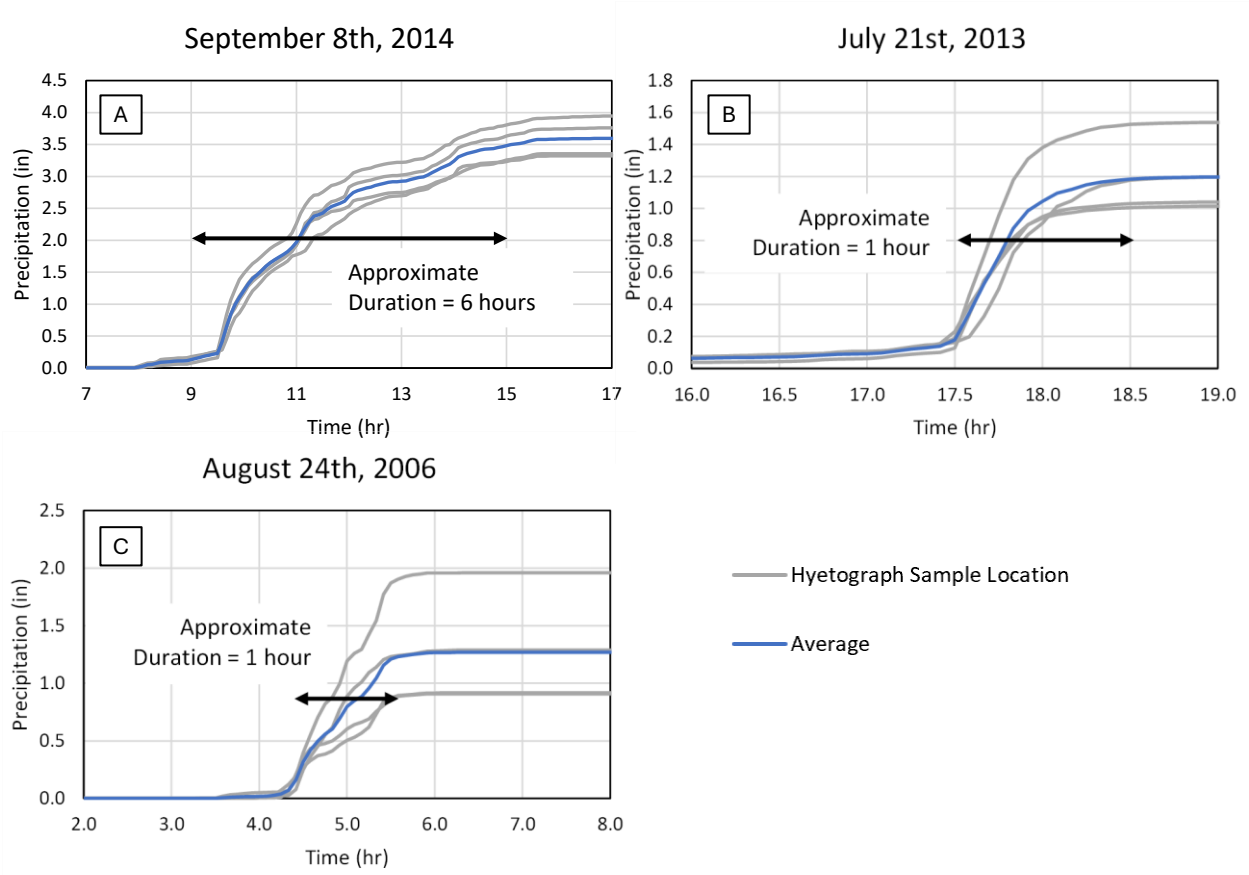


Figure 5-3. Event Hyetographs for (A) September 8th, 2014, (B) July 21st, 2013, and (C) August 24th, 2006.

Table 5-1. Precipitation Recurrence Interval of Calibration Events.

Event	Average Total Depth (in)[a]	Approximate Duration (hour)	Precipitation Recurrence Interval (year)	Maximum Measured Flow Rate (cfs)
August 24th, 2006	1.149	1	6.6	808
July 21st, 2013	1.127	1	6.1	903
September 8th, 2014	3.540	6	750	1,688
[a]Averaged across Tatum Wash watershed				

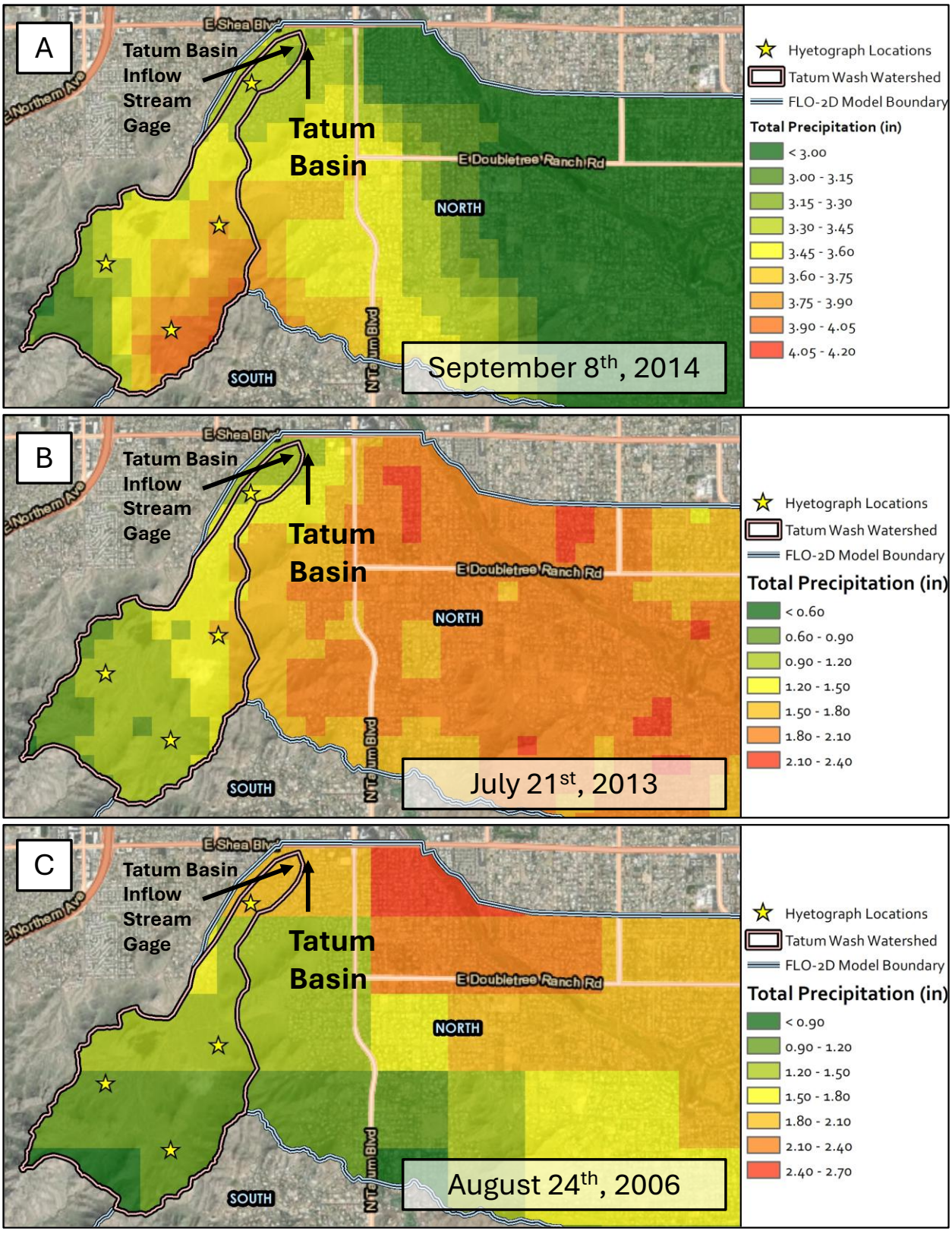


Figure 5-4. Calibration Precipitation Events. (A) September 8th, 2014, (B) July 21st, 2023, and (C) August 24th, 2006.

5.1.2 Calibration Process

The input data provided by the District was processed into RAINCELL.DAT FLO-2D input files using the QGIS pre-processor application. This input file describes precipitation input in both spatially (cell by cell) and temporal dimensions. During the development and testing of this input file it was noted that the District-approved FLO-2D executable (Build 23.10.25, Compiled on 11/9/2023) was not correctly reading the RAINCELL.DAT or RAINCELL.HDF file. JE Fuller coordinated with the District to receive guidance on how to proceed. An interim executable described as a re-compiled version of the same source code (Compiled on 11/5/2024) as the approved version was provided to JE Fuller, however the District noted that this executable exhibited other instabilities un-related to this specific application. A comparison between the 2023 and 2024 executables yielded the same peak discharge and timing at Tatum Basin. Given this, the following work plan was developed between JE Fuller and the District for this study:

1. Compare base results for the 2023 and 2024 executable.
2. Utilize the 2024 executable for calibration runs, including adjusting input parameters.
3. Using the input parameterization from the final, selected calibration scenario, re-run the design storm models (i.e., 2-, 10, and 100-year events) with the approved 2023 version.

Hydrographs at the gaging location just upstream of the inlet to Tatum Basin were compared between the actual, gage data and the base model results. The three events are compared below on **Figure 5-5**. A similar trend is seen in all three scenarios, where the modeled peak flow rate is less than the gage data and the flood wave arrival time is longer than the gage data as well. Further, the modeled volume for the 2014 event appeared to be larger as well.

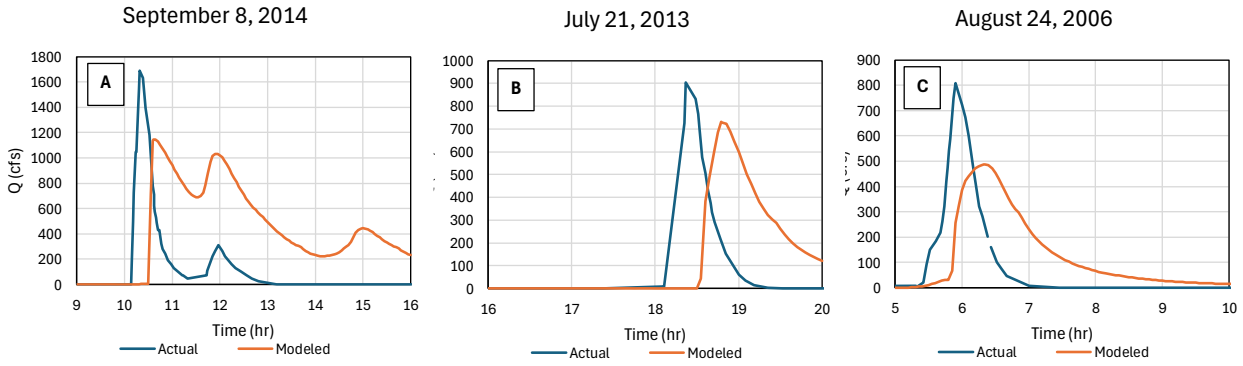


Figure 5-5. Initial Hydrograph Comparisons for the (A) September 8, 2014, (B) July 21, 2013, and (C) August 24, 2006 events.

5.1.2.1 Scenarios

A range of scenarios were developed to understand the sensitivity of various input parameters to the modeled peak discharge, timing, and volume (**Table 5-2**) and reflect ranges of adjustments that are typically made for hydrologic studies. This exercise was performed with the 2006 event only, as it (along with the 2013 event) are closer in magnitude to what it is typically used to size drainage infrastructure as compared to the 2014 event.

In general, adjustments to infiltration (hydraulic conductivity, initial abstraction, and limiting depth) and roughness (base Manning's n and shallow Manning's n) were made. The first scenario involved simply adjusting the global porosity setting to 0.4, however it was concluded afterwards that this value should be 0.0 when using spatially varied parameterization of INFIL.DAT, and when used in this manner it simply increases the DTHETA value.

The scenarios shown below were applied to all cells in the NORTH model. Global modifications were made as this initial step in the calibration process is simply much more effeicient than modifying based upon soil type and land use classification. The purpose of this initial step was to identify which parameters can be adjusted to match the gage data and to provide a more general view of the response of the model to various adjustments. Detailed calibration adjustments then follow this preliminary step. The storm drain component was turned off for all calibration-related simulations, as the purpose of this was limited to the Tatum Wash sub-basin only, and no storm drains are hydraulically upstream from the comparison point.

Table 5-2. Calibration Scenarios for 2006 Event.

Run	Description
S1	Set global porosity to 0.40
S2	50% of base for XKSAT, liming depth = 8"
S3	50% of base for XKSAT, liming depth = 16"
S4	75% of base for XKSAT, liming depth = 16"
S5	50% of IA
S6	50% of IA, 50% for XKSAT, and limiting depth = 8"
S7	50% of Shallow n
S8	50% of Manning N
S9	50% of Shallow n and Manning N
S10	Turn off Shallow n
S11	200% of XKSAT, limiting depth = 16", 50% of IA, 33% of Manning N, turn off Shallow n
S12	67% Shallow n, 1.25 IA, 60% Manning n, limiting depth = 16"
S13	60% of Shallow n, 75% of base n values, 80% of XKSAT, and 110% of IA, limiting depth = 16"

5.1.2.2 Hydrograph Comparisons

The resulting hydrograph at the Tatum Basin inlet for all scenarios is shown below on **Figure 5-6**. The gage data is also displayed along with the 'base', or un-calibrated result. One of the closer matches is from the S1 scenario, as it matched the arrival time well and provided a notable improvement in peak discharge (in terms of matching the gage data), however as noted above this is not a realistic parameterization. It does, however, suggest that an increase in DTHETA could yield closer results. DTHETA was not adjusted in this calibration exercise. The results from the remaining scenarios demonstrate that the arrival time both the arrival time and peak discharge from the model can match the gage data, however not in a simultaneous parameterization. Further, the S11 scenario, which was the only simulation where the peak was close to the modeled peak, represents an extreme parameterization and it required very large adjustments to several variables and is far more of an adjustment that what is typically used in calibration exercises.

In all but S11, the scenario results tend to exhibit lower peak discharge and higher volume. No reasonable combination of variable adjustments yielded agreement with the gage data in terms of timing, peak discharge, and volume comparisons.

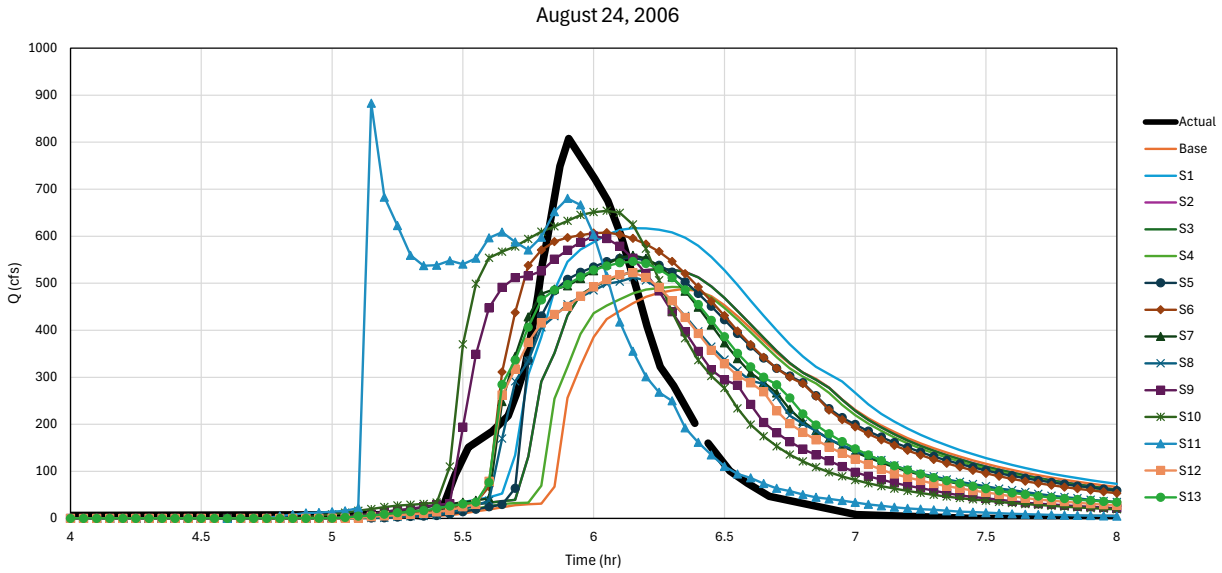


Figure 5-6. Calibration Iterations for 2006 event.

5.1.3 USGS Regression Analysis

Flow rate estimates using the USGS Regional Regression approach (USGS, 2014) were computed for the Tatum Basin. A basin area of 2.17 mi^2, mean basin elevation of 1,705 feet, and mean annual precipitation of 9.17 inches was used. Precipitation was determined using the PRISM dataset (PRISM, 2025). Regression equations for various recurrence intervals were developed in the USGS (2014) study, and results for the 2-, 10-, and 100-year recurrence intervals are presented in **Table 5-3**.

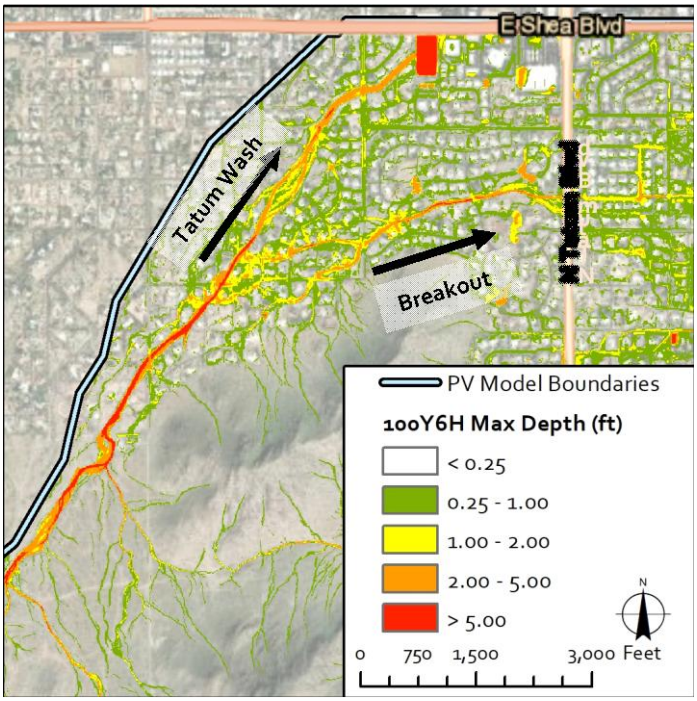


Figure 5-7. Tatum Wash Breakout.

It was observed in the preliminary (i.e., base) model results that a significant breakout to the east occurs just upstream of 44th Street (**Figure 5-7**), and the presence of this breakout in flow was corroborated by Town staff. The model results suggest that flow begins to break out between the 2-year and 10-year events. Therefore, comparisons between model and regression equation results need to include the breakout hydrograph for the modeled results.

Model results presented in **Table 5-3** include both the Tatum Basin inlet as well as the peak of the sum of the inlet and breakout hydrographs. This provides a more one-to-one comparison to the regression results. Inversely to the gage data comparison, the model results are significantly higher than the regression equations with the 100-year modeled results being nearly double of the regression equation results.

Table 5-3. USGS Regression Results.

Recurrence Interval (year)	USGS Region 3 Regression Results (cfs)	6 Hour Model Results (cfs)	
		Tatum Basin	Tatum Basin + Breakout
2	140	887	888
10	569	1,299	1,789
100	1,649	1,641	3,124

5.1.4 Field Verification

A number of field verification points were included in the MIBW ADMS/P H&H Report (Kimley-Horn, 2019). These are locations within the MIBW study where field photographs from the 2014 event were compared with model results from that study. Given that much of the MIBW study extends north of Shea Boulevard, only one comparison point from that study fell within the present study modeling domain.

Figure 5-8 below depicts the conditions and MIBW results from this event at the intersection of Tatum Wash and 44th Street as well as the base results from the present study. The flotsam line from the wash is generally visible. The WSEL profile includes flow from the south along 44th Street, and it is inferred that the transition from a horizontal water surface elevation to varying elevation denotes where the inundation from Tatum Wash intersected the roadway and thereby deposited the flotsam. A simple GIS exercise demonstrates that this location is generally in the vicinity seen in the field photograph taken shortly after the 2014 event.

While this is a qualitative comparison, it does suggest that the base FLO-2D parameterization produces reasonable results.

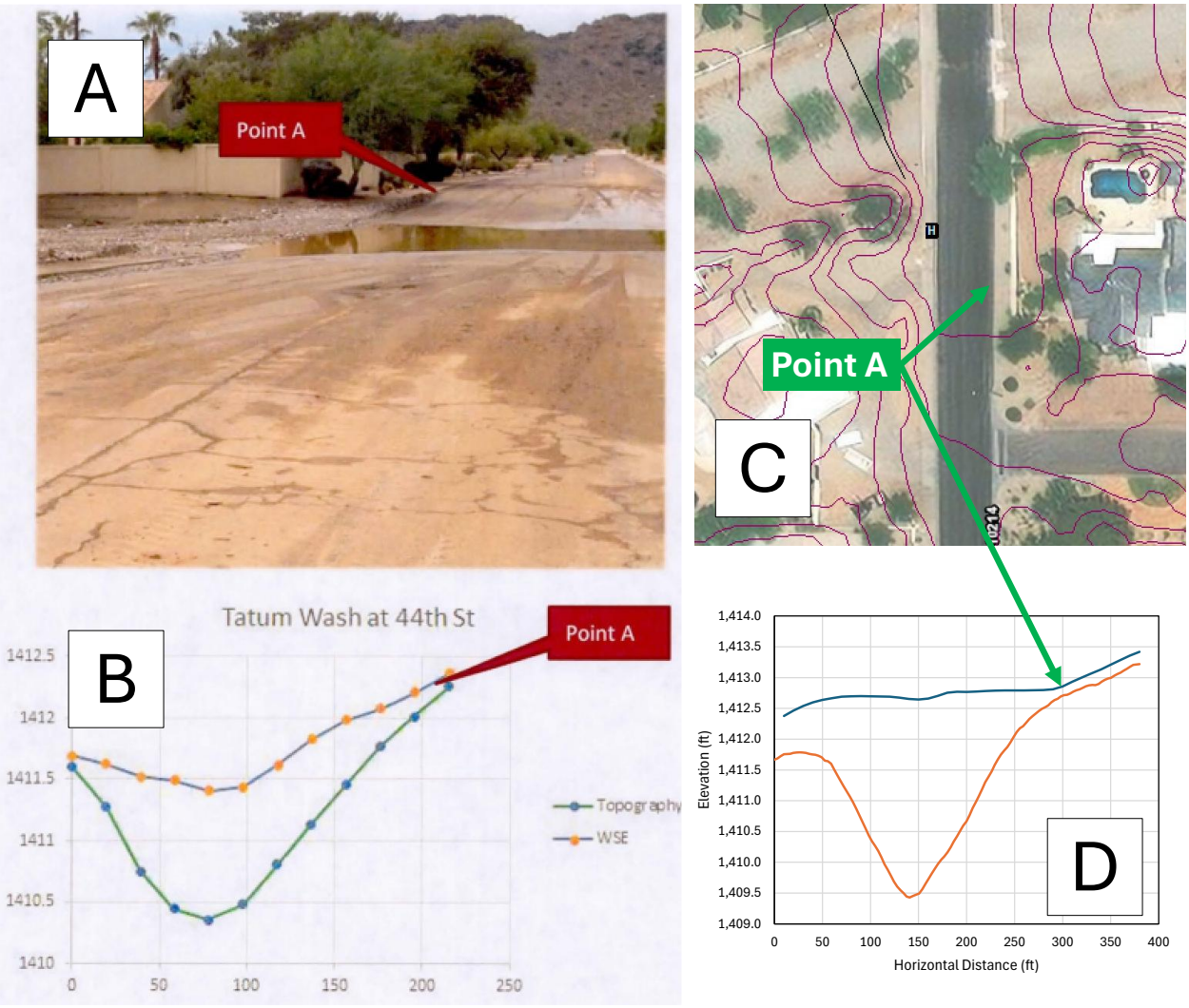


Figure 5-8. 44th Street and Tatum Wash Verification. (A) Field photograph from MIBW report, (B) WSEL profile from MIBW Report, (C) WSEL contours from current study, and (D) WSEL profile from current study.

5.1.5 Further Investigation

Given the disagreements between the gage comparison and regional regression comparisons, further investigation into these differences was performed.

5.1.5.1 FLO-2D Cell Size

To assess the effects of cell size on model results, a 5-ft grid FLO-2D model was developed. This model uses the same input values as the 10-ft grid PVSWMP FLO-2D model, and a comparison of the results is shown below on **Figure 5-10**. Even with the same input shapefiles, the 5-ft model produces a thinner, higher peak hydrograph relative to the 10-ft cell model. This result correlates well with the observed hydrographs at the Tatum Basin Inflow stream gage, where the observed hydrograph arrives faster and has a higher peak than what is obtained from the 10-ft cell with multiple variations of input parameters. This suggests that it may be difficult to fully calibrate the 10-ft model to observed events in this watershed because resolution is lost in the rasterization process relative to actual conditions in the physical world. An example of lost resolution in the Manning's n values is shown in **Figure 5-9**.

More notably, however, is that above a certain flow rate, Tatum Wash breaks out to the east. This breakout occurs over a long length along Tatum Wash (approximately 1,000 feet), and the elevation divide separating the wash from the breakout acts like a lateral weir. Slight differences (e.g., < 0.10 feet) in weir elevations can have very large impacts when considering the long length. The rasterization of the topography at smaller cell sizes closer represents the actual ground surface, and perhaps closer represents the hydraulic properties at the breakout.

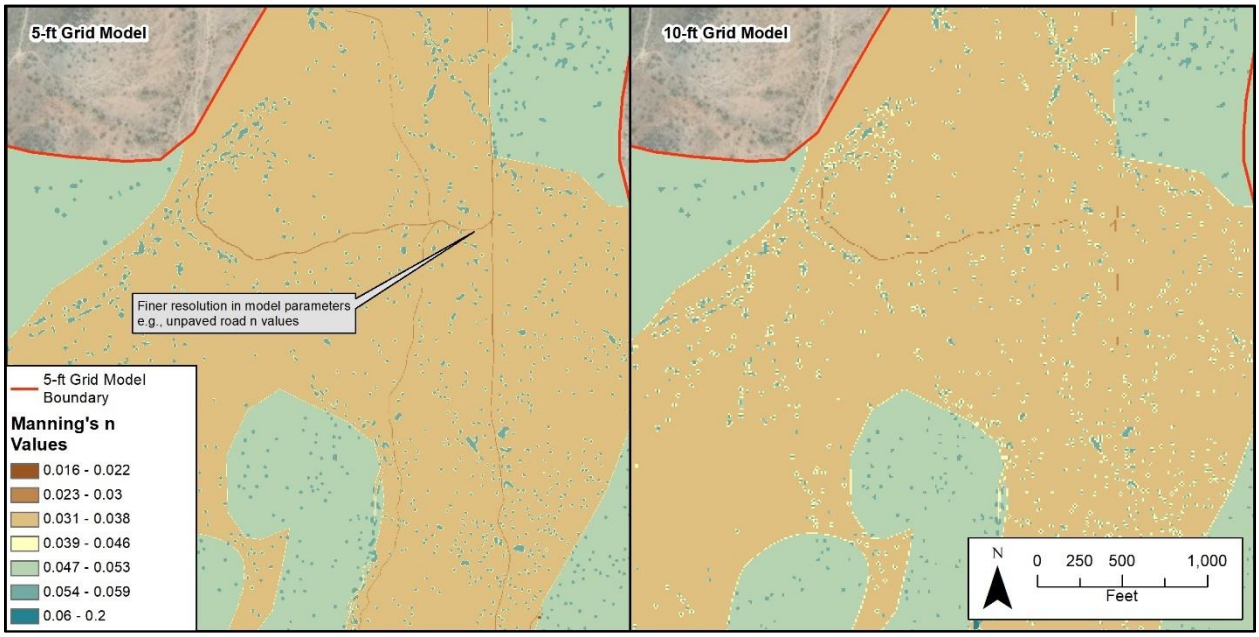


Figure 5-9. Comparison of Manning's n Values between the 5-ft Grid and 10-ft Grid FLO-2D Models.

5.1.5.2 HEC-RAS 2D

To further test model sensitivity, a HEC-RAS 2D (RAS2D) model was developed. Since the infiltration input parameters for this model differ from the FLO-2D model (e.g., initial abstraction is not an explicit parameter and transmission losses cannot be simulated) and RAS2D does not currently implement a shallow Manning's n-value, the results do not provide an exact comparison to FLO-2D. However, the

results do give insight into how each of the models compute runoff. The results from the RAS2D model are compared with the FLO-2D results on **Figure 5-10**. This comparison shows that RAS2D produces a significantly higher peak, and the arrival time is shorter relative to both FLO-2D hydrographs – similar to the differences seen between modeled and measured events for the three calibration storm events. This would indicate that infiltration parameters and Manning's n values may need to be adjusted to produce results equivalent to FLO-2D.

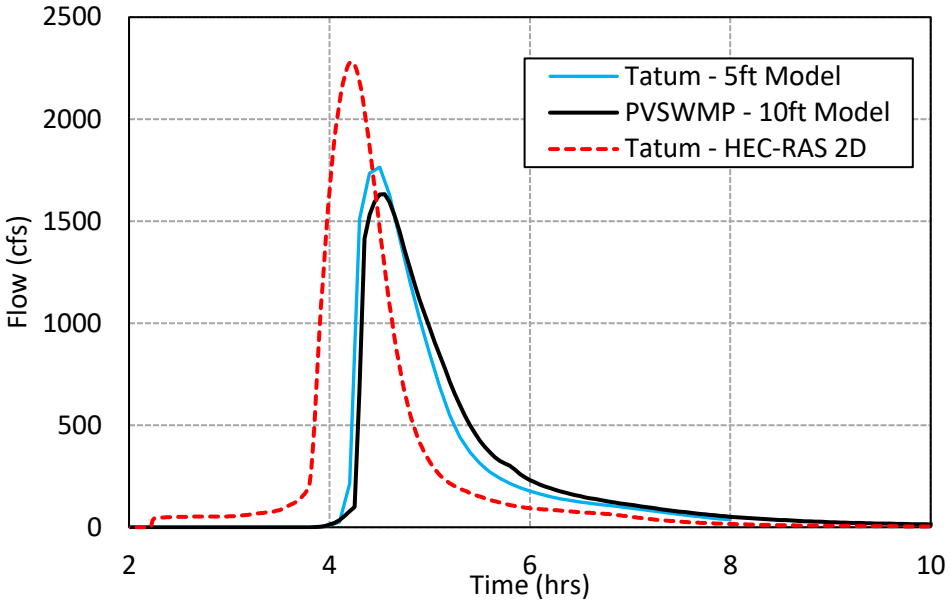


Figure 5-10. Comparison of 100-year Hydrographs at the Tatum Basin Inflow Channel.

Lastly, comparisons between these test models, the base FLO-2D model results, and the gage data were compared for the 2006 and 2014 calibration events (**Figure 5-11** and **Figure 5-12)**. Note that both test models did not use gridded rainfall data (i.e., the RAINCELL.DAT for FLO-2D) for the real event simulations, rather the rainfall input was estimated based on the data in **Figure 5-3**, the storm events where there was less variation across the watershed may be more accurate than those with more variation.

Simply reducing the cell size from 10 to 5 feet yielded a better improvement in matching the gage data than any scenario listed above (**Table 5-2**). The 5-ft hydrograph exhibits an improved arrival time, peak discharge, and the shape better matches the measured hydrograph (in terms of width). It can be easily assumed that calibration of the 5-ft model to the 2006 event would be possible and a very close match could be achieved. The arrival time of the RAS2D hydrograph is much less than the gage data, as is the peak discharge, volume, and hydrograph shape. It should, however, be noted again that there are significant differences in the parameterization of RAS2D as compared to FLO2D. Perhaps the two largest drivers of these differences are the inability to provide increased roughness for shallower depths and no mechanism to simulate transmission losses, where FLO-2D inherently computes these losses when using the Green-Ampt infiltration routine.

A similar trend was seen in comparing the 5-ft and 10-ft model to the 2014 event. The results for the 5-ft model showed slightly elevated peak flow rates and an arrival time much closer to the gage data. Both modeled scenarios, however, over-predicted volume by a significant margin.

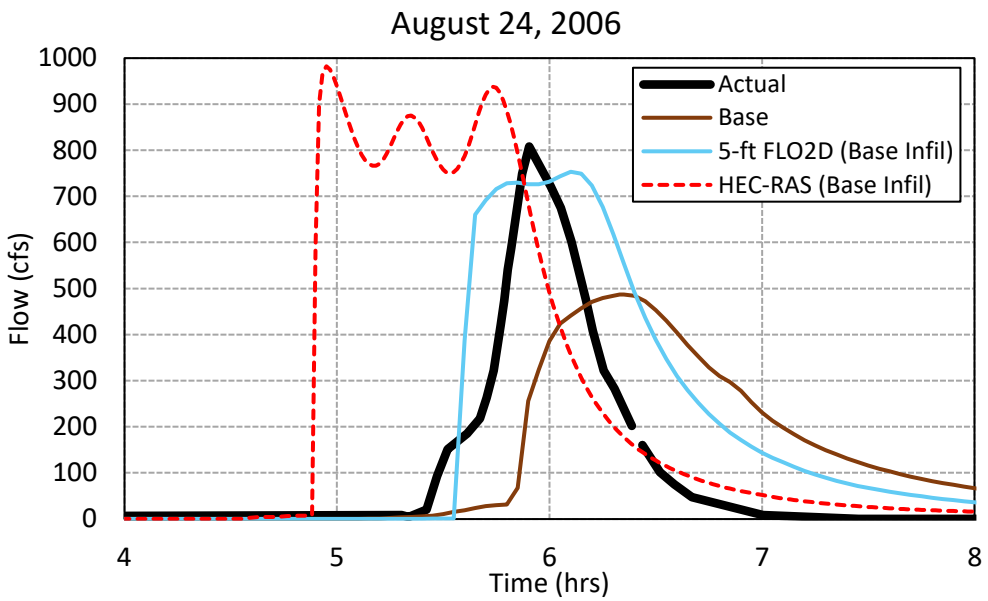


Figure 5-11. Comparison of Hydrographs at the Tatum Basin Inflow Channel for the Event of 8/24/2006.

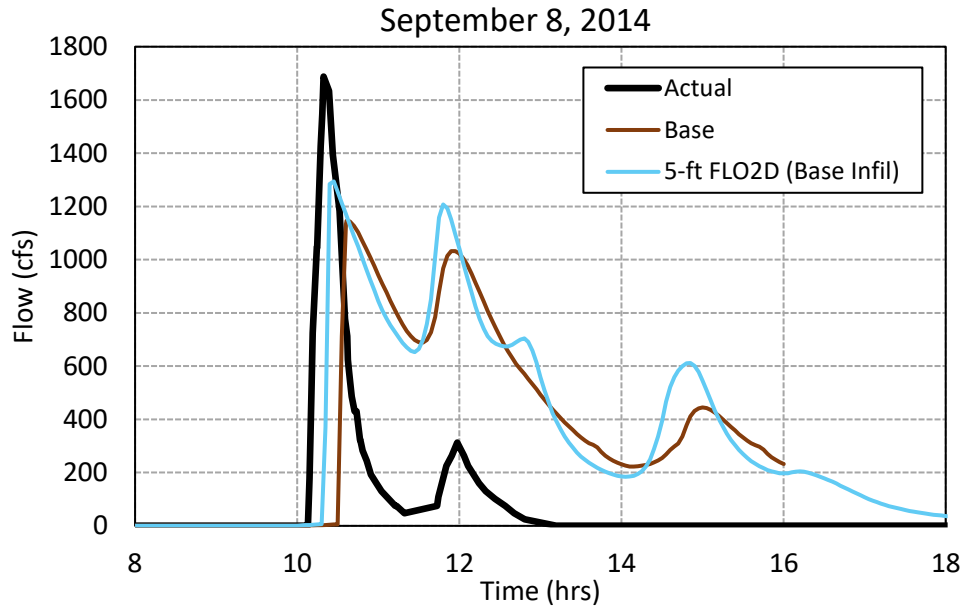


Figure 5-12. Comparison of Hydrographs at the Tatum Basin Inflow Channel for the Event of 9/8/2014.

5.2 Comparison to Previous Studies

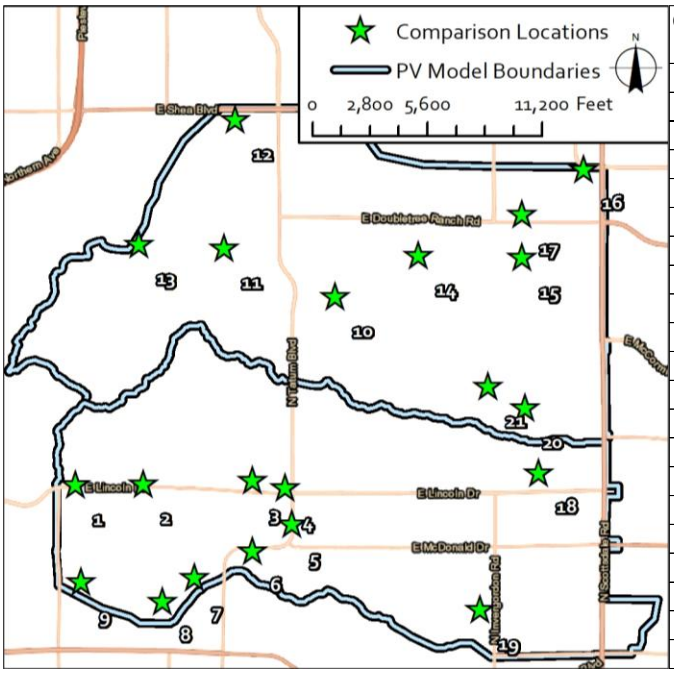
Several exercises were performed to assess the results of this study in the context of previous studies.

5.2.1 Agreement with Existing Studies

The base (i.e., un-calibrated) results of this study were also compared to the results of the contributing study to assess differences and to ensure that the results generated in this study are reasonably close to previous, and in some cases recent results.

The 100-year 6-hour results were compared to the overlapping contributing studies listed in **Table 2-1** with the exception of LIBW, where only the 24-hour event was simulated. Further, this model was not re-computed as there are no inflows into the current model from LIBW. Note that while most of the input data used in developing the PVSWMP model was taken from the Cudia City ADMS, the peak flow rates used in this comparison are from the final Echo Canyon Wash Letter of Map Revision (LOMR) (JE Fuller, 2024) FLO-2D model since this modeling was recently approved by FEMA for a floodplain revision in Echo Canyon Wash (also referred to as Cudia City Wash). The Echo Canyon Wash LOMR modeling exercise resulted in minor changes to the Cudia City Wash ADMS model throughout the LOMR process.

A total of twenty-one comparison points were made throughout the study area (**Figure 5-13**). In general, there was a very close agreement between the current study and the contributing studies. The largest discrepancies were noted when comparing to the East Shea ADMS/P results, where the current study exhibited higher peak discharges. While the average percent difference across the twenty-one comparison points is 8.9%, when weighting the difference based upon the magnitude of the flow rate this difference drops to 0.42% indicating that the base results closely align with the overlapping studies.



Comparison Point	Peak Q (cfs)		Difference		Source
	Current Study	Comparison	cfs	%	
1	595	547	48	8.4%	Cudia
2	124	110	14	12.0%	Cudia
3	1,257	1,190	67	5.5%	Cudia
4	205	202	3	1.5%	Cudia
5	1,510	1,346	164	11.5%	Cudia
6	3,201	2,894	307	10.1%	Cudia
7	2,790	2,784	6	0.2%	Cudia
8	3,295	3,109	186	5.8%	Cudia
9	882	973	-91	9.8%	Cudia
10	1,451	1,483	-32	2.2%	MIBW
11	368	359	9	2.5%	MIBW
12	1,643	1,403	240	15.8%	MIBW
13	3,432	3,269	163	4.9%	MIBW
14	426	426	0	0.0%	MIBW
15	978	617	361	45.3%	E Shea
16	479	546	-67	13.1%	E Shea
17	981	579	402	51.5%	E Shea
18	372	347	25	7.0%	LIBW
19	284	237	47	18.0%	LIBW
20	204	221	-17	8.0%	LIBW
21	616	508	108	19.2%	LIBW

Figure 5-13. Comparison to Previous Study Results.

5.2.2 Off-Site Inflows

The off-site models (i.e., MIBW and E Shea) were re-computed using a variety of recurrence interval and duration combinations. Given that these models were previously calibrated, inflow from these models were examined within the PV model to ensure agreement of peak flow rate values between the off-site model results and what is shown in the PV model results. This is especially important, as the off-site models were re-processed using a much newer FLO-2D executable version.

The primary comparison point is on Indian Bend Wash and Shea Boulevard, at the northern boundary of the PV model. The original study reported a 100-year 6-hour peak discharge of 4,254 cfs, and the equivalent peak discharge at a nearby floodplain cross-section in the PV model was 4,420 cfs. This confirms that the inflow from the MIBW model was accurately translated into the PV model.

5.3 Conclusion

The calibration scenarios were not applied to the design storm events, and the base model parameterization was determined to best reflect hydrologic and hydraulic conditions in the study area. This determination was based on the following factors and conclusions:

- Attempts to calibrate the model to the 2006 storm event could not replicate the gage data, and the modeled discharges were less than the measured discharges. The inverse relationship was found when comparing to the USGS regression equation results, where the modeled results were significantly higher than the regression estimates. Therefore, any attempts to push the model to match one dataset would pull it further from the other, and both datasets (i.e., gage data and regression equation results) are valid and suitable for calibration.
- Further investigations suggest that observed discrepancies may result from basal factors, including model cell size and even model software.
- There is close agreement with the base parameterization results with the final contributing study results. This is particularly important, as it provides a seamless transition to adjacent studies. Further, regulatory flow rates have already been established within the Town limits using the contributing studies, and it is important that this Town-wide model yield similar results.

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Action Report

File #: 25-207

AGENDA TITLE:
Discussion of Curb Replacement Projects: McDonald Dr. (40th St. to 44th St.) and 45th St. (McDonald Dr. to Valley Vista Ln)

STAFF CONTACT:

TOWN
Of
PARADISE VALLEY

STAFF REPORT

TO: **Mayor Stanton and Town Council Members**

FROM: **Andrew Ching, Town Manager**
Chad Weaver, Community Development Director
Shar Johnson, Town Engineer
Sam Kayat, CIP Manager

DATE: **October 9, 2025**

DEPARTMENT: Community Development - Engineering
Sam Kayat, 480-348-3541

AGENDA TITLE:
Curb Replacement Projects: McDonald Dr. (40th St. to 44th St.) and 45th St. (McDonald Dr. to Valley Vista Ln)

SUMMARY STATEMENT

Town staff is providing an update on the McDonald Drive and 45th Street curb replacement projects. A drainage report has been completed, confirming the proposed improvements will not adversely impact downstream properties and the historic flow patterns will be preserved.

In response to Council's request, staff has developed a public outreach plan. Staff propose to notify affected residents via mailed communication. This outreach will include a project overview, a map of the impacted area, the purpose of the improvements, and the anticipated start date and duration of construction.

RECOMMENDATION

Town staff is providing project updates to Council.

BACKGROUND

Project Area Overview:

- McDonald Drive (40th Street to 44th Street): A two-lane local street with an unimproved median and no sidewalks or bike lanes. Posted speed limit: 25 MPH.
- 45th Street (McDonald Drive to Valley Vista Lane): A local street without sidewalks or bike lanes. Posted speed limit: 25 MPH.

The existing asphalt curbs along both corridors are significantly deteriorated, exhibiting cracking, erosion, and general wear. These conditions compromise the integrity of adjacent pavement and may lead to more extensive and costly repairs if not addressed.

Project Scope:
The proposed improvements include full removal of the existing asphalt curbs and installation of new MAG-standard concrete curb and gutter sections. These improvements will:

- Improve roadway durability and longevity.
- Enhance visual appeal.
- Support safer and more reliable travel for residents and visitors.

Brief Projects Development History:

- 2020: Projects identified in the Town's Capital Improvement Program (CIP)
- 2024: Projects included in the approved CIP under the roadway category.
- July 2024: T.Y. Lin International engaged for preliminary engineering and planning support.
- January 23, 2025: Staff presented the project to Council; Council directed staff to complete a drainage analysis and develop a public outreach plan.
- May 2025: Michael Baker International retained for final design and drainage analysis.
- September 2025: Town retained Infrastructure Mavens, LLC an Independent Cost Expert to perform project cost and constructability review.
- Current Status: Plans are at 60% design; draft drainage report has been completed.

General Plan:

The project supports the following General Plan goals:

- M.2 – Roadway Design: Promote high-quality roadway design that enhances safety, reduces environmental impacts, and reflects the Town's character.
- M.5 – Visual Character: Create attractive, well-designed street rights-of-way that reinforce the Town's image.

BUDGETARY IMPACT

The Town's FY26 CIP budget allocates a total of $766,000 for the design and construction of both projects. The current cost estimate to complete them is $994,000, which exceeds the budgeted amount and may change as the projects progress. Final construction costs will ultimately be determined through contractor bids. A project-specific cost breakdown is provided below:

Cost to Complete

Item	McDonald Dr	45th St.	Combined
Design phase	$15,000	$4,000	$19,000
Construction phase	$775,000	$200,000	$975,000
Total	$790,000	$204,000	$994,000

FY26 Budget

Item	McDonald Dr	45th St.	Combined
Total	$645,000	$121,000	$766,000

ATTACHMENT(S):

A. Staff Report
B. Presentation

Curb Replacement Projects Update

McDonald Drive

40th Street to 44th Street

CIP Project No. 2020-09

&

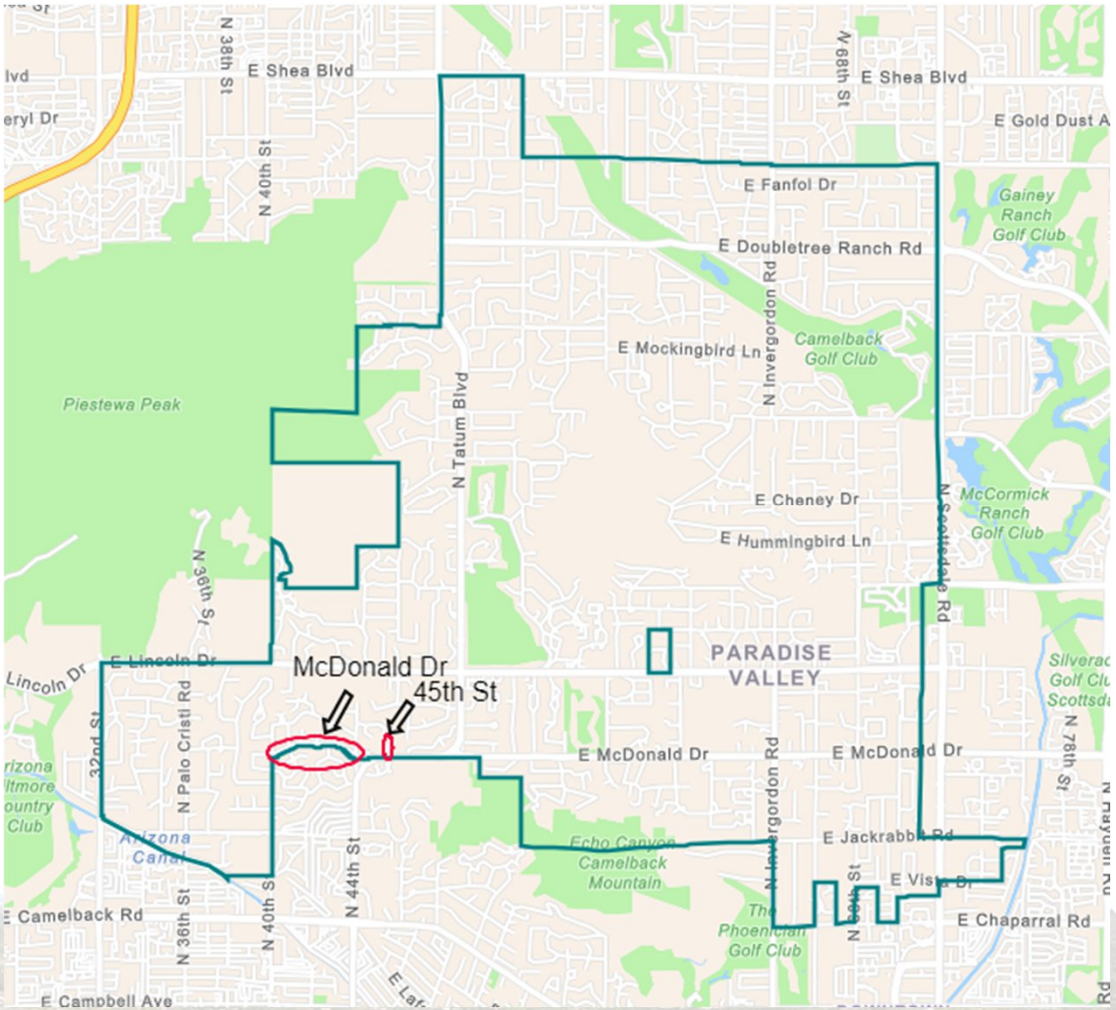
45th Street

McDonald Drive to Valley Vista Lane

CIP Project No. 2020-07

October 9, 2025

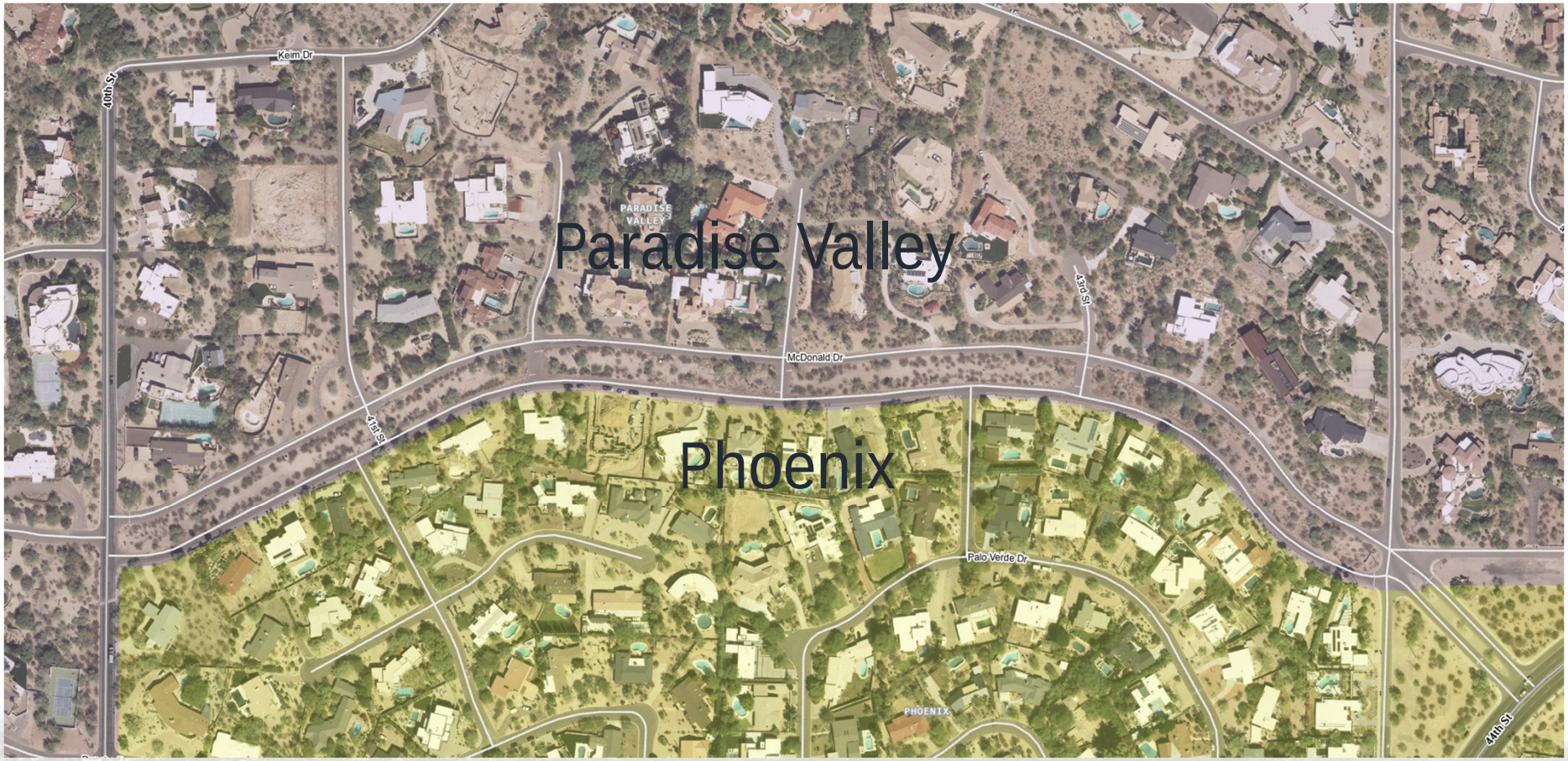
Location Map



McDonald Drive

- Local Street.
- Two lanes of traffic.
- Approximately 0.5 mile
- Wide unimproved median
- No sidewalks/bike lanes.
- Asphalt curb on median side
- 25 MPH speed limit.
- Identified in the Town's CIP in 2020.

McDonald Drive / Town Limits



45th Street

- Local Street.
- Two lanes of traffic.
- No sidewalks/bike lanes.
- 25 MPH speed limit.
- Asphalt curb on both sides
- Approximately 900-ft
- Identified in the Town's CIP in 2020.

The Problem

- Deteriorated and failing asphalt curbs
- Visible signs of wear, cracking, and erosion.
- Need of repair or replacement.
- Risk of further damage to adjacent asphalt pavement.

Project Photos 1

McDonald Dr
westbound

Project Photos 2

McDonald Dr
westbound

Project Photos 3

McDonald Dr
eastbound

Project Photos 4

45th St
west curb

Proposed Solution

Removal of existing asphalt curbs

Installation of MAG standard concrete curb & gutter sections

This solution will:

Eliminate risk of further damage to adjacent asphalt pavement.

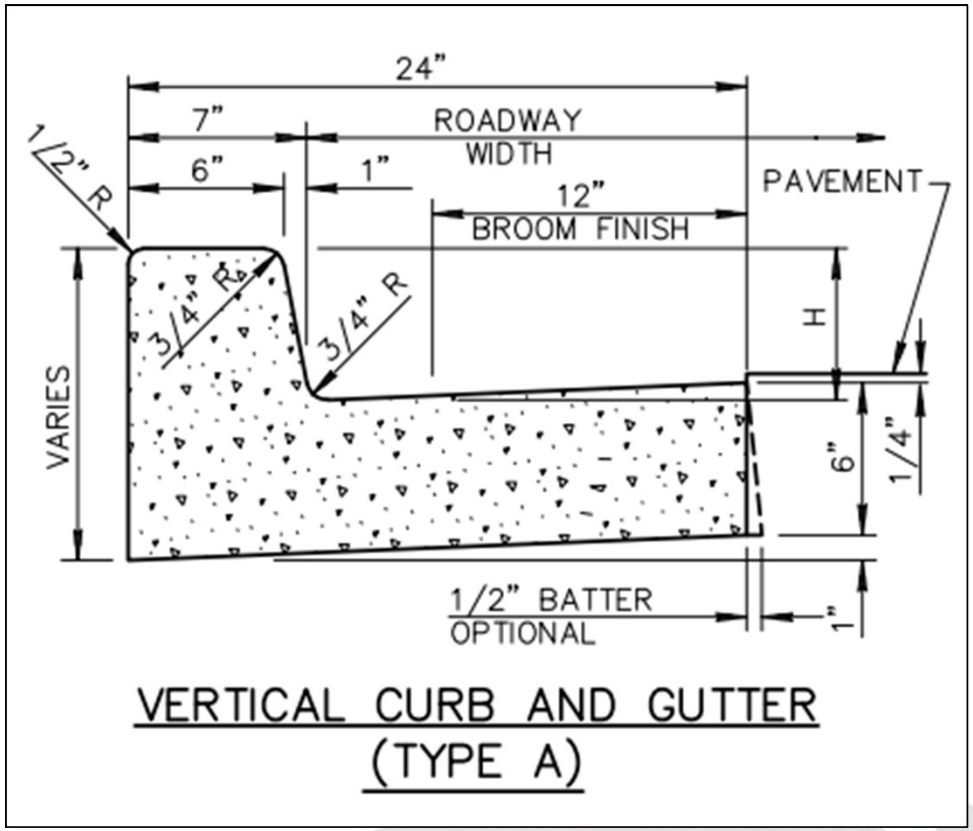
Enhancements to durability, aesthetics, and functionality of existing pavement.

Ensuring safer, more reliable travel for residents and visitors.

Before/After

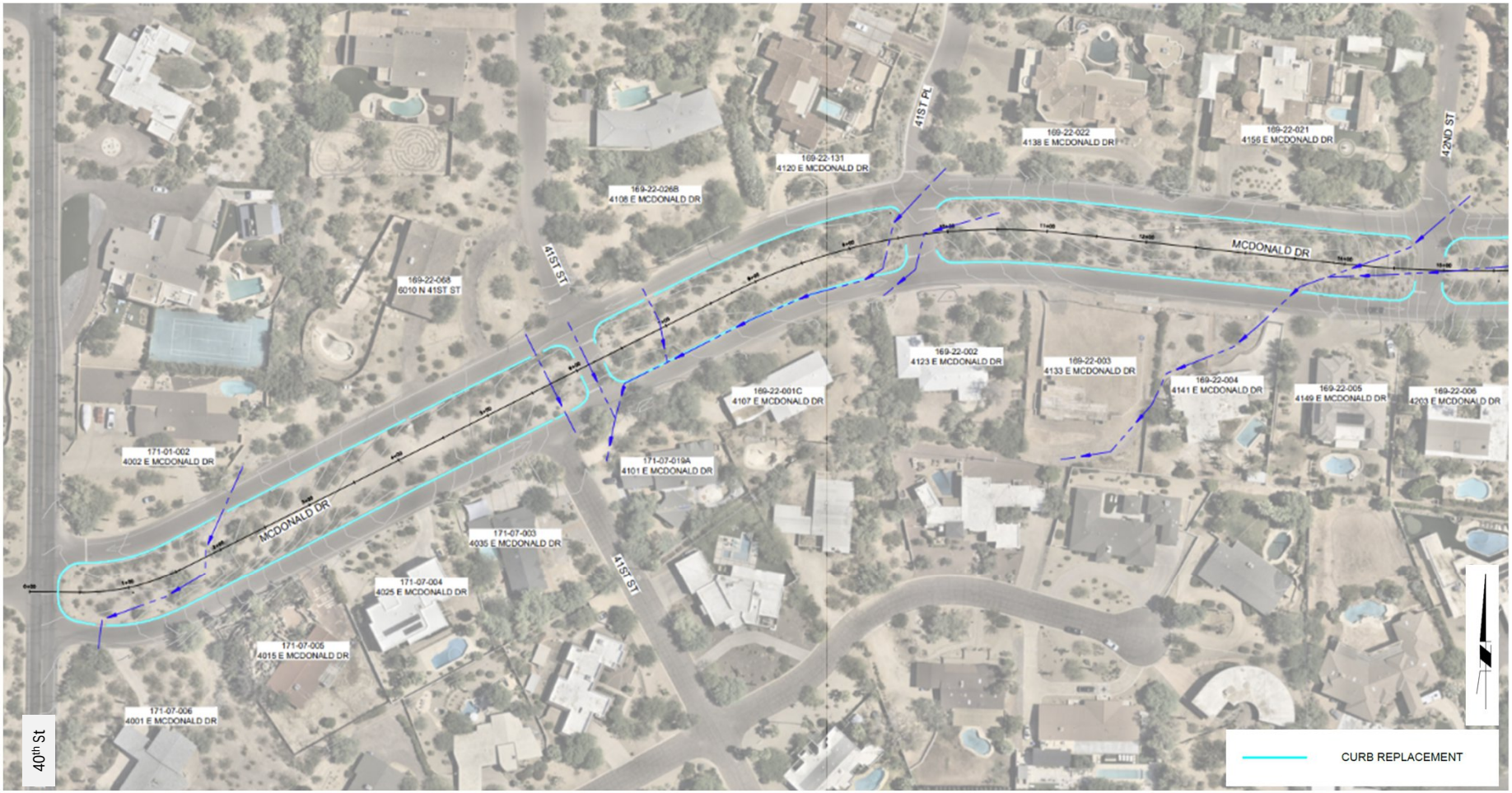
McDonald Dr
westbound

MAG Standard Curb

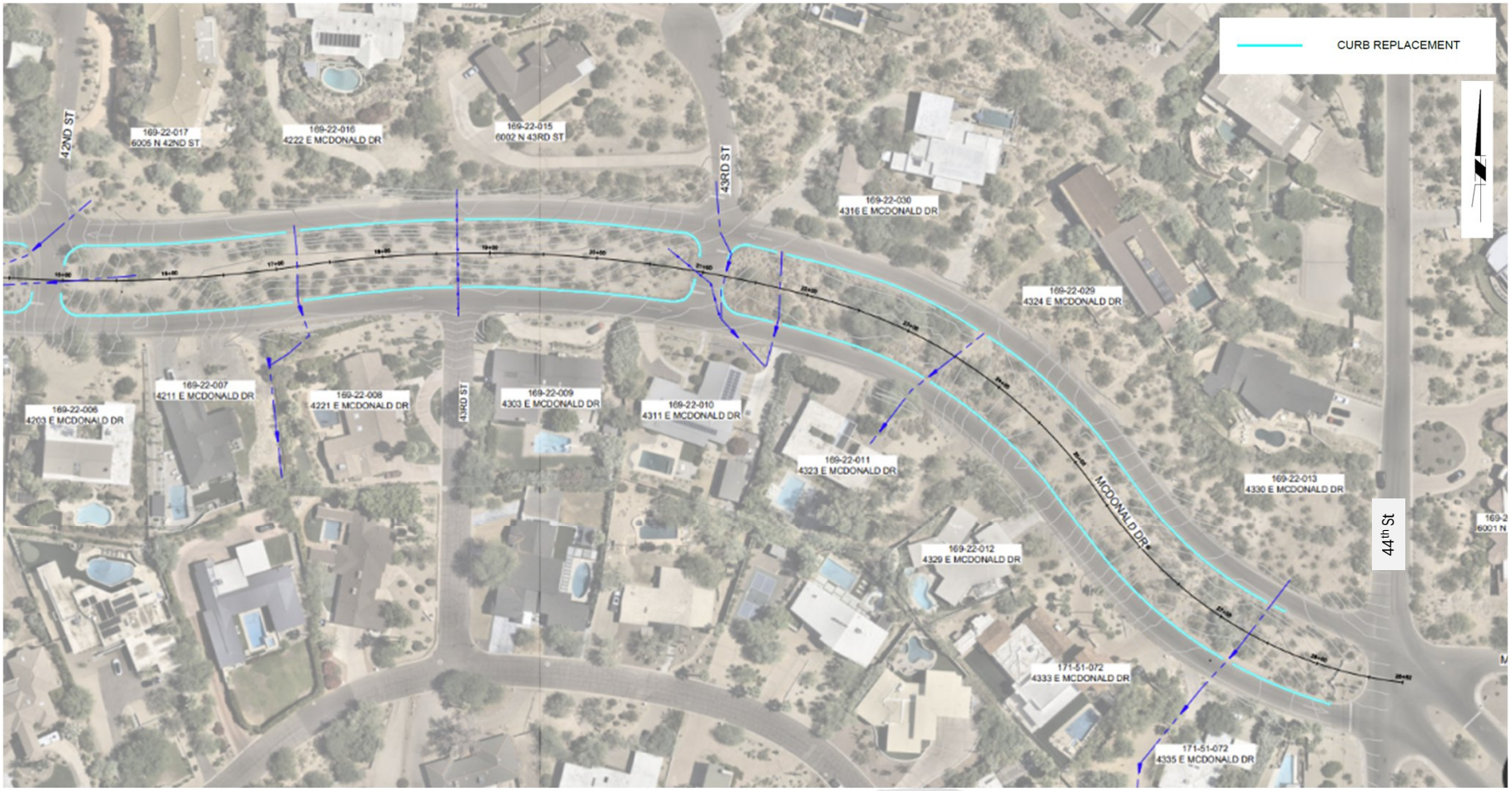


McDonald Dr

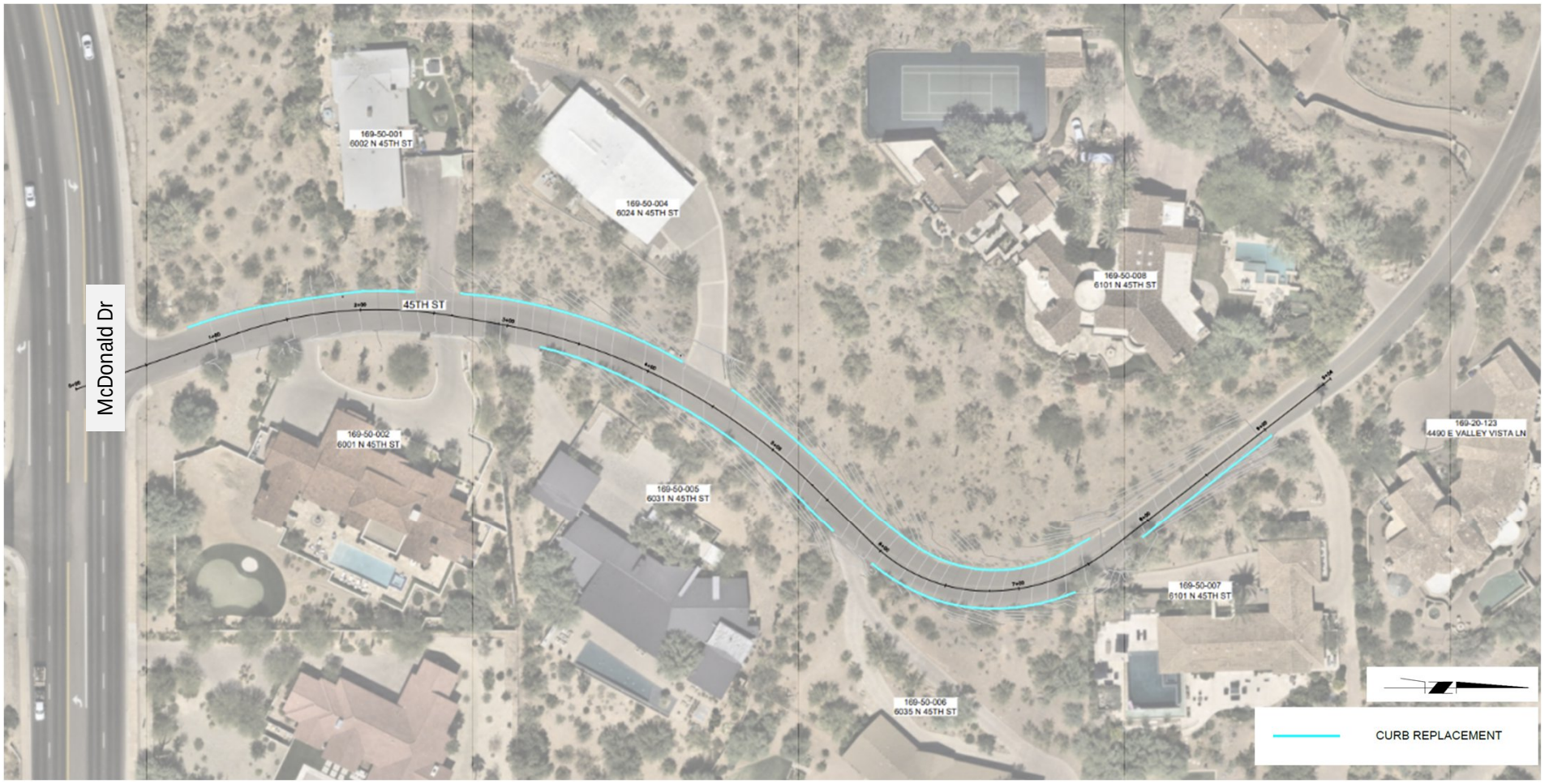
McDonald Dr Roll Plot 1



McDonald Dr Roll Plot 2



45th Street Roll Plot



Previous Council Session

Council Study Session – January 23, 2025

Staff presented the project, and
Council directed staff to:

- Complete a drainage analysis
- Develop a public outreach plan

Project Update

Drainage Report: A drainage report has been completed.

- Proposed improvements will not adversely impact downstream properties.
- Historic flow patterns will be preserved.

Public Outreach Plan: Notify affected residents by mail.

Include a project overview, a map of the impacted area, the purpose of the improvements, and the anticipated start date and duration of construction.

Construction Plans: Plans are at 60% design level.

Estimate / Budget

Estimated Cost to Complete (*)

Item	McDonald Dr	45th St.	Combined
Design phase	$15,000	$4,000	$19,000
Construction phase	$775,000	$200,000	$975,000
Total	$790,000	$204,000	$994,000

(*) Final construction costs will be determined through contractor bids.

FY26 Budget

Item	McDonald Dr	45th St.	Combined
Total	$645,000	$121,000	$766,000

Project Timeline

Task	Date
Public outreach	October 2025
Final construction plans	November 2025
Construction contract approval (*)	January 2026
Anticipated construction start	February 2026
Estimated construction duration	3-6 Months

(*) Council action

Thank You

Questions?

January 23, 2025 Council Session Minutes

3. STUDY SESSION ITEMS

24-355 Discussion of Curb Replacement Projects: McDonald Dr. (40th St. to 44th St.) and 45th St. (McDonald Dr. to Valley Vista Ln)

Mayor Stanton reconvened the meeting at 5:35 PM.

Capital Project Manager Sam Kayat briefed the Town Council on a Capital Improvement Project to replace curbs on McDonald Dr. from 40th St to 44th St and 45th St from McDonald Dr to Valley Vista Ln. He stated that the existing asphalt curbs in these areas have significantly deteriorated and are failing in various locations, showing visible signs of wear and tear, cracking, and erosion. These deteriorations are not only unsightly but also pose risks for further degradation of the adjacent asphalt pavement, potentially leading to more extensive and costly repairs in the future.

He explained that the Fiscal Year 2025 budget for design and construction of $400,000 was based on an estimate from four years ago. The estimated cost will be approximately $865,000; however, only the design contract would be awarded in this fiscal year and construction would be budgeted in FY 2026. The anticipated construction start date would be November 2025 and take four to eight months to complete.

Responding to questions from the Council, Mr. Kayat and Town Engineer Shar Johnson confirmed that the project area drainage would be reviewed and taken into consideration once the Stormwater Management Master Plan has been completed.

Mr. Ching stated that this item would be brought back to Council in April for a study session and action on the design contract. The Council requested that the staff report document the drainage assessment for the project area. The staff report should also include a description of the neighborhood notification plan which should include the properties located in the City of Phoenix.

Action Report

File #: 25-228

AGENDA TITLE:
Proclaim October as Domestic Violence Awareness Month

RECOMMENDATION:
Proclaim October as Domestic Violence Awareness Month

STAFF CONTACT:

TOWN
Of
PARADISE VALLEY

STAFF REPORT

TO: **Mayor Stanton and Town Council Members**

FROM: **Andrew B. Ching, Town Manager**
Duncan Miller, Town Clerk

DATE: **October 9, 2025**

DEPARTMENT: Town Manager
Duncan Miller, 480-348-3610

AGENDA TITLE:
Proclaim October as Domestic Violence Awareness Month

RECOMMENDATION:
Proclaim October as Domestic Violence Awareness Month

SUMMARY STATEMENT:

First observed in October 1987, Domestic Violence Awareness Month is focused on three key themes:

- Mourning those who have died because of domestic violence
- Celebrating those who have survived
- Connecting those who work to end violence

This year the Town is recognizing the important work done by Victim Advocates in Arizona. A Victim Advocate is a person who assists victims throughout the criminal process, providing information, support, and resources, help with protective orders, help with submitting Victim Impact Statements and Restitution information, and generally guiding victims through every stage of a case.

Melissa Dodge has served as the Town's Victim Advocate for three years. She is the first person to hold this position with the Town and has built the program into a well-respected resource for those needing assistance navigating the criminal justice system.

ATTACHMENT(S):
A. Staff Report
B. Proclamation

Proclamation

WHEREAS, *Approximately 36.5% of women and 27.1% of men in Arizona experience some form of domestic violence from an intimate partner during their lifetime; and*

WHEREAS*, Arizona consistently ranks among the top states with the highest homicide rates of women murdered by men; and*

WHEREAS, *between 2009 and 2023, there were 1,543 domestic violence-related deaths in Arizona; and*

WHEREAS, i*n 2023, The Arizona Coalition to End Sexual and Domestic Violence (ACESDV) documented 84 known domestic violence-related fatalities across Arizona; and*

WHEREAS, *Individuals who witnessed intimate partner violence as children are 2 times more likely to become either victims or perpetrators of intimate partner violence in the future; and*

WHEREAS, *over 30% of Arizonan children witness domestic violence, and approximately 1 in 15 children in the U.S. are exposed to it annually; and*

WHEREAS, *domestic violence impacts everyone regardless of race, sex, economic background, occupation or religious beliefs; and*

WHEREAS, *each year October provides an opportunity for all of us to recommit ourselves to support the development of healthy, respectful, and nonviolent relationships, reducing the occurrence of domestic violence to prevent its harmful, long-lasting effects on our community.*

NOW, THEREFORE*, I, Mark Stanton, Mayor of the Town of Paradise Valley, do hereby proclaim October 2025 as*

"Domestic Violence Awareness Month"

in Paradise Valley and urge all residents to become aware of the tragedy of domestic violence and support community efforts to end domestic violence.

IN WITNESS WHEREOF*, I have set my hand and caused to be affixed the seal of the Town of Paradise Valley this 9th day of October, 2025.*

Mark Stanton, Mayor

Attest:

Duncan Miller, Town Clerk

Action Report

File #: 25-227

AGENDA TITLE:
Advisory Committee on Public Safety (ACOPS) Update

STAFF CONTACT:

TOWN
Of
PARADISE VALLEY

STAFF REPORT

TO: **Mayor Stanton and Town Council Members**

FROM: **Andrew Ching, Town Manager**
Duncan Miller, Town Clerk

DATE: **October 9, 2025**

DEPARTMENT: Town Manager
Duncan Miller, 480-348-3610

AGENDA TITLE:
ACOPS Update

SUMMARY STATEMENT:

Each year, the Town's various volunteer committees, commissions, and boards provide an update to the Town Council. Council Member and Chair of the Advisory Committee on Public Safety (ACOPS) Scott Moore will present the annual update.

ATTACHMENTS:
A. Staff Report
B. Presentation

TOWN OF PARADISE VALLEY

Advisory Committee on Public Safety Update

October 9, 2025

ACOPS History

- March 26, 2015, Resolution 1330 created the Advisory Committee on Public Safety ("ACOPS").
- June 25, 2015, ACOPS met for the first time.
- October 26, 2017, Resolution 2017-21 adopted to make ACOPS a permanent committee.
- January 23, 2020, Resolution 2020-01 adopted to stagger member terms.

FY 2025 ACOPS Members

- Councilmember Scott Moore
- Rick Adams
- Jay Ozer
- Kathy Petsas
- Julie Schwalbe
- Mark Winograd
- Vacant (to be filled in next volunteer assignments)

Advisory Committee on Public Safety Goals

1. Promoting resident participation and engagement.
2. Engaging the community on public safety issues.
3. Receiving presentations and materials from the Paradise Valley Police Department.
4. Advise the Mayor and Council on Committee activities and recommendations.

Promoting Resident Engagement, Education, & Input

- Including CPR certification classes for residents
- Presenting articles for the PV Independent on topics such as Personal Safety and YANA program
- Support PVPD by attending coffee with a cop events and our public safety fair.
- Promote our PVPD's updated Public Safety Strategic Plan
- Understand and communicate our community victim outreach
- Supported fundraising events for Special Olympics (over the edge) and Angels on Patrol.
- Assisting the Town Manager and Chief with understanding the public's expectations on crime prevention and awareness
- Participating with our Chief on our new police vehicle design and new police patches (photos of the winners below)

New Vehicle and Patch Designs

Questions?

Action Report

File #: 25-226

TOWN
Of
PARADISE VALLEY

TOWN COUNCIL MEETING
6401 E. LINCOLN DRIVE
PARADISE VALLEY, ARIZONA 85253
MINUTES
THURSDAY, SEPTEMBER 25, 2025

1. CALL TO ORDER / ROLL CALL

Mayor Stanton called to order the Town Council Meeting for Thursday, September 25, 2025 at 3:00 PM in the Town Hall Boardroom, 6401 E. Lincoln Drive, Paradise Valley, AZ 85253.

COUNCIL MEMBERS PRESENT
Mayor Mark Stanton
Vice Mayor Ellen Andeen-Keller
Council Member Christine Labelle
Council Member Karen Liepmann
Council Member Scott Moore
Council Member Julie Pace attended by video conference
Council Member Anna Thomasson

STAFF MEMBERS PRESENT
Town Manager Andrew B. Ching
Town Attorney Andrew McGuire
Police Commander Joseph DiVenti
Town Clerk Duncan Miller
Community Development Director Chad Weaver
Public Works Director Isaac Chavira
CFO Leslie DeReche
Human Resources Director Gina Monger

2. STUDY SESSION ITEMS

25-213 Discussion of Bond Financing Options

Mark Reader, Managing Director, Stifel, briefed the Council on the Arizona Expenditure Limitation Law and the potential issuance of excise tax revenue bonds. He explained that amounts received from the issuance of bonds and payment of principal and interest on such bonds are exempt from the expenditure limit. He provided data on Arizona cities and towns which have adopted an alternative expenditure limit and recent Arizona County tax-exempt borrowing to fund capital improvement projects. He reported on current bond market trends and scenarios for sale of bonds.

25-214 Discussion of Arizona Expenditure Limitation Adjustment Options

Town Clerk Duncan Miller explained that the Arizona Expenditure Limitation Law is a constitutional amendment approved by the voters in 1980. The purpose of the law is to control local government spending and ensure that future increases in spending are tied to changes in population and inflation. The law also allows for exclusions such as debt service, capital leases, grants, excess Highway User Revenue Funds, and investment income. Each year the spending limit is calculated by the Economic Estimates Commission by adjusting a 1979-1980 base year for population growth and inflation. He said the Town's annual expenditures are approaching the limit. He presented the four options authorized by statute to adjust the limitation and their pros and cons. Each option requires voter approval at a regular primary or general election.

1. Home Rule
2. One-time Override
3. Capital Projects Accumulation Fund
4. Permanent Base Adjustment

He presented a sample timeline to place a question on the November 2026 ballot.

Before deciding if and when the Town's expenditure limit should be adjusted, the Council requested additional information on the capital improvement program including long-term project planning, timelines, cost estimates, and funding projections; and information on expenditure limitation trends and bond financing options.

A motion was made at 4:30 PM by Council Member Thomasson, seconded by Council Member Labelle, to go into executive session to discuss items 25-215 and 25-208. The motion carried by the following vote:

Aye: 7 - Mayor Stanton
Vice Mayor Andeen-Keller
Council Member Labelle
Council Member Liepmann
Council Member Moore
Council Member Pace
Council Member Thomasson

3. EXECUTIVE SESSION

25-215 Discussion or consultation with the Town Attorney, as authorized by A.R.S. §38 431.03(A)(3), for legal advice regarding Zoning Code Text Amendments.

DRAFT

25-208 **Discussion or consultation with the Town Attorney in order to consider the Town Council's position and instruct the Town Attorney regarding the Town's position regarding contracts that are subject to pending or contemplated litigation or in settlement discussions conducted in order to avoid or resolve litigation related to Five Star Development project as authorized by A.R.S. §38-431.03(A)(4); and discussion and consultation with the Town Attorney for legal advice regarding the development agreement and associated agreements with Five Star Development as authorized by A.R.S. §38-431.03(A)(3).**

25-210 **The Town Council may go into executive session at one or more times during the meeting as needed to confer with the Town Attorney for legal advice regarding any of the items listed on the agenda as authorized by A.R.S. §38-431.03(A)(3).**

4. BREAK

DRAFT

5. RECONVENE FOR REGULAR MEETING

Mayor Stanton reconvened the meeting at 6:00 PM in the Town Hall Council Chambers.

6. ROLL CALL

COUNCIL MEMBERS PRESENT
Mayor Mark Stanton
Vice Mayor Ellen Andeen-Keller
Council Member Christine Labelle
Council Member Karen Liepmann
Council Member Scott Moore
Council Member Julie Pace attended by video conference
Council Member Anna Thomasson

STAFF MEMBERS PRESENT
Town Manager Andrew B. Ching
Town Attorney Anrew J. McGuire
Police Commander Joseph DiVenti
Town Clerk Duncan Miller
Community Development Director Chad Weaver
Public Works Director Isaac Chavira
CIO James Bailey
IT Team Lead Taylor Hunter

7. PLEDGE OF ALLEGIANCE

PV Arts Board Chair Colleen Steinberg, featured artist Barbara Lacy, and her daughter Jessica Lacy led the Pledge of Allegiance.

8. PRESENTATIONS

25-222 Presentation by Congressman David Schweikert regarding Paradise Valley Post Office

Congressman David Schweikert addressed the Council regarding the Town's successful efforts to appeal the decision by the United States Post Office to close the contract postal unit in Town Hall. Town officials coordinated with the Congressman who pursued the Town's cause at the federal level. He stated that Paradise Valley's Post Office serves as a model for how other contract stations can continue to operate.

25-219 Recognition of Artist-in-Residence Barbara Bayless Lacy for Displaying her Artwork at Town Hall

The Mayor and Council recognized Barabar Bayless Lacy for displaying her art at Town Hall over the last year and presented her with a plaque commemorating her time as the featured artist for 2024-2025.

DRAFT

25-217 PV Arts Board Update

PV Arts Board Chair Colleen Steinberg presented the Board's annual report to Council. She summarized the feature artis program, student art show, and artists' studio tour.

25-216 Hillside Building Committee Update

Hillside Building Committee Chair Scott Jarson presented the Committee's annual report to Council. He said the Committee's role is to review plans for new and modified construction on hillside properties to promote compliance with development regulations. He summarized the types of applications they received, development trends, and educational outreach efforts.

9. CALL TO THE PUBLIC

Christopher Ajluni, Chuck Albrecht, and Cricket Peterson, made comments about Congressman David Schweikert.

Resident Judith Lee Brown addressed the Town Council regarding an incident in 2015 in which her father was struck and killed by a vehicle in Paradise Valley.

10. CONSENT AGENDA

Mr. Ching summarized the items on the items on the consent agenda.

25-211 Minutes of Town Council Meeting September 11, 2025

A motion was made by Council Member Thomasson, seconded by Vice Mayor Andeen-Keller, to approve the Consent Agenda. The motion carried by the following vote:

Aye: 7 - Mayor Stanton
Vice Mayor Andeen-Keller
Council Member Labelle
Council Member Liepmann
Council Member Moore
Council Member Pace
Council Member Thomasson

11. PUBLIC HEARING

There were no public hearings.

DRAFT

12. ACTION ITEMS

25-203 Discussion and Possible Action to Authorize Expenditure of Budgeted Funds for Information Technology Managed Services and Annual Software Renewals with Sentinel Technologies, Inc

IT Team Lead Taylor Hunter presented a request to spend budgeted funds for information technology managed services and annual software renewals with Sentinel Technologies. He said the Town has worked with Sentinel since 2021. They provide 24/7 systems and cyber security monitoring, software licenses and subscriptions, and other professional services for continuous improvements. The total annual contract expenditure is $520,000. This is a routine notification to Council, as required by budget management policies, of an expense to a single vendor in excess of $100,000.

There were no public comments.

A motion was made by Council Member Moore, seconded by Council Member Labelle, to authorize the expenditure of budgeted funds for information technology managed services and annual software renewals with Sentinel Technologies, Inc in an amount not to exceed $520,000. The motion carried by the following vote:

Aye: 7 - Mayor Stanton
Vice Mayor Andeen-Keller
Council Member Labelle
Council Member Liepmann
Council Member Moore
Council Member Pace
Council Member Thomasson

25-220 Discussion and Possible Action to Adopt Ordinance 2025-03, Amending Chapter 2of the Town Code: (i) Article 2-2, Section 2-2-2 Relating to the Annual Process for Selection of the Vice Mayor, and (ii) Article 2-6, Section 2-6-6, Relating to Modified Posting Requirements to Align with Changes in State Law

Town Attorney Andrew McGuire stated that the Council reviewed draft Ordinance 2025-03 at the Council study session on June 12, 2025. The ordinance proposes to replace the current process of electing a Council Member to serve a one-year term as vice mayor with a rotating process based on seniority. Subsequent to the meeting in June, an amendment in a different section of Chapter 2 was added to the ordinance to bring the Town Code into conformance with a change in state law related to public notice posting requirements for adopted ordinances.

Residents Jini Simpson, Rick Adams, and Paul Dembow spoke in opposition to the ordinance. Resident Janie White did not speak but submitted a comment card in opposition to the ordinance.

A motion was made by Council Member Pace, seconded by Vice Mayor Andeen-Keller, to adopt Ordinance 2025-03. The motion carried by the following vote:

Aye: 4 - Mayor Stanton
Vice Mayor Andeen-Keller
Council Member Labelle
Council Member Pace

Nay: 3 - Council Member Liepmann
Council Member Moore
Council Member Thomasson

13. FUTURE AGENDA ITEMS

25-212 Consideration of Requests for Future Agenda Items

Town Manager Ching summarized the future agenda schedule.

14. MAYOR / COUNCIL / MANAGER COMMENTS

Council Members provided comments and updates on current events.

Council Member Moore departed the meeting at 7:50 PM

15. ADJOURN

A motion was made at 7:55 PM by Vice Mayor Andeen-Keller, seconded by Council Member Thomasson, to adjourn the meeting. The motion carried by the following vote:

Aye: 6 - Mayor Stanton
Vice Mayor Andeen-Keller
Council Member Labelle
Council Member Liepmann
Council Member Pace
Council Member Thomasson

Absent: 1 - Council Member Moore

Mayor Stanton adjourned the meeting at 7:55 PM

DRAFT

TOWN OF PARADISE VALLEY

SUBMITTED BY:

_____
Duncan Miller, Town Clerk

STATE OF ARIZONA)
:ss.
COUNTY OF MARICOPA)

CERTIFICATION

I, Duncan Miller, Town Clerk of the Town of Paradise Valley, Arizona hereby certify that the following is a full, true, and correct copy of the minutes of the regular meeting of the Paradise Valley Town Council held on Thursday, September 25, 2025

I further certify that said Municipal Corporation is duly organized and existing. The meeting was properly called and held and that a quorum was present.

_____
Duncan Miller, Town Clerk

DRAFT

Action Report

File #: 25-233

AGENDA TITLE:
Discussion and Possible Action to Authorize the Town Manager to Execute a Linking Agreement with Logicalis, Inc. for the Purchase of Replacement Security Cameras and Servers

RECOMMENDATION:
Authorize the Town Manager to execute a linking agreement with Logicalis, Inc for the replacement of security cameras and related equipment for the Town Hall Campus in the amount of $209,278.79.

STAFF CONTACT:

TOWN
Of
PARADISE VALLEY

STAFF REPORT

TO: **Mayor Stanton and Town Council Members**

FROM: **Andrew Ching, Town Manager**
James Bailey, Chief Information Officer
Taylor Hunter, IT Team Lead

DATE: **October 9, 2025**

AGENDA TITLE:
Discussion and Possible Action to Authorize the Town Manager to Execute a Linking Agreement with Logicalis, Inc. for the Purchase of Replacement Security Cameras and Servers

RECOMMENDATION:
Authorize the Town Manager to execute a linking agreement with Logicalis, Inc for the replacement of security cameras and related equipment for the Town Hall Campus in the amount of $209,278.79.

SUMMARY STATEMENT:
The approved Fiscal Year 2026 Capital Improvement Program (CIP) budget includes the replacement of the Town Hall Campus security monitoring system which includes upgrades to the equipment and software systems.

BACKGROUND:
The Town's current 7-year-old security camera system has reached its end of life for support and is increasingly becoming a risk for the Town to maintain. It is facing issues with out-of-date hardware technology, it is difficult to support, and end-users of the system have trouble viewing footage due to the slowness of the system, report blind spots that will be addressed with a new system, and the lack of integration with future facility systems like door access controls and alarms.

Procurement Approach: Verkada, a cloud-based security monitoring platform, is a market leader across many Arizona public agencies and school systems. This upgrade involves implementing the Verkada Security Monitoring system, a best-n-class cloud-based platform, that integrates cameras, intercom for outdoor gates, DVR video storage, and dispatcher monitoring functionalities, replacing the outdated on-premises cameras and servers at Town Hall, the Police Department, and the Court. As well as new cameras in the Public Works.

The Verkada solution addresses our needs with a simple installation, easy-to-use interface, and centralized management system. It allows for quick access to view and share footage, while also offering advanced features like AI analytics for searching video footage and real-time alerts giving greater visibility and control to the dispatchers monitoring the system.

Verkada will be sourced under the 1GPA cooperative contract and linking agreement with Logicalis, Inc. who will install and support the replacement cameras.

All hardware is covered by a 10-year warranty and includes next-day Return Merchandise Authorization (RMA) service. There are no ongoing maintenance requirements.

BUDGET IMPACT:

FY26 Approved CIP Fund: *Security Camera system Refresh Budget* *$ 330,000.00*

**Budgeted allocation includes initial base project costs, plus any change orders that may be brought back to council in a future update and action request.*

Hardware and installation contract amount $ **209,278.79**

ATTACHMENT(S):

A. Staff Report Exhibits – Logicalis, Inc.
B. Staff Report Exhibits – Verkada Arizona Installations
C. Staff Report Exhibits – Logicalis Linking Agreement

We are proud to be trusted by the Arizona community

+ 400 Customers | 70 Government Entities | +130 School Districts K-12

- Notre Dame Prep School
- Tuba City USD
- Maricopa Community Colleges
- Grand Canyon University
- Globe Unified School District
- Roosevelt School District
- Peoria School District
- Holbrook USD
- Bisbee USD
- Bullhead City Elementary SD
- Catalina Foothills USD
- Kingman USD
- Pima USD
- City of Tolleson
- City of Avondale
- San Carlos USD
- Maricopa Regional School
- Superior USD
- Sanders USD
- Cave Creek USD
- Mohave Valley School District
- Chandler USD
- Morenci USD
- Littlefield School District
- Rock Point Community Schools
- Colorado Rivers Union SD
- Palo Verde Schools
- Thatcher USD
- Queen Creek
- Kayenta Boarding School
- San Carlos Community College
- Safford USD
- Rough Rock Community School
- Dilcon Community School
- Black Mesa Community School
- Naslini Community School
- Fort McDowell Tribe
- Arizona School for the Deaf and Blind
- Douglas Unified
- Hopi Jr. & Sr. High School
- The University of Arizona
- Superior Unified School District
- Maricopa Unified School District
- Navajo Tribal Utility Authority

Verkada [2023]. Confidential

LINKING AGREEMENT
FOR COOPERATIVE PURCHASE

LOGICALIS, INC.
FIRE, SECURITY AND COMMUNICATION SYSTEM SOLUTIONS

This Linking Agreement for Cooperative Purchase (this "**Agreement**") is made and entered into on _____, 2025 (the "**Effective Date**") by and between the Town of Paradise Valley, an Arizona municipal corporation (the "**Town**"), and Logicalis, Inc. a New York corporation authorized to do business in Arizona (the "**Contractor**"). The Town and Contractor are the only parties to this Agreement; they are each individually a "**Party**," and together they are the "**Parties**."

RECITALS

A. On May 1, 2021, after a competitive procurement process, the 1Government Procurement Alliance (1GPA) entered into Contract No. 21-07P-13 with the Contractor (the "**Base Agreement**") to purchase goods and services as described therein. A copy of the Base Agreement is attached hereto as **Exhibit A**, and the terms of the Base Agreement are incorporated herein by reference to the extent not inconsistent with this Agreement. The Base Agreement permits its cooperative use by other governmental agencies, including the Town.

B. Pursuant to A.R.S. §§ 41-2631 *et seq*. and Town of Paradise Valley Resolution Nos. 1205 and 1207, the Town has the authority to utilize cooperative purchasing contracts and engage contractors under the terms thereof.

C. The Town desires to contract for goods or services identical or nearly identical to the goods or services the Contractor is providing other units of government under the Base Agreement, and the Contractor desires to provide such goods and services as set forth in this Agreement.

AGREEMENT

NOW, THEREFORE, the Contractor and the Town, in consideration of the foregoing Introduction and Recitals, which are incorporated herein by reference, and for the consideration hereinafter set forth, promise, covenant, and agree as follows:

1. Scope of Work; Terms, Conditions, and Specifications.

   1.1. The Contractor shall provide the Town the goods and/or services, generally described as fire, security, and communication system solutions and more particularly identified in the proposal dated February 15, 2021 (the "**Scope of Work**"), which is attached hereto as **Exhibit B** and incorporated herein by reference.

   1.2. The Contractor agrees to comply with all the terms, conditions, and specifications of the Base Agreement. Such terms, conditions, and specifications are specifically incorporated into and are an

enforceable part of this Agreement, except to the extent superseded herein or otherwise provided in **Exhibit C**. Pursuant to the terms of the Base Agreement, the Town is a 1GPA Member and is entitled to all the same benefits under the Base Agreement as 1GPA.

1.3. The Contractor shall comply with all the Town's specific requirements and/or options, as specified in **Exhibit C** attached hereto and incorporated herein by reference. **To the extent there is any conflict between Exhibit B or C and the Base Agreement, Exhibits B and C take precedence.**

1.4. The Contractor acknowledges and agrees that work order(s) containing unauthorized exceptions, conditions, limitations, or provisions in conflict with the terms of this Agreement (collectively, the "Unauthorized Conditions"), other than the Town's project-specific requirements, are hereby expressly declared void and shall be of no force and effect. Acceptance by the Town of any work order or invoice containing any such Unauthorized Conditions or failure to demand full compliance with the terms and conditions set forth in this Agreement or in the Base Agreement shall not alter such terms and conditions or relieve the Contractor from, nor be construed or deemed a waiver of, its requirements and obligations in the performance of this Agreement. If this Agreement is renewed pursuant to Subsection 3 and such renewal includes any Unauthorized Conditions, other than price, those terms will be null and void.

2. Payment. Payment to the Contractor for the services, materials, or equipment provided shall be made in accordance with the terms and conditions of the Base Agreement and the price list set forth in Exhibit B. The total compensation for the goods or services purchased under this Agreement shall not exceed $209,278.79 for the entire term of this Agreement.

3. Contract Term and Renewal.

3.1. This Agreement shall be effective as of the date first set forth above and shall remain in full force and effect until April 30, 2026, unless terminated, canceled, or extended as otherwise provided in this Agreement.

3.2. The Town Manager or designee may extend the term of this Agreement consistent with the extension, if any, of the Base Agreement. Extensions are not automatic and shall only occur if the Town gives the Contractor notice of its intent to extend this Agreement.

3.3. Upon the expiration of the Base Agreement, including any authorized renewals thereof, the Town may, at its option, extend this Agreement on a month-to-month basis for a maximum of six months. The purpose of such month-to-month extensions, if any, shall be to allow for the Town's procurement processes in the selection of a vendor to provide the services or materials provided under this Agreement.

4. Certificates of Insurance. All insurance provisions of the Base Agreement shall apply, including, without limitation, the requirement to name the Town, its agents, representatives, officials, volunteers, officers, elected officials, and employees as additional insured. Prior to commencing work under this Agreement, the Contractor shall furnish the Town with Certificate(s) of Insurance and formal endorsements issued by the Contractor's insurer(s) as evidence that policies providing the required coverages, conditions, and limits required by this Agreement are in full force and effect.

5. E-Verify. The Contractor complies with A.R.S. § 23-214 and agrees to comply with the requirements of A.R.S. § 41-4401.

6. Boycott of Israel Prohibited. To the extent Title 35 applies to this Agreement, the Contractor warrants that it is not and will not participate in prohibited activity in contravention of A.R.S. § 35-393.01.

7. Cancellation for Conflict of Interest. This Agreement may be canceled pursuant to A.R.S. § 38-511.

8. Counterparts. This Agreement may be executed in any number of counterparts, all such counterparts shall be deemed to constitute one and the same instrument, and each of said counterparts shall be deemed original hereof.

9. Forced Labor of Ethnic Uyghurs. To the extent applicable under A.R.S. § 35-394, the Contractor warrants and certifies that it does not currently, and agrees that it will not, for the duration of this Agreement, use the forced labor, any goods or services produced by the forced labor, or any contractors, subcontractors, or suppliers that use the forced labor or any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China. If the Contractor becomes aware that it is not in compliance with this paragraph, it shall notify the Town of the noncompliance within five business days of becoming aware of it. If the Contractor fails to provide a written certification that it has remedied the noncompliance within 180 days after that, this Agreement shall terminate unless the termination date of this Agreement occurs before the end of the remedy, in which case this Agreement terminates on its termination date.

10. Indemnification. To the fullest extent permitted by law, the Contractor shall indemnify, defend, and hold harmless the Town and each council member, officer, employee, or agent thereof (the Town and any such person being herein called an "Indemnified Party"), for, from, and against any and all losses, claims, damages, liabilities, costs, and expenses (including, but not limited to, reasonable attorneys' fees, court costs and the costs of appellate proceedings) to which any such Indemnified Party may become subject, under any theory of liability whatsoever ("Claims") to the extent that such Claims (or actions in respect thereof) are caused by the negligent acts, recklessness or intentional misconduct of the Contractor, its officers, employees, agents, or any tier of subcontractor in connection with the Contractor's work or services in the performance of this Agreement. The amount and type of insurance coverage requirements set forth in this Agreement or the Base Agreement will in no way be construed as limiting the scope of the indemnity in this section.

11. Provisions Required by Law. Each and every provision of law and any clause required by law to be in this Agreement will be read and enforced as though it were included herein and, if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party, this Agreement will promptly be physically amended to make such insertion or correction.

IN WITNESS WHEREOF, the Parties have hereunto subscribed their names.

TOWN OF PARADISE VALLEY,
an Arizona municipal corporation:

_____
Andrew Ching, Town Manager

ATTEST:

_____
Duncan Miller, Town Clerk

APPROVED AS TO FORM:

_____
Andrew J. McGuire, Town Attorney

LOGICALIS, INC.
a New York corporation:

By: _____

Name: _____

Title: _____

LINKING AGREEMENT
FOR COOPERATIVE PURCHASE

LOGICALIS, INC.
FIRE, SECURITY AND COMMUNICATION SYSTEM SOLUTIONS

EXHIBIT A
BASE AGREEMENT

(See attached: Fire, Security and Communication System Solutions, Contract No. 21-07P-13, May 1, 2021)

OFFEROR'S PROPOSAL AND CONTRACT ACCEPTANCE

The Undersigned hereby certifies understanding and compliance with the requirements in the General Terms and Conditions. Offeror further agrees to furnish the material and/or service in compliance with all terms, conditions, specifications, and amendments in the solicitation and any written exceptions in the Proposal.

13-4000122
Federal Employer Identification Number

8945 S. Harl Avenue, Suite 102
Address

Logicalis, Inc.
Company Name

Tempe | AZ | 85284
City, | State | Zip

Pete Edwards
Printed Name

480-850-5050
Company Telephone Number

Area Sales Director
Title

Jamie Kazee
Accounting / AP Contact Name

LogicalisGovEdContracts@us.logicalis.com
Primary Email (for Contract Inquiries)

Jamie.Kazee@us.logicalis.com
Accounting / AP Email

Authorized Signature

The vendor shall not commence any billable work or provide any material or service under this contract until Vendor receives a purchase order/contract from a 1GPA member. The vendor agrees to comply with the requirements of submitting Usage Reports and Purchase Orders and/or Contracts to 1GPA. The vendor shall provide monthly or quarterly (arrangements to be made with 1GPA) reconciliation reports based on all contract activity to 1GPA. Vendor will be invoiced from these reports. Invoices are due upon receipt.

1GPA'S PROPOSAL AND CONTRACT ACCEPTANCE

The Proposal is hereby accepted:

The Vendor is now bound to sell the materials and/or services offered to and accepted by 1GPA in accordance with the solicitation, including all terms, conditions, specifications, amendments, etc.

This contract shall henceforth be referred to as 21-07P-13 Fire, Security and Communication System Solutions

Awarded this 14th day of April 2021

This contract shall be effective this 1st day of May 2021

1GPA

Signature: Christy Knorr Date: 4/14/2021

Printed Name: Christy Knorr Title: Vice President

Approved By: Mary C. O'Brien Accommodation School/Pinal County ESA

Signature: Jill M. Broussard Date: 4/14/21

Printed Name: Jill M. Broussard Title: Pinal County School Superintendent

The following is a Cooperative Solicitation, released via Mary C. O'Brien Accommodation School/Pinal County ESA as the lead agency of 1Government Procurement Alliance:

Request for Proposal #21-07P
Fire, Security and Communication System Solutions

Proposal Due Date and Time: February 18, 2021 at 11:00 A.M. Arizona Time

RFP Opening Location: 1Government Procurement Alliance (1GPA)
1910 W. Washington Street
Phoenix, Arizona 85009
See enclosed information for submittal instructions.

Last Day for Questions: February 5, 2021

Pre-Proposal Conference: None

In accordance with the Arizona procurement code and rules, Competitive Sealed Proposals for the materials or services specified will be received by 1GPA, at the above specified location, until the time and date cited. Proposals received by the correct time and date shall be opened and the name of each Offeror will be publicly read. All other information contained in the Proposal shall remain confidential until award is made.

Solicitations shall be in the actual possession of 1GPA on or prior to the time and date, and at the location indicated above. Late solicitations shall not be considered.

Solicitations must be submitted in a sealed envelope or package with the Request for Proposal number and the Offerors name and address clearly indicated on the envelope or package. Additional instructions for preparing a solicitation are provided herein. Offerors are strongly encouraged to carefully read the entire solicitation document.

Questions regarding this Request for Proposal should be submitted online at **https://secure.procurenow.com/portal/1GPA** or directed to: Rebecca Seifert, Procurement Specialist
Email: rseifert@1gpa.org
Phone: 480-524-2593

Jill Broussard

Jill Broussard, Superintendent
Pinal County ESA

Christy Knorr

Christy Knorr, Vice President
1Government Procurement Alliance (1GPA)

Date: January 13, 2021

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DOCUMENTS REFERENCED

You may access a complete copy of the documents referenced within this solicitation at the following web addresses:

Arizona:

Arizona Revised Statutes (A.R.S.) is available at
http://www.azleg.state.az.us/ArizonaRevisedStatutes.asp

The Arizona School District Procurement Rules in the Arizona Administrative Code (A.A.C.) is available at
http://apps.azsos.gov/public_services/Title_07/7-02.pdf

All Other States:

For a full listing of Intergovernmental Purchasing Statutes by state, **Click Here** to be re-directed to 1GPA website available at:
http://1gpa.org/state-statutes/

Local Governments website (USA.gov): http://www.usa.gov/Agencies/Local_Government/Cities.shtml

Federal:

I.R.S. W-9 form (Request for Taxpayer I.D. Number) is available at
http://www.irs.gov/pub/irs-pdf/fw9.pdf

Education Department General Administrative Regulations (EDGAR), 2 C.F.R. §§ 200.318-326
https://www.gpo.gov/fdsys/pkg/CFR-2014-title2-vol1/xml/CFR-2014-title2-vol1-part200-subpartD.xml

INTRODUCTION

Who are we?

1Government Procurement Alliance (1GPA), is a non-profit national governmental purchasing cooperative which allows public agencies to take advantage of existing contracts to purchase the goods and services they need from local and national vendors.

Eligible using members include school districts, charter schools, universities, colleges, cities, towns, municipalities, counties, states, local governments, federal government, Native American communities, fire districts, and any other political subdivision.

What do we do?

We provide contracts for a broad range of commodities and services that are available to the Cooperative eligible members through a government purchasing cooperative or Interlocal agreement. All of our contracts are competitively procured and awarded in compliance with state statutes, procurement laws and regulations.

Contracts are approved and awarded by 1GPA's lead governmental entities and are only available for use and benefit of all entities complying with state procurement laws and regulations.

Why are we preferred?

The Cooperative's pooled purchasing power means public and private schools, cities, counties and state agencies, non-profits, as well as colleges, universities and Native American communities **can save actual budget dollars** on our contracts utilizing best business practices.

Our agency is dedicated to negotiating the best contracts with the best firms locally or nationally to ensure our members receive quality products and services at the best price.

We service our members by providing in-house knowledge of public procurement practices in conjunction with quality business practices to mainstream the purchasing process for large and complex solicitations that can take up to 6 to 12 months for our members on their own.

We pride our firm on our commitment to compliance, innovation, and collaboration.

As a government purchasing cooperative, 1GPA offers its Members access to a broad range of vendors whose goods and services have been competitively procured by 1GPA, in coordination with its governmental lead agencies. When conducting competitive solicitations, 1GPA takes all steps necessary to comply with federal, state and local procurement laws applicable to both the Lead Agency identified in the solicitation, as well as to 1GPA. Each Member must make its own independent determination as to (1) whether the Member may, under laws applicable to the Member, lawfully purchase particular goods or services through purchasing cooperatives, and (2) whether the Member must comply with any additional procedures required under laws applicable to the Member prior to completing a cooperative purchase. 1GPA makes no representations or warranties to its Members, or to any vendors, regarding such matters.

OFFEROR'S PROPOSAL AND CONTRACT ACCEPTANCE

The Undersigned hereby certifies understanding and compliance with the requirements in the General Terms and Conditions. Offeror further agrees to furnish the material and/or service in compliance with all terms, conditions, specifications, and amendments in the solicitation and any written exceptions in the Proposal.

Federal Employer Identification Number	Address
Company Name	City, State Zip
Printed Name	Company Telephone Number
Title	Accounting / AP Contact Name
Primary Email (for Contract Inquiries)	Accounting / AP Email

Authorized Signature

The vendor shall not commence any billable work or provide any material or service under this contract until Vendor receives a purchase order/contract from a 1GPA member. The vendor agrees to comply with the requirements of submitting Usage Reports and Purchase Orders and/or Contracts to 1GPA. The vendor shall provide monthly or quarterly (arrangements to be made with 1GPA) reconciliation reports based on all contract activity to 1GPA. Vendor will be invoiced from these reports. Invoices are due upon receipt.

1GPA'S PROPOSAL AND CONTRACT ACCEPTANCE

The Proposal is hereby accepted:

The Vendor is now bound to sell the materials and/or services offered to and accepted by 1GPA in accordance with the solicitation, including all terms, conditions, specifications, amendments, etc.

This contract shall henceforth be referred to as 21-07P-_____ Fire, Security and Communication System Solutions

Awarded this _____ day of _____ 2021

This contract shall be effective this _____day of _____ 2021

1GPA

Signature: _____ Date: _____

Printed Name: _____Title: _____

Approved By: Mary C. O'Brien Accommodation School/Pinal County ESA

Signature: _____ Date: _____

Printed Name: _____ Title: _____

DEFINITION OF TERMS

A complete list of definitions can be in the Arizona Administrative Code R7-2-1001. The terms listed below are defined as follows:

"Attachment" means any item the Solicitation requires the Offeror to submit as part of the Proposal.

"Contract" means the combination of the Solicitation, including the Special Instructions to Offerors, Special Terms and Conditions, and the Specifications and Statement or Scope of Work/Services; the Proposal and any Best and Final Offers; and any Solicitation Amendments or Contract Amendments, and Member purchase orders.

"*Contract Amendment"* means a written document signed by the 1GPA that is issued for the purpose of making changes in the Contract.

"Cost" means the aggregate cost of all materials and services, including labor performed by force account.

"Days" means calendar days and shall be computed pursuant to A.R.S. 1-243.

"Exhibit" means any item labeled as an Exhibit in the Solicitation or placed in the Exhibits section of the solicitation.

"Governing Body" means any group comprised of elected or appointed officials, such as School District Governing Boards, City Councils, County Supervisors, Board of Regents, etc., which has the authority to make fiduciary decisions for a Member organization.

"Gratuity" means a payment, loan, subscription, advance, deposit of money, services, or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value is received.

"*Materials"* means all property, including equipment, supplies, printing, insurance and leases of property but does not include land, a permanent interest in land or real property or leasing space.

"Member" means the non-profit entities, public and private schools (including independent school districts and charter schools), education service centers, colleges, universities, municipalities, counties, political subdivisions, and other governmental entities and agencies throughout the United States that have followed local governing authority allowing them to utilize contracting vehicles procured and administered by 1GPA.

"Offer" means a response to a Solicitation.

"Offeror" means a person submitting a Proposal in response to a Request for Proposals

"Person" means any corporation, business, individual, union, committee, club, other organization or group of individuals.

"Procurement Officer" means the person duly authorized to enter into and administer Contracts and make written determinations with respect to this Solicitation or his or her designee.

"Purchase Order or PO" means the agreed-upon purchase order or other form of binding contract document between the 1GPA member and the Vendor which is used in making a purchase under a 1GPA contract.

"Responsible Bidder or Offeror" means a person who at the time of contract award has the capability to perform the Contract requirements with the integrity and reliability which will assure good faith performance.

"Responsive Bidder or Offeror" means a person who submits a bid or proposal which conforms in all material respects to the Invitation for Bids or Request for Proposals.

"Services" means the furnishing of labor, time or effort by a vendor or subcontractor which does not involve the delivery of a specific end product other than required reports and performance, but does not include employment agreements or collective bargaining agreements.

"Solicitation" means an Invitation for Bids ("IFB"), a Request for Proposal ("RFP"), or a Request for Qualification ("RFQ").

"Solicitation Amendment" means a written document that is authorized by the Procurement Officer and issued for the purpose of making changes to the Solicitation.

"Subcontract" means any Contract, express or implied, between the venodr and another party or between a subcontractor and another party delegating or assigning, in whole or in part, the making or furnishing of any material or any service required for the performance of the Contract.

"Vendor" means any person who has a Contract with the 1GPA.

UNIFORM INSTRUCTIONS TO OFFERORS

1. **Inquiries**

A. **Duty to Examine** - It is the responsibility of each Offeror to examine the entire Solicitation, seek clarification in writing, and check its Proposal for accuracy before submitting the Proposal. Lack of care in preparing a Proposal shall not be grounds for withdrawing the Proposal after the Proposal due date and time nor shall it give rise to any Contract claim.

B. **Solicitation Contact Person** - Any inquiry related to a Solicitation, including any requests for or inquiries regarding standards referenced in the Solicitation, shall be directed solely to the Solicitation contact person.

C. **Submission of Inquiries** - Questions and/or clarifications concerning this RFP will be accepted in writing through February 5, 2021 by 5:00 p.m. Request may be transmitted via facsimile or email. Written responses to all written inquiries will be provided and distributed to all recipients of this RFP. Responses and addenda to this RFP, if necessary, are scheduled to be issued by February 10, 2021 by 5:00 p.m. No Offeror may rely upon oral responses made by any 1GPA employee or any representative. Questions and/or clarifications concerning this RFP shall be directed to Rebecca Seifert, Procurement Specialist, rseifert@1gpa.org, or Fax 602-663-9515 or submit online at **https://secure.procurenow.com/portal/1GPA** .

D. **Solicitation Amendments/Addenda** - The Solicitation shall only be modified by a Solicitation Amendment or Addendum. 1GPA will not be responsible for Offerors adjusting their proposal based on oral instructions by any member of 1GPA or lead District Personnel.

E. **Pre-Proposal Conference** - If a Pre-Proposal Conference has been scheduled under this Solicitation, the date, time, and location shall appear on the Solicitation cover sheet or elsewhere in the Solicitation. An Offeror should raise any questions it may have about the Solicitation or the procurement at that time. An Offeror may not rely on any verbal responses to questions at the conference. Material issues raised at the conference that result in changes to the Solicitation shall be answered solely through a written Solicitation Amendment or Addendum.

F. **Proposal Opening:** Proposals shall be opened on the date and time, and at the place designated on the cover page of this document, unless amended in writing by 1GPA. The name of each Offeror shall be read at this time. All Offers and any modifications and other information received in response to the Request for Proposals shall be shown only to authorized 1GPA personnel having a legitimate interest in the evaluation. After contract award, the Proposals and evaluation document shall be open for public inspection.

G. **Time Stamp**: Proposals will be time stamped when received. They will be accepted up to but no later than the time indicated in the Request for Proposal (RFP). Proposals received after the time stated in the RFP will not be considered and will remain unopened. Offeror assumes the risk of any delay in the U.S. Mail. Whether sent by mail or by means of personal delivery, the Offeror assumes responsibility for having his Proposal deposited on time at the place specified.

H. **Persons with Disabilities** - Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting the appropriate Solicitation contact person. Requests shall be made as early as possible to allow time to arrange the accommodation.

2. **Proposal Preparation**

A. **Forms** - A Proposal shall be submitted either on the forms provided in this Solicitation or their substantial equivalent. Any substitute document for the forms provided in this Solicitation will be legible and contain the same information requested on the form.

B. **Typed or Ink Corrections** - The Proposal should be typed or in ink. Erasures, interlineations or other modifications in the Proposal should be initialed in ink by the person signing the Proposal. Modifications shall not be permitted after Proposals have been opened except as otherwise provided under R7-2-1030.

C. **Signature(s) on Proposals** - The Proposal and Contract Acceptance document should be submitted with an original ink signature by the person authorized to sign the Proposal. Failure to sign the Proposal and Contract Acceptance document may result in rejection of the Proposal.

D. **Exceptions to Terms and Conditions** - All exceptions included with the Proposal shall be submitted in a clearly identified separate section of the Proposal in which the Offeror clearly identifies the specific paragraphs of the Solicitation where the exceptions occur. Any exceptions not included in such a section shall be without force and effect in any resulting Contract unless such exception is specifically referenced by the Procurement Officer in a written statement. The Offeror's preprinted or standard terms will not be considered as a part of any resulting Contract. All exceptions that are contained in the Proposal may negatively affect the solicitation evaluation based on the evaluation criteria as stated in the Solicitation or result in rejection of the Proposal. No exceptions included in the Proposal shall become part of the resulting Contract unless agreed and accepted to by 1GPA.

E. **Subcontracts** - Offeror shall clearly list any proposed subcontractors and the subcontractor's proposed responsibilities in the Proposal.

F. **Cost of Proposal Preparation** - 1GPA will not reimburse any Offeror the cost of responding to a Solicitation.

G. **Solicitation Amendments/Addenda** - Unless otherwise stated in the Solicitation, each Solicitation Amendment or Addendum should be acknowledged by the person signing the Proposal. Failure to acknowledge a material Solicitation Amendment or Addendum or to follow the instructions for acknowledgement of the Solicitation Amendment/Addendum may result in rejection of the Proposal.

H. **Provision of Tax Identification Numbers** - Offerors are required to provide their Federal Tax Identification number, if applicable, in the space provided on the Proposal and Acceptance Form and provide the tax rate and amount, if applicable, on the Proposal Cost Sheet.

I. **Taxes**:

1. **Federal Excise Tax** - Arizona School Districts/Public Entities are exempt from certain Federal Excise Tax on manufactured goods.

2. **Transaction Privilege Taxes** - Arizona School Districts/Public Entities are subject to all applicable state and local transaction privilege taxes. Transaction Privilege Taxes in Arizona include State, County and City taxes.

3. **Property Taxes** - Arizona School Districts/Public Entities do not pay state property taxes.

4. **Taxes on Shipping** - Transaction privilege tax may not be collected on delivery charges to the Member's location if separately stated on the invoice.

5. **Payment of Taxes** – Member is responsible for payment for all taxes listed on the invoice. Vendor is responsible for collection such taxes and shall forward all taxes to the proper revenue office.

All Other States - Other states may have different tax requirements and laws. The tax laws in each state shall be followed by the awarded vendor. It is the responsibility of the vendor to be familiar with the laws and statutes in the state in which they are conducting business.

J. **Disclosure** - If the firm, business, or person submitting this Proposal has been debarred, suspended or otherwise lawfully precluded from participating in any public procurement activity, including being disapproved as a subcontractor with any Federal, state, or local government, or if any such preclusion from participation from any public procurement activity is currently pending, the Offeror shall fully explain the circumstances relating to the preclusion or proposed preclusion in the Proposal. The Offeror shall include a letter with its Proposal setting forth the name and address of the governmental unit, the effective date of this suspension or debarment, the duration of the suspension or debarment, and the relevant circumstances relating the suspension or debarment. If suspension or debarment is currently pending, a detailed description of all relevant circumstances including the details enumerated above must be provided.

K. **Solicitation Order of Precedence** - In the event of a conflict in the provisions of this Solicitation and any subsequent contracts, the following shall prevail in the order set forth below:

1. Addenda/Amendments;
2. Special Terms and Conditions;
3. Uniform General Terms and Conditions;
4. Scope of Work/Specifications;
5. Attachments;
6. Exhibits;
7. Special Instructions
8. Uniform Instructions to Offerors.

L. **Delivery** - Unless stated otherwise in the Solicitation, all prices shall be F.O.B. Destination and shall include all delivery and unloading at the destination(s). Vendor shall provide delivery of goods, and/or performance of services in accordance with the needs of the 1GPA Member. Products delivered must conform to the products listed under this contract and may not be substituted with nonconforming products. Vendor agrees to pay for and arrange for return of goods that are defective.

3. **Submission of Proposal**

A. **Sealed Envelope or Package** - Each Proposal shall be submitted to the location identified in this Solicitation, in a sealed envelope or package that identifies its contents as a Proposal and the Solicitation number to which it responds. The appropriate Solicitation number should be plainly marked on the outside of the envelope or package.

B. **Electronic Submission** - If determined by 1GPA that electronic submission of Proposals is advantageous, 1GPA will include the electronic submission requirements as well as if the electronic submission is mandatory or optional in the Special Instructions, Terms and Conditions section of the solicitation. Unless otherwise instructed, a facsimile or electronically submitted Proposal shall be rejected.

C. **Proposal Amendment or Withdrawal** - An Offeror may modify or withdraw a Proposal in writing at any time before Proposal opening if the modification or withdrawal is received before the Proposal due date and time at the location designated in the Solicitation. A Proposal may not be amended or withdrawn after the Proposal due date and time except as otherwise provided under R7-2-1044.

D. **Public Record/Confidentiality** - Under applicable law, all Proposals submitted and opened are public records and must be retained by 1GPA. Proposals shall be open to public inspection after Contract award, except for such Proposals deemed to be confidential by 1GPA pursuant to R7-2-1006.

If Offeror believes that its proposal contains trade secrets or other proprietary data not be disclosed as otherwise required by A.R.S. §39-121, a statement advising 1GPA of this fact shall accompany the Proposal, and the information shall be so identified wherever it appears. Requests to deem the entire Proposal as confidential, contract terms and conditions, pricing, and information generally available to the public are not considered confidential information under this Section.

E. **Certification** - By signing the Proposal and Acceptance form or other official contract form, the Offeror certifies that:

1. The prices have been arrived at independently, without consultation, communication or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other Offeror or with any competitor; the prices which have been quoted have not been nor will not be disclosed directly or indirectly to any other Offeror or to any competitor; nor attempt has been made or will be made to induce any person or firm to submit or not to submit, a Proposal for the purpose of restricting competition. It did not engage in collusion or other anti-competitive practices in connection with the preparation or submission of its Proposal and that the offeror has taken steps and exercised due diligence to ensure that no violation of A.R.S. §15-213(O) has occurred; and

2. It does not discriminate against any employee, applicant for employment or person to whom it provides services because of race, color, religion, sex, national origin, or disability, and that it complies with all applicable federal, state, and local laws and executive orders regarding employment, including, Federal Executive Order 11246, Arizona State Executive Order 99-4, 2000-4, A.R.S. §41-1461 through 1465; and

3. The Offeror warrants that it and all proposed subcontracts will maintain compliance with Federal Immigration and Nationality Act (FINA), ARS § 41-4401 and § 23-214, and all other Federal immigration laws and regulations related to

the immigration status of its employees which requires compliance with Federal immigration laws by employers, contractors and subcontractors in accordance with the E-Verify Employee Eligibility Verification Program; and

4. The Offeror has not given, offered to give, nor intends to give at any time hereafter any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor, or service to a public servant in connection with the submitted Proposal. Failure to provide a valid signature affirming the stipulations required by this clause shall result in rejection of the Proposal. Signing the Proposal with a false statement shall void the Proposal, any resulting contract and may be subject to legal remedies provided by law; and

5. By submission of this Proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency or otherwise lawfully prohibited from participating in any public procurement activity, including, but not limited to, being disapproved as a subcontractor of any public procurement unit or other governmental body; and

6. By submission of this Proposal, that no Federal appropriated funds have been paid or will be paid by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with the awarding of a Federal contract, the making of a Federal grant, the making of a Federal loan, the entering into a Cooperative agreement, and the extension, continuation, renewal, amendment, or modification of a Federal Contract, grant, loan or cooperative agreement; and

7. In accordance with ARS § 35-392, the Offeror is in compliance and shall remain in compliance with the Export Administration Act.

8. The Offeror warrants that it and all proposed subcontracts are not currently engaged in, and agrees for the duration of this Contract/Agreement that it will not engage in, a boycott of Israel, as that term is defined in A.R.S. § 35-393 and Texas Gov't Code 2270.002.

9. The Offeror warrants that it shall comply with the fingerprinting requirements, unless otherwise exempted, in accordance with A.R.S. § 15-512.

4. **Additional Information**

A. **Unit Price Prevails** - Where applicable, in the case of discrepancy between the unit price or rate and the extension of that unit price or rate, the unit price or rate shall govern.

B. **Taxes** - The amount of any applicable transaction privilege or use tax of a political subdivision of the state of Arizona is not a factor in determining the most advantageous proposal.

C. **Late Proposals, Modifications or Withdrawals** - A Proposal, Modification or Withdrawal submitted after the exact Proposal due date and time shall not be considered except under the circumstances set forth in R7-2-1044.

D. **Disqualification** - The Proposal of an Offeror who is currently debarred, suspended or otherwise lawfully prohibited from any public procurement activity may be rejected.

E. **Proposal Acceptance Period** - An Offeror submitting a Proposal under this Solicitation shall hold its Proposal open for the number of days from the due date that is stated in the Solicitation. If the Solicitation does not specifically state a number of days for the Proposal acceptance, the number of days shall be ninety (90).

F. **Payment** - Payments shall comply with the requirements of A.R.S. Titles 35 and 41, Net 30 days. Upon receipt and acceptance of goods or services, the Vendor shall submit a complete and accurate invoice for payment within thirty (30) days.

G. **Waiver and Rejection Rights** - Notwithstanding any other provision of the solicitation, 1GPA reserves the right to:

1. Waive any minor informality;

2. Reject any and all Proposals or portions thereof; or
3. Cancel the Solicitation.

5. **Award**

A. **Number or Types of Awards** - Where applicable, the 1GPA reserves the right to make multiple awards or to award a Contract by individual line item, by a group of line items, or categories ,by an incremental award, by region, or by location, as indicated within the Special Instructions, Terms and Conditions. The award will be limited to the least number of Offerors that 1GPA determines is necessary to meet the needs of its Members.

B. **Contract Inception** - A Proposal does not constitute a Contract nor does it confer any rights on the Offeror to the award of a Contract. A Contract is not created until the Proposal is accepted in writing by 1GPA and the Lead Agency with authorized signatures on the Proposal and Acceptance form. A letter or other notice of award or of the intent to award shall not constitute acceptance of the Proposal.

C. **Effective Date** - The effective date of this Contract shall be the date that 1GPA and the Lead Agency signs the Proposal and Acceptance form or other official contract form, unless another date is specifically stated in the Contract.

6. **Protests**

A protest shall comply with and be resolved according to Arizona Department of Education School District Procurement Code Rule A.A.C. R7-2-1141 through R7-2-1153. Protests shall be in writing and be filed with 1GPA/lead agency representative, Christy Knorr, Vice President.

A. Protest shall include:

1. The name, addresses, and telephone number of the interested party;
2. The signature of the interested party or the interested party's representative;
3. Identification of the purchasing agency and the Solicitation or Contract number;
4. A detailed statement of the legal and factual grounds of the protest including copies of relevant documents; and
5. The form of relief requested.

B. The interested party shall supply any other information requested by 1GPA or lead agency within 10 days of the request.

C. The interested party may file a written request with the district representative for an extension of the time limit for providing additional information set forth in subsection (B). The written request shall be filed before the expiration of the time limit set forth in subsection (B) and shall set forth good cause as to the specific reason that the interested party is unable to provide the additional information with the 10 days. The district representative shall approve or deny the request in writing, state the reasons for the determination, and if an extension is granted, set forth a new date for submission of the filing.

D. Protests based upon alleged improprieties in a solicitation that are apparent before the due date and time for responses to the Solicitation, shall be filed before the due date and time for responses to the Solicitation.

E. In cases other than those covered in section D of the section, the interested party shall file the protest within 10 days after 1GPA or lead agency makes the procurement file available for public inspection.

F. The interested party may file a written request for an extension of the time limit for protest filing. The written request for an extension shall be filed with the 1GPA Representative before the expiration of the time limit and shall set forth good cause as to the specific action or inaction of 1GPA that resulted in the interested party being unable to file the protest within the 10 days. The 1GPA representative shall approve or deny the request in writing, state the reasons for the determination, and, if an extension is granted, set forth a new date for submission of the filing.

UNIFORM TERMS AND CONDITIONS

1. **Cooperative Purchasing**

A. **Cooperative Purchasing** - This contract is based on the need for 1GPA to provide the economic benefits of volume purchasing and reduction in administrative costs through cooperative purchasing to schools and other Members. Although vendors may restrict sales to certain public units (e.g. state agencies, local government units), any contract that prohibits sales from being made to public school districts may not be considered. Sales without restriction to any members are preferred.

B. **Cooperative Purchasing Agreements** - Cooperative Purchasing Agreements between 1GPA and its Members have been established under all procurement laws.

C. **Cooperative Purchasing Contracts** - Offeror agrees all prices, terms, warranties, and benefits granted by Offeror to Members through this contract are comparable to or better than the equivalent terms offered by Offeror to any present customer meeting the same qualifications or requirements.

Nothing in this solicitation is intended to establish a most favored customer relationship between 1GPA and Vendor. Vendor may respond to any solicitation without regard to this contract. If Vendor offers lower prices to any of its other customers, it may lower its prices to 1GPA at the same time by written notice.

D. **Non-Exclusive Contract** - Any contract resulting from this Solicitation shall be awarded with the understanding and agreement that it is for the sole convenience of 1GPA members. 1GPA and its membership reserve the right to obtain like goods and services from other sources.

E. **Lead Agency** - A Lead Agency is a well-established and well respected government agency who facilitates the competitive bidding process by being a part of the process from start to finish. The Lead Agency also provides Board Approval for the award of contracts resulting from each Solicitation. The Lead Agency for this RFP is Mary C. O'Brien Accommodation School/Pinal County ESA.

2. **Contract Interpretation**

A. **Application of Law** - The Arizona Procurement Code, Title 41, Chapter 23, applies to this Contract including, where applicable, the Uniform Commercial Code as adopted by the State of Arizona and the Arizona School District Procurement Code, Arizona Revised Statutes (A.R.S.) 15-213, and its implementing rules, Arizona Administrative Code (A.A.C.) Title 7, Chapter 2, Articles 10 and 11.

For all other states this procurement shall be governed by, construed, and enforced in accordance with the laws of each state in which 1GPA is conducting business under this contract. It is the responsibility of the awarded vendor and member to ensure this solicitation and ensuing contract complies with the State laws in which they are conducting business regarding use of a cooperative contract.

B. **Implied Contract Terms** - Each Provision of law and any terms required by law to be in this Contract are a part of this Contract as if fully stated in it.

C. **Relationship of Parties** - Offerors receiving contracts under this solicitation are independent contractors. Neither party to this contract, nor any Member, shall be deemed to be the employee or agent of the other party to the contract.

D. **Severability** - The provisions of this Contract are severable to the extent that any provision or application held to be invalid shall not affect any other provision or application of the Contract.

E. **No Parol Evidence** - This Contract is intended by the parties as a final and complete expression of their agreement. No course of prior dealings between the parties and no usage of the trade shall supplement or explain any terms used in this document.

F. **No Waiver** - Either party's failure to insist on strict performance of any term or condition of the Contract shall not be deemed waiver of that term or condition even if the party accepting or acquiescing in the nonconforming performance knows of the nature of the performance and fails to object to it.

3. **Contract Administration and Operation**

A. **Records** - Under A.R.S. § 35-214 and § 35-215, the Vendor shall retain and shall contractually require each Subcontractor to retain all data and other records ("records") relating to the acquisition and performance of the Contract for a period of five years after the completion of the Contract.

B. **Audit** - At reasonable times during the term of this Contract and five (5) years thereafter, the Vendor's or any Subcontractor's books and records shall be subject to audit by 1GPA or Member and, where applicable, the Federal Government, to the extent that the books and records relate to the performance of the Contract or Subcontract.

C. **Inspection and Testing** - The Vendor agrees to permit access to its facilities, Subcontractor facilities and the Vendor's processes for producing the materials, at reasonable time for inspection of the materials and services covered under this Contract. 1GPA or its Members shall also have the right to test at its own cost the materials to be supplied under this Contract. Neither inspection at the Vendor's facilities nor testing shall constitute final acceptance of the materials. If 1GPA or Member determines non-compliance of the materials, the Vendor shall be responsible for the payment of all costs incurred by 1GPA or Member for testing and inspection.

D. **Notices** - Notices to the Vendor required by this Contract shall be made by 1GPA to the person indicated on the Proposal and Acceptance form submitted by the Vendor unless otherwise stated in the Contract. Notices to 1GPA required by the Contract shall be made by the Vendor to the Solicitation Contact Person indicated on the Solicitation cover sheet, unless otherwise stated in the Contract. An authorized Procurement Officer and an authorized Vendor representative may change their respective person to whom notices shall be given by written notice and an Amendment to the Contract shall not be necessary.

E. **Advertising and Promotion of Contract** - Offeror shall not advertise or publish information concerning this solicitation prior to an award being announced by 1GPA. After award, vendor(s) may advertise the availability of products and services to Member. Any promotional marketing materials using the 1GPA logo must be approved by 1GPA in advance.

F. **Administration Fee** - 1GPA has an Administrative Fee of .01 (1%). The Administrative Fee shall be included in the offeror's net pricing and is the responsibility of the Vendor. Vendor shall not add the administration fee to approved contract prices post award. The Administrative Fee shall be a part of the Vendor's unit prices and is not to be charged directly to the customer in the form of a separate line item.

G. **Usage Reports –** The Usage Report will be the established communication between the awarded vendor and 1GPA of all contract activity. The Vendor shall provide contract Usage Reports to 1GPA on a regular mutually agreed upon schedule. 1GPA will accept Monthly or Quarterly reporting arrangements which shall be made at the time of contract award.

H. **Submission of Usage Reports** – Within ten (10) days following the end of the arranged reporting schedule, the Vendor shall submit their Usage Report electronically via email to: cknorr@1gpa.org.

I. **Purchase Orders/Contracts -** All purchase orders and/or contracts issued to the Vendor in reference to 1GPA shall be submitted at the same time as the Usage Report. All purchase orders and/or contracts should be zipped in a single file and submitted as an attachment in the same email as the usage report in which they are referenced. 1GPA is audited on an annual basis & documentation is necessary for compliance. Failure to submit purchase orders and/or contracts may result in contract cancellation.

J. **Invoicing of Administration Fee –** Upon receipt of Vendor's Usage Report, 1GPA will generate an invoice which is calculated as: Administrative Fee (1%) multiplied by the Total Sales Transactions as stated in the Usage Report. Vendor's failure to remit administrative fees in a timely manner consistent with the contract's requirements may result in 1GPA exercising any recourse available under the contract or as provided for by law. All administrative fees not paid when due shall bear interest at a rate of 1 1/2% per month until paid in full.

Administrative Fees shall be paid to "1GPA" and mailed to:

1910 W. Washington Street
Phoenix, AZ 85009

4. **Costs and Payments**

A. **Ordering Procedures** - Purchase Orders are issued by 1GPA members to the Vendor according to this Contract. Members and Vendors must send Purchase Orders to 1GPA at cknorr@1gpa.org.

B. **Billings** - Vendor shall invoice Member after delivery of goods and/or services. All invoices shall list the applicable Member purchase order and 1GPA contract number. Vendor will invoice Member directly.

C. **Payment** - Payment terms are Net thirty (30) from receipt of Vendor's invoice

D. **Progress Payments** - 1GPA will permit Members to make progress payments under the following conditions:
1. Member and Vendor agree to the terms of the progress payments prior to issuing a purchase order
2. Purchase order describes the amounts or percentages and the dates or frequency of payments
3. Payments are made in full compliance with Member's local governing entity rules

E. **Tax Indemnification** - Vendor and all Subcontractors shall pay all federal, state, and local taxes applicable to its operation and any persons employed by the Vendor. Vendor shall, and require all Subcontractors to hold the Member harmless from any responsibility for taxes, damages and interest, if applicable, contributions required under federal, and/or state and local laws and regulations and any other costs including transaction privilege taxes, unemployment compensation insurance, Social Security and Worker's Compensation.

F. **IRS W-9** - In order to receive payment under any resulting Contract, Vendor shall have a current I.R.S. W-9 Form on file with each Member.

G. **Availability of Funds for the Next Fiscal Year** - Funds may not presently be available for performance under this Contract beyond the current fiscal year. No legal liability on the part of the Member for any payment that may arise under this Contract beyond the current fiscal year until funds are made available for performance of the Contract. It is the responsibility of the Member to make reasonable efforts to secure such funds.

5. **Contract Changes**

A. **Amendments** - The Contract may be modified only through a Contract Amendment within the scope of the Contract signed by the Procurement Officer. Changes to the Contract, including the addition of work or materials, the revision of payment terms, or the substitution of work or materials, directed by an unauthorized employee or made unilaterally by the Vendor are violations of the Contract and or applicable law. Such changes, including unauthorized written Contract Amendments, shall be void and without effect, and the Vendor shall not be entitled to any claim and this Contract based on those changes.

B. **Subcontracts** - The Vendor shall not enter into any Subcontract under this Contract without the advance written approval of the Procurement Officer. The Subcontract shall incorporate by reference the terms and conditions of this Contract.

C. **Assignment and Delegation** - Vendor shall not assign any right or interest nor delegate any duty under this Contract without the prior written approval of 1GPA. 1GPA shall not unreasonably withhold approval.

D. **Novation** - If Vendor sells or transfers all assets or the entire portion of the assets used to perform this contract, a successor in interest must guarantee to perform all obligations under this contract. 1GPA reserves the right to accept or reject any new party. A simple change of name agreement will not change the contractual obligations of Vendor.

E. **Contract Placed on Hold** - 1GPA shall have the ability to place a contract on hold, if it is deemed necessary to address ongoing problems with an awarded contract. Details of the decision to place the contract on hold shall be provided in a written deficiency notice. A reasonable amount of time shall be provided to Vendor to address issues in the written deficiency notice.

6. **Risk and Liability**

A. **Risk of Loss** - Vendor shall bear all loss of conforming material covered under this Contract until received by authorized personnel at the location designated in the purchase order or Contract. Mere receipt does not constitute final acceptance. The risk of loss for nonconforming materials shall remain with the Vendor regardless of receipt.

B. **General Indemnification** - To the extent permitted by law, 1GPA and its Members shall be indemnified and held harmless by the Vendor for its vicarious liability as result of entering into this Contract. Each party to this Contract is responsible for its own negligence.

C. **Indemnification - Patent and Copyright** - To the extent permitted by law, Vendor shall indemnify and hold harmless 1GPA and its Members against any liability, including costs and expenses, for infringement of any patent, trademark, or copyright arising out of Contract performance or use by the 1GPA or Member of materials furnished or work performed under this Contract. 1GPA or Member shall reasonably notify the Vendor of any claim for which it may be liable under this paragraph.

D. **Force Majeure**

1. Except for payment of sums due, neither party shall be liable to the other nor deemed in default under this Contract if and to the extent that such party's performance of this Contract is prevented by reason of force majeure. The term "*force majeure"* means an occurrence that is beyond the control of the party affected and occurs without its fault or negligence. Without limiting the foregoing, force majeure includes acts of God; acts of the public enemy; war; riots; strikes; mobilization; labor disputes; civil disorders; fire; flood; lockouts; injections-intervention-acts; or failures or refusals to act by government authority; and other similar occurrences beyond the control of the party declaring force majeure which such party is unable to prevent by exercising reasonable diligence.

2. Force Majeure shall not include the following occurrences:

   a. Late delivery of equipment or materials caused by congestion at a manufacturer's plant or elsewhere, or an oversold condition of the market; or
   b. Late performance by a Subcontractor unless the delay arises out of a force majeure occurrence in accordance with this force majeure term and condition; or
   c. Inability of either the Vendor or any Subcontractor to acquire or maintain any required insurance, bonds, licenses, or permits.

3. If either party is delayed at any time in the progress of the work by force majeure, the delayed party shall notify the other party in writing of such delay, as soon as is practicable and no later than the following working day, of the commencement thereof and shall specify the causes of such delay in such notice. Such notice shall be delivered or mailed certified-return receipt, and shall make a specific reference to this article, thereby invoking its provisions. The delayed party shall cause such delay to cease as soon as practicable and shall notify the other party in writing when it has done so. The time of completion shall be extended by Contract Amendment for a period of time equal to the time that results or effects of such delay prevent the delayed party from performing in accordance with this Contract.

4. Any delay or failure in performance by either party hereto shall not constitute default hereunder or give rise to any claim for damages or loss of anticipated profits if, and to the extent that such delay or failure is caused by force majeure.

7. **Warranties**

A. **Liens** - The Vendor warrants that the materials supplied under this Contract are free of liens.

B. **Quality** - Unless otherwise modified elsewhere in these terms and conditions, the Vendor warrants that, for one year after acceptance by the School District/Public Entity of the materials or services, they shall be:

1. A quality to pass without objection in the trade under the Contract description;

2. Fit for the intended purposes for which the materials or services are used;

3. Within the variations permitted by the Contract and are of even kind, quality, and quality within each unit and among all units;

4. Adequately contained, packaged and marked as the Contract may require; and

5. Conform to the written promises or affirmations of fact made by the Vendor.

C. **Fitness** - Vendor warrants that any material or service supplied to 1GPA or its Members shall fully conform to all requirements of the contract and all representations of the Vendor, and shall be fit for all purposes and uses required by the Contract.

D. **Inspection/Testing** - The warranties set forth in this section shall not be affected by inspection or testing of, or payment for the materials or services by 1GPA Members.

E. **Compliance with Applicable Laws** - The materials and services supplied under this Contract shall comply with all applicable federal, state and local laws, and the Vendor shall maintain all applicable licenses and permits.

F. **Survival of Rights and Obligations after Contract Expiration or Termination**

1. Vendor's Representations and Warranties. All representations and warranties made by the Vendor under this Contract shall survive the expiration of termination hereof. In addition, the parties hereto acknowledge that pursuant to A.R.S. § 12-510, except as provided in A.R.S. § 12-529, 1GPA and its Members are not subject to or barred by any limitations of actions prescribed in A.R.S. Title 12, Chapter 5.

2. Purchase Orders. The Vendor shall, in accordance with all terms and conditions of the Contract, fully perform and shall be obligated to comply with all purchase orders received by the Vendor prior to the expiration or termination hereof, unless otherwise directed in writing by the Procurement Officer, including, without limitation, all purchase orders received prior to but not fully performed and satisfied at the expiration or termination of this Contract.

8. **Contractual Remedies**

A. **Right to Assurance** - If 1GPA in good faith has reason to believe that the Vendor does not intend to, or is unable to perform or continue performing under this Contract, 1GPA may demand in writing that the Vendor give a written assurance of intent or ability to perform. Failure by the Vendor to provide written assurance within the number of days specified in the demand may, at 1GPA's option, be the basis for terminating the Contract under the Uniform General Terms and Conditions.

B. **Nonconforming Tender** - Materials supplied under this Contract shall fully comply with the Contract. The delivery of materials or a portion of the materials in an installment that do not fully comply constitutes a breach of Contract. On delivery of nonconforming materials, 1GPA may terminate the Contract for default under applicable termination clauses in the Contract, exercise any of its remedies under the Uniform Commercial Code, or pursue any other right or remedy available to it.

C. **Right of Offset** - 1GPA and its Members shall be entitled to offset against any sums due the Vendor, any expenses or costs incurred or damages assessed by 1GPA or its Members concerning the Vendor's nonconforming performance or failure to perform the Contract, including expenses, costs and damages described in the Uniform General Terms and Conditions.

9. **Contract Termination**

A. **Cancellation for Conflict of Interest** - Pursuant to A.R.S. 38-511 and R7-2-1087(F) 1GPA may cancel this Contract within three (3) years after Contract execution without penalty or further obligation if any person significantly involved in initiating, negotiating, securing, drafting, or creating the Contract on behalf of 1GPA is, or becomes at any time while the Contract or an extension the Contract is in effect, an employee of or a consultant to any other party to this Contract with respect to the subject matter of the Contract. The cancellation shall be effective when the Vendor receives written notice of the cancellation unless the notice specifies a later time.

B. **Personal Gifts or Benefits** - 1GPA may, by written notice, terminate the Contract, in whole or in part, if 1GPA determines that any person or vendor has offered, conferred or agreed to confer any personal gift or benefit on any employee who supervised or participated in the planning, recommending, selecting or contracting of the Contract, in accordance with A.R.S. § 15-213(O) and R7-2-1087(G).

C. **Gratuities** - 1GPA may, by written notice, terminate the Contract in whole or in part, if 1GPA determines that employment or a gratuity was offered or made by the Vendor or a representative of the Vendor to any officer or employee of 1GPA for the purpose of influencing the outcome of the procurement or securing the Contract, an amendment to the Contract, or

favorable treatment concerning the Contract, including making of any determination or decision about contract performance in accordance with R7-2-1087(H)..

D. **Suspension or Debarment** - 1GPA may, by written notice to the Vendor, immediately terminate this Contract if 1GPA determines that the Vendor has been disbarred, suspended or otherwise lawfully prohibited from participating in any public procurement activity, including but not limited to, being disapproved as a Subcontractor of any public procurement unit or other governmental body.

E. **Termination for Convenience** - 1GPA reserves the right to terminate the Contract, in whole or in part at any time, when in the best interests of its Members without penalty recourse. The Vendor shall be entitled to receive just and equitable compensation for work in progress, work completed, and materials accepted before the effective date of the termination.

F. **Cancellation for Non-Performance or Vendor Deficiency** - 1GPA may terminate any contract if Members have not used the contract, or if purchase volume is determined to be "low volume" in any 12-month period. 1GPA reserves the right to cancel the whole or any part of this contract due to failure by Vendor to carry out any obligation, term or condition of the contract. 1GPA may issue a written deficiency notice to Vendor for acting or failing to act in any of the following:

1. Providing material that does not meet the specifications of the contract;
2. Providing work and/or material that was not awarded under the contract;
3. Failing to adequately perform the services set forth in the scope of work and specifications;
4. Failing to complete required work or furnish required materials/product within a reasonable amount of time;
5. Failing to make progress in performance of the contract and/or giving 1GPA reason to believe that the Vendor will not or cannot perform the requirements of the contract; and or
6. Performing work or providing services under the contract prior to receiving a 1GPA reviewed purchase order for such work.

Upon receipt of a written deficiency notice, Vendor shall have ten (10) days to provide a satisfactory response to 1GPA. Failure to adequately address all issues of concern may result in contract cancellation. Upon cancellation under this paragraph, all goods, materials, work, documents, data and reports prepared by Vendor under the contract shall become the property of the Member on demand.

G. **Vendor Cancellation** - Vendor may cancel this contract at any time upon thirty (30) days prior written notice to 1GPA or on the yearly anniversary of the contract. Termination shall have no effect on projects in progress at the time the notice of cancellation is received by 1GPA.

H. **Continuation of Performance through Termination** - The Vendor shall continue to perform, in accordance with the requirements of the Contract, up to the date of termination, as directed in the termination notice.

10. **Contract Claims**

Contract claims and controversies under this Contract shall be resolved according to Arizona Department of Education School District Procurement Code Rule A.A.C. R7-2-1155 through R7-2-1159.

Any dispute involving a 1GPA member and Vendor outside of Arizona shall be governed by the laws of the state of the 1GPA member, without regard to its provisions on conflicts of laws, and exclusive jurisdiction and venue shall lie in the city, county, and state of the 1GPA member.

11. **Federal and State Requirement**

A. **Compliance with Federal and State Requirements** - Vendor shall comply with all applicable federal, state, and local laws, statutes, ordinances, standards, orders, rules, and regulations, including, as applicable, workers' compensation laws, minimum and maximum salary and wage statutes and regulations, prompt payment and licensing laws and regulations.

Vendor shall comply, when working on any federally assisted projects with the following:

1. The Contract Work hours and Safety Standards Act, (40 U.S.C. §3701 – 3708; 29 CFR Part 5)
2. Davis-Bacon Act, (40 U.S.C. §276a / 29 CFR Part 5)

3. Copland Anti-Kickback Act, (18 U.S.C. §874 / 29 CFR Part 5)
4. Equal Opportunity Employment requirements (Executive Order 11246 and 11375 / 41CFR Chapter 60)
5. McNamara-O'Hara Service Contract Act (41 U.S.C. 351),
6. Section 306 of the Clean Air Act (42 U.S.C. § 1857h,
7. Section 508 of the Clean Water Act (33 U.S.C. § 1368),
8. Executive Order 11738, Environmental Protection Agency regulations (40 CFR Part 15).
9. Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (2 CFR Part 200)
10. Education Department General Administrative Regulations, 2 C.F.R. Parts 200 and 3474, and 34 C.F.R. Parts 75-77 and 81 ("EDGAR"),
11. Mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub. L. 94-163, 89 Stat. 871)
12. All applicable requirements and regulations, including those related to reporting, patent rights, copyrights, data rights and those mandated by federal agencies making awards of federal funds to 1GPA members.

B. **Offshore Performance** - Due to security and identity protection concerns, direct services under any subsequent contract shall be performed within the borders of the United States. Any services that are described in the specifications or scope of work that directly serve the school district(s) or charter school(s) or its clients and may involve access to secure or sensitive data or personal client data or development or modification of software for the State shall be performed within the borders of the United States. Unless specifically stated otherwise in the specifications, this definition does not apply to indirect or "overhead" services, redundant back-up services or services that are incidental to the performance of the contract. This provision applies to work performed by subcontractors at all tiers.

C. **Vendor's Employment Eligibility** - By entering the contract, Vendor warrants compliance with ARS § 41-4401, ARS § 23-214, the Federal Immigration and Nationality Act (FINA), and all other federal immigration laws and regulations. 1GPA or Member may request verification of compliance from any Vendor or subcontractor performing work under this Contract. 1GPA or Member reserves the right to confirm compliance in accordance with the applicable laws. Should 1GPA or Member suspect or find that the Vendor or any of its subcontractors are not in compliance, 1GPA or Member may pursue any and all remedies allowed by law, including, but not limited to: suspension of work, termination of the Contract for default and suspension, and/or debarment of the Vendor. All costs necessary to verify compliance are the responsibility of the Vendor.

D. **Davis-Bacon** – For Federally funded projects subject to the Davis-Bacon Act, the Member shall specify the applicable Davis-Bacon wage decision, prior to the Vendor providing a firm price quotation for the proposed project. The wage decision shall be identified by the WD Number, modification number, and date of the wage decision.

E. **Fingerprint and Background Checks** - In accordance with ARS § 15-512(H), a contractor, subcontractor or vendor, any employee of a contractor, subcontractor or vendor who is contracted to provide services on a regular basis at an individual school may be required to obtain a valid fingerprint clearance card pursuant to Title 41, Chapter 12, Article 3.1. An exception to this requirement may be made as authorized in governing board policy of the Member District.

F. **Terrorism Country Divestments** - Per ARS § 35-392, 1GPA and its Members are prohibited from purchasing from a company that is in violation of the Export Administration Act.

G. **Registered Sex Offender Restrictions** - For work to be performed at schools, Vendor agrees that no employee or employee of a subcontractor who has been adjudicated to be a registered sex offender will perform work at any time when students are or are reasonably expected to be present. Vendor agrees that a violation of this condition shall be considered a material breach and may result in the cancellation of the purchase order at the Member's discretion. Vendor must identify any additional costs associated with compliance of this term. If no costs are specified, compliance with this term will be provided at no additional charge.

H. **Affordable Care Act** - Vendor understands and agrees that it shall be solely responsible for compliance with the Patient Protection and Affordable Care Act, Public Law 111-148 and the Health Care Education Reconciliation Act, Public Law 111-152 (collectively the Affordable Care Act "ACA"). Vendor shall bear sole responsibility for providing health care benefits for its employees who provide services to the Member as required by state or federal law.

I. **Boycott of Israel –** Arizona public entities and other states as applicable, the member may not enter into a contract with a company that is currently engaged in, and agrees for the duration of the contract to not engage in, a boycott of Israel.

J. **EDGAR –** When a 1GPA Member seeks to procure goods and services using funds under a federal grant or contract, specific federal laws, regulations, and requirements may apply in addition to those under state law. This includes, the procurement standards of the **Uniform Administrative Requirements, Cost Principles and Audit Requirements for Federal Awards, 2 C.F.R. 200 (EDGAR)**. All Vendors submitting proposals must complete the EDGAR Vendor Certification Form contained within this document.

K. **Minority Businesses** – 1GPA and its Lead Agency have taken all necessary affirmative steps to assure minority businesses, women's business enterprises, and labor surplus area firms are notified of any bidding opportunities when possible according to 2 CFR Part 200.321.

L. **Civil Rights Compliance** - In accordance with 7 CFR Part 210.23, Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, sex, disability, age, or reprisal or retaliation for prior civil rights activity in any program or activity conducted or funded by USDA.

M. **Texas House Bill 1295 Certificate of Interested Parties** – For contract entered into or after January 1, 2016, Texas Government Code Chapter 2252.908 (H.B. 1295) states that a Texas governmental entity or state agency may not enter into a contract unless the business entity submits a disclosure of interested parties to the governmental entity or state. The law applies only to a contract that either (1) requires an action or vote by the governing body or (2) has a value of at least $1 million. Information from the Commission regarding the requirements, including rules and filing information, are available at the following links:

https://www.ethics.state.tx.us/tec/1295-info.htm
https://www.ethics.state.tx.us/whatsnew/faq_form1295.html
https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm

It is the responsibility of vendors to determine the applicability of, and comply with, all disclosure laws of House Bill 1295.

SPECIAL TERMS AND CONDITIONS

1. **TERM OF CONTRACT:** It is 1GPA's intent to award a multi-term contract. The initial term of the resultant contract shall start on May 1, 2021 and shall continue for a period of one (1) year thereafter, unless terminated, cancelled or extended as otherwise provided herein.

2. **CONTRACT EXTENTION:** 1GPA reserves the right to unilaterally extend the period of any resultant contract month to month beyond the stated expiration date if that is determined to be in the best interests of Members. In addition, by mutual written agreement, any resultant contract may be extended for a supplemental period up to a maximum of forty-eight (48) months in twelve (12) month increments.

3. **RENEWAL OF CONTRACT:** Conditions for renewal of the contract shall include, but are not limited to: contract usage, satisfactory performance of services during the preceding contract term, ability to continue to provide satisfactory services, continued adherence to the contract requirements, and continued competitive prices for the materials and services provided under the contract.

4. **CONTRACT TYPE**: The term contract shall be a percent of discount off manufacturer's price list or catalog, or fixed price, or a combination of both with indefinite quantities.

5. **FORM OF CONTRACT:** The form of contract for this Solicitation shall be the Request for Proposal, the awarded Proposal(s) and Best and Final Offer(s), and properly issued purchase orders incorporating each member's specific policies and P.O. terms and conditions referencing the requirements of the Request for Proposals. Partial offers will be considered.

6. **VENDOR CONTRACT DOCUMENTS:** 1GPA will review proposed vendor contract documents. Vendor's contract document shall not become part of 1GPA's contract with vendor unless and until an authorized representative of 1GPA reviews and approves it.

7. **SUPPLEMENTAL AGREEMENTS**: The 1GPA Member and Vendor may enter into a separate supplemental agreement to further define the level of service requirements over and above the minimum defined in this solicitation such as invoice requirements, on campus service specifics, etc. Any supplemental agreement developed as a result of this RFP is exclusively between the Member and Vendor. 1GPA, its agents, members and employees shall not be made party to any claim for breach of such agreement. Any supplemental agreement between the Member and Vendor is exclusively between the Member and the Vendor and will be subject to immediate cancellation by the Member (without penalty) if, in the opinion of the Member, the quality, service and specification requirements and/or the terms and conditions are not maintained as stated in the supplemental agreement.

8. **PROPOSAL ACCEPTANCE PERIOD**: In order to allow for an adequate evaluation, the District requires a Proposal in response to this Solicitation to be valid and irrevocable for ninety (90) days after the opening time and date.

9. **RESPONSE FORMAT:** All Proposal responses are to be in the same form as this Request for Proposal. Address each requirement in the same order as has been requested.

10. **ELECTRONIC SUBMITTAL - OPTIONAL:** An electronic submission is also requested but **optional**. The electronic submission is to be uploaded online through ProcureNow. Submittal instructions for ProcureNow are found on the last page of this document under Exhibit A.

11. **TIME STAMP**: Proposals will be time stamped when received. They will be accepted up to but no later than the time indicated in the Request for Proposal (RFP). Proposals received after the time stated in the RFP will not be considered

and will remain unopened. Offeror assumes the risk of any delay in the U.S. Mail. Whether sent by mail or by means of personal delivery, the Offeror assumes responsibility for having his Proposal deposited on time at the place specified.

12. **AWARD**: Award(s) will be made to the responsive and responsible Offeror(s) whose Proposal(s) is (are) determined in writing to be most advantageous to 1GPA for its Members based on the factors set forth in the Request for Proposals. No other factors or criteria may be used in the evaluation. The amount of any applicable transaction privilege or use tax of a political subdivision of this state is not a factor in determining the most advantageous proposal. The procurement file shall contain the basis on which the award is made.

13. **DISCUSSIONS**: In accordance with R7-2-1047, after the initial receipt of Proposals, 1GPA reserves the option to conduct discussions with those Offerors who submit Proposals determined by 1GPA to be reasonably susceptible of being selected for award. Discussions may be conducted to assure full understanding of the Proposal in order to obtain the most advantageous contract for 1GPA Members.

14. **BEST AND FINAL OFFERS:** If discussions are conducted pursuant to R7-2-1047, 1GPA shall issue a written request for Best and Final Offers pursuant to R7-2-1048. If Offerors do not submit a notice of withdrawal or a Best and Final Offer, the immediate previous offer will be construed as the Best and Final Offer.

15. **MULTIPLE AWARDS:** 1GPA has a large number and variety of potential using districts and agencies at locations throughout the United States. In order to assure that any ensuing contracts will allow 1GPA to fulfill current and future requirements; 1GPA reserves the right to award contracts to multiple vendors. Such decision will be based upon consideration for Members' experience with existing products and systems, brand continuity for parts replacement and future expansion, vendor's ability to provide for a large diverse Membership, geographic areas served. The actual use of any contract will be at the sole discretion of 1GPA members. Contracts will be awarded, as applicable, by individual line item, groups of line items, or categories, incrementally, by region, or by location. The awards will be limited to the least number of Offerors that 1GPA determines is necessary to meet the needs of the 1GPA Members. Offeror should consider the fact that 1GPA may award multiple contracts in preparing their response. The fact that 1GPA may make multiple contracts, award only one contract, or to make no awards rests solely with 1GPA.

16. **ADMINISTRATION FEE:** 1GPA's .01 (1%) administration fee shall be included in offeror's net price. Vendor shall not add the administration fee to approved contract prices. 1GPA will invoice the Vendor on a monthly basis for the administrative participation fee. The invoice will be based on total sales made through the 1GPA contract with the Vendor. Invoices will be issued at the time a Purchase Order is received by 1GPA. Invoices are due and payable upon receipt.

17. **PRICING:** Contract pricing must be based upon:
1) Fixed discount(s) off published price list(s) or catalog(s)
2) Firm fixed price
3) A combination of the above

18. **COMBINATION PRICING:** Offers for combination contracts shall clearly identify items covered by discount(s) and those with fixed prices. Prices for such contracts shall be adjusted as identified for the appropriate contract type above.

19. **CATALOG/PRICE LIST DISCOUNTS:** Discounts offered must clearly identify a percentage of discount to apply to contract. If multiple discounts apply, offeror shall clearly indicate the discounts and applicable materials or services. There will be no reduction discount(s) during the term of contract. Current catalog or list prices, at the time of the bid, shall be valid for one year from contract effective date. The manufacturer's price list and catalog must be a formally published list for general distribution. The discount percentage shall remain firm for the term of the contract and shall be provided on the price sheet(s) where indicated for each of the manufacturers listed.

SPECIAL TERMS AND CONDITIONS

20. PRICE ADJUSTMENT FOR DISCOUNT PRICING: Revised published price lists, and/or catalogs may be submitted for review throughout the term of the contract. 1GPA shall determine whether the requested revised pricing or an alternate option is in the best interest of its Members. Revised published price lists, and/catalogs will not become effective until approved by 1GPA. Vendor must hold the price list(s) firm for the first 12 months of the contract.

21. PRICE ADJUSTMENT FOR FIXED PRICING: Fixed price offers shall include prices for any and all items proposed under the contract. Fixed prices shall be firm until each anniversary date of contract, unless there is an occurrence of one or more allowable economic price adjustment contingencies outlined in proposal. If allowable price adjustment contingencies occur, contract vendor may submit a fully documented request for price adjustment to 1GPA. The document must substantiate that any requested price increase was clearly unpredictable at the time of proposal submittal and results from an increased cost to contract vendor that was out of contract vendor's control.

22. PRICE REDUCTION: A price reduction adjustment may be offered at any time during the term of a contract and shall become effective upon notice.

23. VOLUME DISCOUNTS: The awarded vendor may offer volume discounts at any time during the Contract such that the price is at or below the percent off list price within the Contract given that the price reduction is available to all Customers allowed to purchase under the Contract. Approval of volume discounts shall be in the form of a bilateral contract amendment.

24. TRAVEL EXPENSE REIMBURSEMENT: Vendor shall be responsible for travel arrangements and expenses. Travel expenses not included in the consulting fee may be billed for certain in-state and out-of-state travel expenses on a case-by-case basis. Vendor shall seek Member approval before billing for any in-state or out-of-state travel expenses. The vendor shall not be reimbursed for travel time. If approved by the Member, in-state and out-of-state travel expenses shall be reimbursed in accordance with the Member's state travel policy. The travel policy may be accessed via the internet at the US General Services Administration's website: https://www.gsa.gov/travel/plan-book/per-diem-rates.

25. NEW PRODUCT: New products/services may be added during the term of the contract upon written request providing it is within the original scope of this RFP. All request are subject to review and approval by 1GPA. Successful vendor shall be responsible for notifying 1GPA of all discontinued products in writing.

26. QUANTITIES: 1GPA estimates considerable activity resulting from this award. Based on historical data from previous contracts as well as member surveys, 1GPA estimates usage of this contract to $6,000,000 to $8,000,000 annually. A current list of 1GPA Members may be found at:

https://www.dropbox.com/s/z2swxxr210nx4un/1%20-%20PUBLISHED%20Membership%20List.xlsx?dl=0

1GPA makes no guarantee or commitment of any kind concerning quantities that will actually be purchased. 1GPA makes no guarantee or commitment of any kind regarding usage of any contracts resulting from this Solicitation.

27. SHIPPING TERMS: Prices shall be F.O.B. Destination to Member's location. Vendor shall retain title and control of all goods until they are delivered and the contract of coverage has been completed. All risk of transportation and all related charges shall be the responsibility of the Vendor. All claims for visible or concealed damage shall be filed by the Vendor. 1GPA Members will notify the vendor promptly of any damaged goods and shall assist the vendor in arranging for inspection.

28. DELIVERY: Delivery is desired within thirty (30) days of receipt of purchase order. Any outstanding items delivered after this date may be canceled and deleted from the purchase order. Offeror shall be responsible for delivery of items in good condition at point of destination, and return of all items that do not meet specifications. Offeror shall file with carrier all

claims for breakage, imperfections and losses, which will be deducted from invoices. The receiving Member will report to the successful Offeror when packages are not received in good condition.

29. PROTECTION OF MEMBERS: The Offeror shall protect all furnishings from damage and shall protect the Member's property from damage or loss arising in connection with this contract. He shall make good any such damage, injury or loss caused by his operations, or those of his employees, to the satisfaction of the Member. The Offeror shall confine his equipment, storage of materials and the operation of his workmen to the limits as indicated by the Unit Foreman in the area in which the work is being performed. Any damage caused to Member's facilities, lawns, etc., shall be repaired immediately or replaced at no expense to the Member.

The successful Offeror shall take all necessary precautions for the safety of students, employees and the public, and shall comply with all applicable provisions of Federal, State and Municipal Safety Laws. He agrees that he is fully responsible to the Member for the acts and omissions of any and all persons whether directly or indirectly employed by him. He shall maintain such insurance as will protect him and the Member from claims or damage for personal injury, including death, which may arise from operations under this contract.

30. BRAND NAMES: Any manufacturer's names, trade names, brand names or catalog numbers used in the specifications are for the purpose of describing and/or establishing the quality, design and performance required. Any such reference is not intended to limit or restrict a Proposal by any vendor but is only enumerated in order to advise potential offerors of the requirements of 1GPA. Any Proposal which proposes like quality, design or performance will be considered.

31. NEW EQUIPMENT: All equipment supplied pursuant to this specification shall be new, unused, and the most current model available at time of order.

32. CURRENT PRODUCTS: All products being offered in response to this solicitation shall be in current and ongoing production and capable of meeting or exceeding all specifications and requirements set forth in this solicitation.

33. DEFECTIVE PRODUCTS: All defective products shall be replaced and exchanged by the vendor. The cost of transportation, unpacking, inspection, re-packing, re-shipping or other like expenses shall be paid by the vendor.

34. EQUIPMENT AND PRODUCT RECALL NOTICES: In the event of any recall notice, technical service bulletin, or other important notification affecting equipment or product purchased from this contract, a notice shall be sent to the Contract Administrator with 1GPA and the Member. It shall be the responsibility of the vendor to assure that all recall notices are sent directly to the agency Member Representative.

35. SAFETY STANDARDS: All items supplied on this contract must comply with the current applicable state and local rules, regulations and standards, Occupational Safety and Health Administration (OSHA) standards, the National Electric Code, National Fire Alarm Code, the Underwriters Laboratories (UL) standards and the National Fire Protection Association (NFPA) Standards.

36. RESPONSIBILITY OF OFFERORS: 1GPA may consider the following factors in determining if an Offeror is responsible:

A. The bidder or offeror's financial, material, personnel and other resources, including subcontracts;
B. The bidder or offeror's record of performance and integrity;
C. Whether the bidder or offeror has been debarred or suspended; and
D. Whether the bidder or offeror is qualified legally to contract with public entities.

37. LICENSES: Offeror shall maintain in current status all federal, state and local licenses and permits required by the operation of the business conducted by the offeror.

SPECIAL TERMS AND CONDITIONS

38. INSPECTION: Work performed under this contract will have a final inspection and acceptance by 1GPA Member staff. Any discrepancies noted during the inspection will be corrected prior to final payment. Field inspections will be performed by Member upon completion of each project.

39. CLEAN UP: The vendor, at all times, shall keep the premises free from accumulation of waste materials or rubbish caused by performance of work under this contract. Upon completion of the work, remove all waste materials and rubbish from and about the projects, as well as tools, construction equipment, machinery and surplus materials.

If the vendor fails to clean up the work, the 1GPA Member may do so and the cost thereof shall be charged to the vendor.

Remove all surplus materials and debris of every nature resulting from operations, and put site in a neat, orderly condition.

40. BILLINGS: All billing notices shall identify the specific item(s) being billed. Items are to be identified by name, model/serial number as most applicable. Any purchase/delivery order issued will refer to the contract number resulting from this solicitation.

41. INSURANCE: Offeror agrees to maintain such insurance as will fully protect Offeror, 1GPA and its Member from any and all claims under any workers' compensation statute or unemployment compensation laws, and from any and all other claims of any kind or nature for damage to property or personal injury, including death, made by anyone, that may arise from work or other activities carried on, under, or facilitated by this Agreement, either by Offeror, its employees, or by anyone directly or indirectly engaged or employed by Offeror. Offeror agrees to maintain such automobile liability insurance as will fully protect Offeror, 1GPA and its Member for bodily injury and property damage claims arising out of the ownership, maintenance or use of owned, hired or non-owned vehicles used by Offeror or its employees, while providing services to 1GPA Members.

Successful Offeror will be required to provide proof of and maintain comprehensive general liability insurance with a limit of not less than $1,000,000 per occurrence and $2,000,000 aggregate coverage. Before any orders are processed under an awarded contract, awarded vendor shall provide a certificate that names 1GPA as the certificate holder. In addition, awarded vendor shall be willing to provide, upon request, a certificate of insurance to any Member using this contract.

Successful Offeror will be required to submit proof of and maintain Worker's Compensation and Employer's Liability Insurance as required by law.

42. KEY PERSONNEL: It is essential that the Offeror provide adequate experienced personnel, capable of and devoted to the successful accomplishment of work to be performed under this contract. The Offeror must agree to assign specific individuals to the key positions.

The Offeror agrees that, once assigned to work under this contract, key personnel shall not be removed or replaced without written notice to 1GPA or Member.

If key personnel are not available for work under this contract for a continuous period exceeding 30 calendar days or are expected to devote substantially less effort to the work than initially anticipated, the Offeror shall immediately notify 1GPA or Member and shall, subject to the concurrence of the District, replace such personnel with personnel of substantially equal ability and qualifications.

43. DATA, INFORMATION AND RECORDS SECURITY AND PRIVACY: Offeror agrees to comply with all applicable laws and regulations regarding data, information and records security and privacy all of which are incorporated herein by reference in their current forms and as amended at any future time. These include, but are not limited to, Arizona Revised Statute (A.R.S.) §18-552 et seq – Notification of Security System Breaches; A.R.S. §44-7601 et seq – Discarding and Disposing of Records Containing Personal Identifying Information; Family Educational Rights and Privacy Act (FERPA);

Protection of Pupil Rights Amendment (PPRA); Health insurance Portability and Accountability Act of 1996 (HIPPA) Privacy and Security Rules; Health Information Technology for Economic and Clinical Health (HITECH) Act; Payment Card Industry Data Security Standards; applicable federal, state and local regulations relating to confidentiality of student records; and any other federal and/or state law governing the privacy of personally identifiable information

44. OFFEROR'S EMPLOYEES: Offeror agrees that the individuals provided to 1GPA or Member on a temporary basis are Offeror's, not 1GPA's or Member's employees.

Offeror agrees that it is solely responsible for its own acts and omissions and for those of its employees and that Offeror and any employees working for Offeror are the sole responsibility of Offeror for the purposes of any and all legal requirements, including, but not limited to, obligations and liabilities in the following areas:

Workers' Compensation Insurance
Federal and State Unemployment Taxes
Federal and State Withholding and Reporting Requirements
Unemployment Compensation Insurance
Federal, State, and Local Employment Laws

Offeror agrees that it or its employees are not entitled to any benefits or protections that accrue from an employment relationship with 1GPA, including, but not limited to, health insurance, life insurance, due process rights, and/or vacation/holiday pay.

1GPA will not provide Offeror or its employees any business registrations or licenses that may be required. 1GPA will not combine business operations with Offeror.

Neither Offeror nor its employees are to be considered agents or employees of 1GPA for any purpose. It is understood and agreed that 1GPA does not require Offeror to provide services exclusively to 1GPA and that Offeror and its employees are free to contract to provide services to other companies while it is under contract with the District.

In compliance with all applicable laws, the Offeror shall, at no charge to 1GPA, conduct drug/alcohol testing, fingerprint checks, reference checks and background checks of each individual who will perform services for 1GPA to ascertain that there is no history of behavior that would make the individual unsuitable to work with children or work in a school setting. These checks must be completed before the individual provides any services to the Member. The fingerprint and background checks will be conducted in accordance with applicable laws, including current Arizona Revised Statutes § 15-512 and/or 15-534, as applicable.

At any time, and for any reason, 1GPA or the Member may request or reject any of Offeror's employees.

Offeror agrees to comply with the Member's rules, regulations, and policies, as the Member may modify from time to time.

45. FINGERPRINT & BACKGROUND CHECKS: 1GPA anticipates that services under this contract may cause the Offeror and proposed subcontractors to have direct, unsupervised contact with pupils. In accordance with ARS § 15-512(H), a contractor, subcontractor or vendor or any employee of a contractor, subcontractor or vendor who is contracted to provide services on a regular basis at an individual school shall be required to obtain a valid fingerprint clearance card pursuant to title 41, chapter 12, Article 3.1. Therefore, the Offeror and any proposed subcontractors warrant compliance with ARS subsection 41-4401, ARS subsection 23-214, the Federal Immigration and Nationality ACT (FINA) and all other federal, state and local immigration laws and regulations related to the immigration status of its employees. The Offeror must have all employees on-site submit to a fingerprint clearance conducted by Department of Public Safety and all employees must carry fingerprint card at all times. These warranties shall remain in effect through the term of the contract.

1GPA may, at its sole discretion, require evidence of compliance during the evaluation process or contract term. Should 1GPA or Member request evidence of compliance, the Offeror and any proposed subcontractors shall have 5 working days from receipt of the request to supply adequate information. Failure to supply the requested information or if 1GPA or Member suspects or finds the Offeror or any of its subcontractors are not in compliance, 1GPA or Member may pursue any and all remedies allowed by law, including, but not limited to: non-consideration of contract award, suspension of work, termination of the contract for default, and suspension and/or debarment of the Offeror. All costs associated with verification and any remedies are the sole responsibility of the Offeror and any proposed subcontractor.

46. EMPLOYEE IDENTIFICATION: All employees **must** check in at the front office of each Member site. The employee must have an identification badge at all times in clear view, with picture ID and name of firm. In addition, the employee shirt must have the company name on it. Failure to have any of these items will result with the employee being escorted off property.

SCOPE OF WORK

PURPOSE: The purpose of this solicitation is to enter into contracts with qualified firms to provide a broad range of fire, security and communication system solutions on behalf of 1GPA members nationwide. Items may include but are not limited to product purchase, installation, training, inspection and testing, repair, maintenance and monitoring services.

BACKGROUND: Government Procurement Alliance (1GPA), is a non-profit national governmental purchasing cooperative which allows public agencies to take advantage of existing contracts to purchase the goods and services they need from local and national vendors. Eligible using members include school districts, charter schools, universities, colleges, cities, towns, municipalities, counties, states, local governments, federal government, Native American communities, fire districts, and any other political subdivision.

The Pinal County Education Service Agency's (PCESA) Mary C. O' Brien Accommodation District (MCOB) acts as a Lead Agency for 1GPA. PCESA provides programs and services for approximately 45,000 students within 21 public school districts, in addition to the growing number of private and charter schools within Pinal County. Also served by PCESA is a large Indian community including parts of the Tohono O'odham Nation (Papago & Pima Indians), the San Carlos Apache Indian Reservation, and Gila River Indian Community, along with the entirety of the Ak-Chin Indian Community Pinal County was founded in 1875 and is located in the central part of Arizona between Maricopa County (Phoenix) on the north and west sides, Gila County also on the north, Pima County (Tucson) on the south and Graham County on the East. It covers an area of 5,374 square miles. The estimated population in 2017 was 430,200 and growing. The county seat is located in Florence, AZ as is the Pinal County School Superintendent's office.

1GPA currently holds contract 16-04P Fire and Safety Inspections, Products and Service Solutions with fourteen (14) vendors. The contract is in the fifth and final year, expiring May 1, 2021 at which time this contract will become effective.

SCOPE OF WORK: The awarded vendor shall provide a full line of products and/or services covering the categories listed below. The items listed should not be construed as comprehensive or limiting. 1GPA is not aware of the particular needs of every member and therefore related products and services not specifically listed may be included under this contract. This is not an "all or nothing" solicitation – offerors are encouraged to respond to single or multiple categories as applicable. ***Vendors are not required to respond to all areas to be considered for contract award*.**

1. General Requirements

1.1 Offeror shall be properly licensed and certified to perform the work in accordance with all applicable federal, state and local laws and industry standards including, but not limited to:

- American National Standards Institute (ANSI)
- American Society for Testing and Materials (ASTM)
- American Waterworks Association (AWWA)
- FM Global (FM)
- National Fire Protection Association (NFPA)
- National Institute of Standards and Technology (NIST)
- Occupational Health and Safety Administration (OSHA)
- Security Industry Association (SIA)
- Underwriters Laboratories (UL)

1.2 All work and any phase thereof is subject to inspection by the Member and/or the State Fire Marshall. Any discrepancies found shall be corrected at no additional charge.

1.3 Offeror shall make a reasonable effort to provide consistency in the service technicians assigned to the Members.

1.4 Under no circumstances shall a system be left in a disabled condition without notification and approval of the Member.

2. Products

Products purchased under this contract include parts, supplies and equipment for fire, security and communication systems such as, but not limited to:

2.1 Fire Alarm and Suppression Systems

- Control panels
- Primary and backup power supplies
- Alarm initiating devices
- Alarm notification devices
- Portable fire extinguishers – all new extinguisher purchases shall include tags
- Fire risers
- Fire sprinklers
- Commercial kitchen exhaust hoods
- Rolling steel fire doors
- Main drain valves
- Water supply systems
- Flow switches
- Backflow preventers
- Fire hydrants
- Fire pumps
- Fire hoses

2.2 Closed Circuit Television and Video Surveillance Systems

- Cameras
- Lenses
- Mounts and covers
- Cabling
- Power supplies
- Switches and synchronizers
- Monitors
- Video recorders
- Video motion detectors

2.3 Security Systems

- Security and access control panels
- Keypads and readers
- Door and window contacts
- Locking hardware
- Magnet door switches
- Motion detectors
- Glass break detectors

2.4 Intercom Systems

- Base stations
- Substations
- Door stations
- Intercom stations

- Wall mount stations
- Belt packs
- Handsets
- Headsets
- Amplifiers

3. System Design, Installation and Training

Offeror shall provide appropriately certified and qualified personnel to provide system design, installation and training services including, but not limited to the systems listed above in Scope of Work, Item 2, Products. All work performed shall meet the highest industry standards and shall be in full compliance with the manufacturer's warranty requirements.

4. Inspection and Testing

Offeror shall provide all labor, tools and supplies necessary to properly perform inspections, complete functional testing and routine maintenance of the systems listed below in accordance with federal, state, and local rules and regulations as well as NFPA and other industry standards. Discharge of any system and repairs caused by Vendor negligence shall be remedied at no additional cost to the Member. All systems shall be tagged as required and a report detailing the findings and actions shall be provided to the Member. Member may also require a report of the anticipated inspection requirements for the following fiscal year for budgeting purposes. Inspection and testing services may include but are not limited to:

4.1 Fire Risers and Sprinklers (NFPA 25)

- Valve operations
- Gauges
- Water pressure and flow
- Gong operation
- Electronic flow and tamper devices

4.2 Commercial Kitchen Exhaust Hoods (NFPA 13, 17, 17A and 96)

- Nozzles
- Extinguishing lines
- Manual pull stations
- Pressure gauges
- Gas shutoff valves and microswitches
- Gas and electrical shut offs upon activation
- Fans
- Fusible links (replace as required)

4.3 Portable Fire Extinguishers (NFPA 10)

- Annual inspection and testing
- Worn/defective part replacement
- Tamper seal replacement
- 6-year maintenance
- Hydrostatic tests
- Recharge

4.4 Fire Pumps (NFPA 20)

- Flow test
- Checking pumps for leaks, corrosion and proper operation

- Routine cleaning and adjustments
- Lubricating motors and valves

4.5 Rolling Steel Fire Doors (NFPA 80)

- Fire doors
- Operating mechanisms, fuse links and release chain/cable
- Damaged or missing components
- Drop tests

4.6 Fire Hoses (NFPA 1962)

- Hose cabinet maintenance
- Pressure regulating device
- Hoses
- Twist and tug tests
- Reracking hose in cabinet creating a new fold

4.7 Fire Hydrants (NFPA 25 and 291)

- General condition and proper drainage
- Lubricate operating nut, parking and thrust collar

4.8 Backflow Preventers (NFPA 25 and AWWA Standards)

- Backflow preventer systems
- Flow test

4.9 Low Voltage Systems

- Fire systems
- Security systems
- Closed circuit televisions and video surveillance systems
- Intercom communication systems

5. Maintenance and Repairs

5.1 Service Hours and Response Time

Service shall be available to Members 24 hours per day, 365 days per year as follows. Response times shall be from vendor notification to on-site arrival:

Description	Hours (Member Time Zone Applies)	Response Time
Normal Business Hours	Monday – Friday 7:00 a.m. to 5:00 p.m.	2 hours emergency 24 hours non-emergency
After Hours	Monday-Friday 5:00 p.m. to 7:00 a.m. the next day	2 hours emergency 4 hours non-emergency
Weekend/Holiday	Saturday, Sunday or Holidays listed on page 42	2 hours emergency 4 hours non-emergency

5.2 Labor Rates

Repairs shall be billed at the contracted labor rates and shall include labor, supervision, tools, transportation and supplies.

5.3 Reimbursement for Replacement Parts

The vendor shall be entitled to reimbursement for all replacement parts. Maintenance supplies such as lubricants, tags, seals and hardware shall be included in the cost for inspection, testing, routine maintenance and repairs. All part replacements shall be approved by the Member in advance of installation. The Member may authorize a purchase approval threshold if desired. Member reserves the right to source replacement parts from other part vendors if deemed advantageous.

5.4 System Back Up Service

Back up protection should be provided by the Vendor upon Member request when systems are out of service.

5.5 Records

Vendor shall maintain complete and accurate records including replacement parts for all maintenance and repair services that include (at minimum) the date, time and type of service performed. All records shall be the property of the Member and made available at no additional charge.

5.6 Warranty Services

Vendor should coordinate all warranty claims with the original equipment manufacturer on behalf of the Member and perform labor necessary to resolve warranty issues

6. Monitoring Services

6.1 Provide a full-service UL or FM certified central station that integrates with a wide variety of commonly used systems such as Ademco, Bosch, Fire Lite, Simplex, Notifier, Silent Knight, etc.

6.2 Monitor all accounts 24 hours per day, 7 days per week, 365 days per year.

6.3 **Verify and confirm proper decoding at the monitoring station of all fire and security panel signals including but** not limited to:

- Battery Failure
- Communication Failure
- Failed to Test
- Fire Alarm
- Intrusion
- No Signal
- Open/Close Signals
- Panics
- Restorals
- Supervisory
- Waterflow Tamper

6.4 Assist Member with reprograming and testing all dialers. The vendor shall make every effort to allow Members to keep all account numbers, pass codes and ID's the same.

6.5 Provide business cards, phone labels and/or keypad placards for personnel at all monitored locations containing the central monitoring station contact information for quick reference in cases of false alarms.

6.6 Provide a web-based system that allows the Member to retrieve real time building access reports, access vent logs and the ability to put systems on test. Access through a mobile application is desired.

6.7 Dispatch the designated emergency service, alarm response firm and/or other personnel required by the Member. The vendor shall be responsible for any physical damage or theft resulting from lack of dispatch or delayed response

7. Related Products and Services

Other related products and services under this contract may include but are not limited to:

- Emergency and exit lighting
- Server room clean agent fire suppression systems
- Master clocks
- Storage and management of video data
- Radio frequency identification
- System integration and design
- Public warning/mass notification
- Stage curtain fire retardant chemicals and application

EVALUATION CRITERIA

Representatives of 1GPA will evaluate the proposals and rank them from the one most likely to the one least likely to meet the needs of 1GPA and its Members, and satisfy the requirements of the RFP. 1GPA may call for interviews to clarify information received in the proposal. In addition to interviews, or if the proposals are very closely ranked, 1GPA reserves the option to enter into discussion on pricing and/or other portions of the proposal, and may request Best and Final offers if it is determined to be in 1GPA 's own best interest. However, offering firms are cautioned that 1GPA may proceed with an award on the basis of information received in the original proposal and subsequent interviews (if held) without calling for additional discussions or Best and Final offers.

Evaluation of the proposal will be based on the following criteria. Specific weighting shall be used. The following criteria are listed in order of greatest importance:

A. Cost – (300 Points Possible) Overall pricing offered will be considered.

B. Products and Services Offered – (250 Points Possible) Demonstrated understanding of the Scope of Work required and the ability of the Offeror to deliver quality services in a timely and professional manner.

C. Experience, Expertise and Qualifications – **(275 Points Possible)** Experience, expertise and qualifications of the firm and key personnel in providing required services. Previous experience with similar or like services as outlined in this RFP is also considered.

D. Additional Value / Added Services Offered – (125 Points Possible) Other related products or services that add value to the 1GPA Members utilizing the contract offered at little or no cost, the ability to serve a national member base and the Offeror's marketing plan.

E. Responsiveness – (50 Points Possible) Overall responsiveness of the proposal and providing the required information at time of RFP submittal. The ability of the firm to accept the terms and conditions of this solicitation that will become the governing document of this contract will be considered.

SUBMITTAL REQUIREMENTS & PROPOSAL FORMAT

1. SUBMITTAL REQUIREMENTS

Offeror should prepare **one (1) original and two (2) copies (total of three paper sets)** of the proposal to the address listed on the cover of this solicitation. The original should be marked "ORIGINAL" and the copy should be marked "COPY". All offers should be submitted with Tabs for each section as indicated in the Proposal Format section below.

In addition to the paper sets, an electronic proposal is optional (but preferred) using the ProcureNow online portal. Submittal instructions for ProcureNow are found on the last page of this document under Exhibit A. Alternatively, the electronic copy may be submitted on a thumb drive with the paper copies of the proposal.

Proposals will be date and time stamped when received, whether delivered in paper format to the opening location or submitted electronically through ProcureNow. Both paper and electronic proposals must be identical and contain the same documentation.

2. PROPOSAL FORMAT

Each proposal should be submitted on the forms and in the format specified in the RFP. The material should be in sequence and related to the RFP. 1GPA will not provide any reimbursement for the cost of developing or presenting proposals in response to this RFP. Each proposal should contain a table of contents with a clear and complete identification of the materials submitted by section and page number. Failure to include the requested information may have a negative impact on the evaluation of the offeror's proposal. The proposal should include at least the following information:

PROPOSAL FORMAT (MINIMUM REQUIREMENTS) CHECKLIST		
TAB 1	**COST**	✓
	Discount Schedule (Excel Cost Form, Tab 1)	☐
	Market Basket Pricing (Excel Cost Form, Tab 2)	☐
	Inspections and Testing (Excel Cost Form, Tab 3)	☐
	Maintenance and Repairs (Excel Cost Form, Tab 4)	☐
	Monitoring (Excel Cost Form, Tab 5)	☐
TAB 2	**PRODUCTS AND SERVICES OFFERED**	✓
	Form 2A: Products and Services Offered (Pages 36-46)	☐
	Form 2B: Subcontractor Questionnaire (Page 47)	☐
TAB 3	**EXPERIENCE, EXPERTISE AND QUALIFICATIONS**	✓
	Form 3A: Qualifications/Experience (Pages 48-49)	☐

PROPOSAL FORMAT (MINIMUM REQUIREMENTS) CHECKLIST		
	Form 3B: Past Performance (Page 50)	☐
	Form 3C: References (Page 51)	☐
	Form 3D: Performance Evaluation Survey (Page 52)	☐
	Form 3E: Financial Disclosure Questionnaire (page 53)	☐
TAB 4	**ADDITIONAL VALUE/SERVICES OFFERED**	✓
	Form 4A: Value Added Services (Page 54)	☐
	Form 4B: Marketing Plan (Pages 55-56)	☐
	Form 4C: Geographical Locations and Regions (Pages 57-58)	☐
TAB 5	**RESPONSIVENESS**	✓
	Form 5A: Responsiveness/Compliance. (Pages 59-72)	☐

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

Additional pages may be utilized.

1. Indicate below the categories of products and/or services your firm offers by placing and "X" in the appropriate box.

Description of Products:	Product	Services	Notes, Limitations or Exceptions:
Fire Alarm and Suppression Systems			
Closed Circuit Television and Video Surveillance Systems			
Security Systems			
Intercom Systems			
Alarm Monitoring Services			
Related Products/Services (List in the "Notes" Column			

2. Describe your firm's method to satisfying the Scope of Work Items listed on pages 27-32

2a. General Requirements (Scope of Work page 27)

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

2b. Products (Scope of Work pages 28-29)

Does your firm enforce minimum orders? ☐ **Yes** ☐ **No**

If yes, please describe:

How many days to deliver, on average, after receipt of order? _____

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

Describe your firm's return policy:

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

Does your firm offer online ordering capabilities? ☐ **Yes** ☐ **No**

If yes, please describe:

2c. System Design, Installation and Training (Scope of Work page 29)

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

2d. Inspection and Testing (Scope of Work pages 29-30)

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

Provide sample inspection checklists or sample reports for each of the following inspection services offered

Included TAB 2	OR	Not Applicable	Description
☐		☐	Fire Risers and Sprinklers
☐		☐	Commercial Kitchen Exhaust Hoods
☐		☐	Portable Fire Extinguishers
☐		☐	Fire Pumps
☐		☐	Rolling Steel Fire Doors
☐		☐	Fire Hoses
☐		☐	Fire Hydrants
☐		☐	Backflow Preventers
☐		☐	Low Voltage Systems – Fire Alarm System
☐		☐	Low Voltage Systems - Security
☐		☐	Low Voltage Systems – Closed Circuit Television and Video Surveillance System
☐		☐	Low Voltage Systems – Intercom Communication System

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

2e. Maintenance and Repairs (Scope of Work pages 30-31)

Provide a list of holidays your firm observes.

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

2f. Monitoring Services (Scope of Work pages 31-32)

Provide a copy of the central station's UL or FM Certification ☐ **Included in Tab 2 or** ☐ **Not Applicable**

What is the monthly capacity for receiving and storing activities and what brands of fire/security panels has your system successfully integrated with?

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

Describe your approach to new client set up. Include if manually programing dialers/panels is included.

Provide a sample activity report. ☐ **Included in Tab 2** **or** ☐ **Not Applicable**

Describe your firm's procedure for responding to an alarm notification.

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

2g. Related Products and Services (Scope of Work page 32)

Describe any products or services related to fire, security and communication system solutions your firm offers.

3. Warranty - Provide a detailed statement of warranty for the products and/or services your firm offers.

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

4. Reporting – Describe your firm's online reporting capabilities.

FORM 2B: SUBCONTRACTOR QUESTIONNAIRE (TAB 2)

Provide a list of subcontractors your firm may use to fulfill the requirements of the Scope of Work (pages 27-32)

Subcontractors are the sole responsibility of the vendor and are not employed directly by the Member. All purchase orders will be issued to the vendor. Central stations for monitoring shall be UL or FM certified (provide a copy of certification).

	Subcontractor	**License and/or Certification**
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		

FORM 3A: QUALIFICATIONS/EXPERIENCE (TAB 3)

QUALIFICATIONS AND EXPERIENCE OF OFFER: *Additional sheets may be utilized.*

Please provide an executive summary of your firm's history, qualifications, and experience in providing products and services as referenced in the scope of work for this solicitation. It is the vendor's responsibility to demonstrate competence and experience in the industry. Please include a history of the firm, including the length of time in business, location of office(s) and specifically experience as it relates to the Scope of Work.

Copies of Certifications and Licenses Held by the Firm (i.e. Business License, etc.):

☐ **Included in Tab 3** ☐ **Not applicable**

FORM 3A: QUALIFICATIONS/EXPERIENCE (TAB 3)

KEY PERSONNEL: Provide information (bios) regarding the key personnel including, but not limited to, education, experience, certifications and years of service in the industry.

Certifications and licenses held by key personnel (i.e. NICT, backflow prevention certification, inspection and testing certifications, CSA Group, etc.):

☐ **Included in Tab 3** ☐ **Not applicable**

FORM 3B: PAST PERFORMANCE (TAB 3)

PAST PERFORMANCE: *Additional sheets may be utilized.*

Provide a description of any past, relevant work with school districts or public sector clients. Include a brief summary of the work completed. Offerors are responsible to provide information to show records of positive Past Performance history.

FORM 3C: REFERENCES (TAB 3)

Offeror shall list below a minimum of five (5) client references for performance history that are similar in scope of work to this solicitation. Each reference should complete the Performance Evaluation Survey on page 52 of this RFP and a copy should be included under Tab 3. Alternatively, references may email completed surveys to rseifert@1gpa.org.

1. Client Reference:_____
Street Address:_____
City:_____ State:_____ Zip:_____
Contact Name:_____ Phone:_____
Date of Contract Initiation: _____
Description of Services Provided: _____

2. Client Reference:_____
Street Address:_____
City:_____ State:_____ Zip:_____
Contact Name:_____ Phone:_____
Date of Contract Initiation: _____
Description of Services Provided: _____

3. Client Reference:_____
Street Address:_____
City:_____ State:_____ Zip:_____
Contact Name:_____ Phone:_____
Date of Contract Initiation: _____
Description of Services Provided: _____

4. Client Reference:_____
Street Address:_____
City:_____ State:_____ Zip:_____
Contact Name:_____ Phone:_____
Date of Contract Initiation: _____
Description of Services Provided: _____

5. Client Reference:_____
Street Address:_____
City:_____ State:_____ Zip:_____
Contact Name:_____ Phone:_____
Date of Contract Initiation: _____
Description of Services Provided: _____

FORM 3D: PERFORMANCE EVALUATION SURVEY (TAB 3)

Subject: Request For Proposals 21-07P Fire, Security and Communication System Solutions

Company Being Surveyed: _____

To Whom It May Concern:
1GPA is currently undergoing Performance Evaluations for the vendor listed above regarding their response to a current solicitation. The information will be used to determine the Past Performance and Qualifications of the above firm. 1GPA would greatly appreciate you taking a few minutes out of your busy day to complete the questionnaire below.
Please evaluate the performance of the vendor (**10 means-you are Always satisfied, 5 means- you are Sometimes satisfied, and 1 means- you are very Dissatisfied because of very poor performance**). If you do not have sufficient knowledge of in a particular area, leave it blank.

NO.	Criteria	Unit	Score
1	Ability to maintain schedule and provide results in a timely manner	(1-10)	
2	Quality of Products and/or Service	(1-10)	
3	Ability to understand the needs of the your agency	(1-10)	
4	Vendor's participation and assistance when "issues" arise	(1-10)	
5	Close out process (invoicing, no unexpected/hidden fees)	(1-10)	
6	Billing statements provided are easy to understand	(1-10)	
7	Ability to follow your agency's rules, regulations, and requirements	(1-10)	
8	Communication with your agency regarding schedules and timelines	(1-10)	
9	Vendor provides value added services with satisfaction of your agency	(1-10)	
10	Overall customer satisfaction based on performance (comfort level in using vendor again)	(1-10)	

Total Points _____

Any additional comments regarding vendor/services provided: _____

_____

_____ _____
Signature Date

_____ _____
Printed Name Title

_____ _____
Organization Phone Number

Thank you for your time and effort in assisting the vendor in this important endeavor. Please email this survey back to the firm requesting it as soon as possible so they can include in their response.

If preferred, you may email this form directly to Rebecca Seifert at rseifert@1gpa.org. PLEASE RETURN THIS FORM TO 1GPA NO LATER THAN February 18, 2021 @ 11:00 AM, AZ TIME.

FORM 3E: FINANCIAL DISCLOSURE QUESTIONNAIRE (TAB 3)

Offeror shall complete each item using attachments if necessary. Attachments shall indicate the item number and heading being referenced as it appears below. Please respond "Not Applicable", "N/A", or "none" as needed instead of leaving items blank. Failure to complete may result in the rejection of proposal as unresponsive:

1. Have any licenses / certifications ever been denied, revoked or suspended or provisionally issued within the past five years? If yes, please provide explanation.

2. List all judgments, arbitration awards and settlements against your firm within the last three (3) years arising from a lawsuit or claim of any nature.

3. Describe all unresolved claims, arbitration claims, lawsuits or bond claims brought by or against your firm. Include the name of all parties and a brief description of the nature of the dispute.

4. Has your firm made any filing under the United States Bankruptcy Code, assignment for the benefit of creditors or other measures taken for the protection against creditors during the last three (3) years?

5. If the Offeror's firm is a division or subsidiary of another firm, indicate below the name and address of the parent firm. Also include a description of the working relationship between the Offeror's firm and the parent firm. Specify what impact, if any, this relationship would have on the Offeror's firm's ability to meet the requirements for services described in this solicitation.

6. Has your company ever had a name change in the past? _____Yes _____No
   If yes, provide all prior name(s) your company has used and year(s) of operation.

10. What are the annual sales for the past 3 years for your firm?

2019: _____ 2018: _____ 2017: _____

Note: 1GPA reserves the right to request a copy of audited financial statements for the immediate past two fiscal years.

FORM 4A: VALUE ADDED SERVICES (TAB 4)

VALUE ADDED SERVICES: *Additional sheets may be utilized.*

Identify any other related value-added services your firm offers at little or no cost that support your firm's primary business such as vendor managed inventory, consignment programs, lunch and learns, etc. Any associated fees shall be included in the Excel Cost Form Tab 3 (filed in Tab 1 of your response).

FORM 4B: MARKETING PLAN (TAB 4)

MARKETING PLAN: *Additional sheets may be utilized*

1. Describe your firm's strategy to successfully market, promote and communicate the benefits of this contract to current and potential 1GPA Members nationwide.

2. Describe how your firm will train your employees to properly use the contract.

FORM 4B: MARKETING PLAN (TAB 4)

3. List any organizations and trade shows your firm actively participates in. Describe how the 1GPA contract will be displayed and promoted.

FORM 4C: GEOGRAPHICAL REQUIREMENTS & PROPOSAL FORMAT (TAB 4)

Place "P" for Products, "S" for Services or "PS" for Products and Services in the box(es) next to the geographical locations served by your firm. Mark the appropriate "All" boxes if your firm provides products and/or services to all states listed in a Division (no need to mark each state individually).

REGION 1: Northeast		***P, S or PS***
Division 1: New England	All	
	Connecticut	
	Maine	
	Massachusetts	
	New Hampshire	
	Rhode Island	
	Vermont	
Division 2: Mid Atlantic	All	
	New Jersey	
	New York	
	Pennsylvania	

REGION 2: Midwest		***P, S or PS***
Division 3: East North Central	All	
	Illinois	
	Indiana	
	Michigan	
	Ohio	
	Wisconsin	
Division 4: West North Central	All	
	Iowa	
	Kansas	
	Minnesota	
	Missouri	
	Nebraska	
	North Dakota	
	South Dakota	

REGION 3: South		***P, S or PS***
Division 5: South Atlantic	All	
	Delaware	
	Florida	
	Georgia	
	Maryland	
	North Carolina	
	South Carolina	
	Virginia	
	District of Columbia	
	West Virginia	
Division 6: East South Central	All	
	Alabama	
	Kentucky	
	Mississippi	
	Tennessee	
Division 7: West South Central	All	
	Arkansas	
	Louisiana	
	Oklahoma	
	Texas	

FORM 4C: GEOGRAPHICAL REQUIREMENTS & PROPOSAL FORMAT (TAB 4)

REGION 4: West		***P, S or PS***
Division 8: Mountain	All	
	Arizona	
	Colorado	
	Idaho	
	Montana	
	Nevada	
	New Mexico	
	Utah	
	Wyoming	
Division 9: Pacific	All	
	Alaska	
	California	
	Hawaii	
	Oregon	
	Washington	

FORM 5A: RESPONSIVENESS/COMPLIANCE

RESPONSIVENESS: Offerors shall confirm that all documentation requested herein has been completed, signed and submitted. If not, state the reason for the omission.

Requested Copies	
DESCRIPTION:	**Check**
1. Original Hardcopy	☐
2. Two Additional Hardcopies	☐
3. Electronic Copy (submitted via ProcureNow portal or thumb drive)	☐

Required Forms	
DESCRIPTION:	**Check**
1. Proposal and Contract Acceptance Form (Page 5)	☐
2. Confidential/Proprietary Submittals Form (Page 60)	☐
3. Deviations/Exceptions Form (Page 61)	☐
4. Non-Collusion Affidavit (Page 62)	☐
5. EDGAR Certifications (Page 63-67)	☐
6. Debarment Certification (Page 68)	☐
7. Anti-Trust Certification (Page 69)	☐
8. Minority/Women Business Enterprise (MWBE) and Historically Underutilized Business (HUB) Form (Page 70)	☐
9. Certificate of Insurance (Page 71)	☐
10. W-9 Form (Page 72)	☐
11. Addendum acknowledgement (if applicable). The offeror is responsible for checking the Public Purchase or AZ Purchasing websites for any amendments issued.	☐

CONFIDENTIAL/PROPRIETARY SUBMITTALS

Confidential/Proprietary Submittal (mark one):

☐ **No confidential/proprietary materials included.**

☐ **Confidential/Proprietary materials included.** Offerors should identify below any portion of their Proposal deemed confidential or proprietary. Identification in this section does not guarantee that disclosure will be prevented but that the item will be subject to review by the Offeror and 1GPA prior to any public disclosure. Contract terms and conditions, pricing, and information generally available to the public are not considered confidential information. 1GPA will be the final judge if materials will be accepted as confidential or not. **Request to deem the entire Proposal or price as confidential will not be a consideration.**

Complete description of the material to be considered confidential, including the page number, paragraph and other identifiable information must be outlined below.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

The undersigned hereby acknowledges that any items deemed to be confidential or proprietary are clearly listed on this Form.

_____
Offeror Name

_____ _____
Authorized Signature *Date*

_____
Printed Name and Title

DEVIATIONS/EXCEPTIONS

Offerors shall indicate any and all deviations/exceptions taken to the provisions or specifications in this solicitation document. Clearly identify the specific paragraph(s) of the Solicitation where the exceptions occur and describe in detail. The Offeror's preprinted or standard terms will not be considered as a part of any resulting Contract. All exceptions that are contained in the Proposal may negatively affect the solicitation evaluation based on the evaluation criteria as stated in the Solicitation or result in rejection of the Proposal. No exceptions included in the Proposal shall become part of the resulting Contract unless agreed and accepted to by 1GPA.

Deviations / Exceptions (mark one):

☐ **No Deviations / Exceptions**

☐ **Deviations / Exceptions Taken (explain in detail – attach additional pages if needed):**

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

The Undersigned hereby acknowledges that any deviation/exceptions to this Solicitation are clearly listed on this Form.

_____

Offeror Name

_____ _____

Authorized Signature *Date*

_____

Printed Name and Title

NON-COLLUSION AFFIDAVIT

State of _____ County of _____

_____ _____

Name Title

_____

Company Name

As an authorized representative of the persons, corporation, or company who makes the accompanying Proposal, and having first been duly sworn, I hereby depose and state as follows:

The accompanying Proposal is genuine, and such Offer is neither a sham nor collusive, nor is such Offer made in the interest or on behalf of any person or corporation not named herein.

The Offeror has not directly or indirectly induced or solicited any other Offeror to put in a sham or collusive bid, or induced or solicited any other Offeror to refrain from submitting an Offer.

The Offeror has not in any manner sought by collusion or anti-competitive means or practices to secure for itself advantage over any other Bidder.

The Offeror has taken steps and exercised due diligence to ensure that no violation of A.R.S § 15-213(O) has occurred.

Signed:_____

Title: _____

Subscribed and sworn to before me

This _____ day of _____, 20_____

_____

Signature of Notary Public in and for the

State of _____

County of _____

My Commission Expires on _____

THIS PAGE MUST BE SIGNED, NOTARIZED AND RETURNED WITH YOUR RESPONSE

EDGAR CERTIFICATIONS

The following certifications and provisions are required and apply when a 1GPA Member expends federal funds for any contract resulting from this procurement process. Accordingly, the parties agree that the following terms and conditions apply to the Contract between 1GPA, Member and awarded Vendor ("Vendor") in all situations where Vendor has been paid or will be paid with federal funds:

(A) Contractor Violation or Breach of Contract Terms

Contracts for more than the simplified acquisition threshold currently set at $150,000, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.

Pursuant to Federal Rule (A) above, when 1GPA Member expends federal funds, 1GPA reserves all rights and privileges under the applicable laws and regulations with respect to this procurement in the event of breach of contract by either party.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

(B). Termination for Cause or Convenience

Termination for cause and for convenience by the grantee or subgrantee including the manner by which it will be effected and the basis for settlement. (All contracts in excess of $10,000)

Pursuant to Federal Rule (B) above, when 1GPA Member expends federal funds, 1GPA or its Member reserves the right to immediately terminate any agreement in excess of $10,000 resulting from this procurement process in the event of a breach or default of the agreement by Vendor in the event Vendor fails to: (1) meet schedules, deadlines, and/or delivery dates within the time specified in the procurement solicitation, contract, and/or a purchase order; (2) make any payments owed; or (3) otherwise perform in accordance with the contract and/or the procurement solicitation. 1GPA also reserves the right to terminate the contract immediately, with written notice to vendor, for convenience, if 1GPA believes, in its sole discretion that it is in the best interest of 1GPA to do so. Vendor will be compensated for work performed and accepted and goods accepted by 1GPA as of the termination date if the contract is terminated for convenience of 1GPA. Any award under this procurement process is not exclusive and 1GPA reserves the right to purchase goods and services from other vendors when it is in 1GPA's best interest.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

(C). Equal Employment Opportunity

Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

Pursuant to Federal Rule (C) above, when 1GPA Member expends federal funds on any federally assisted construction contract, the equal opportunity clause is incorporated by reference herein.

Does Vendor agree to abide by the above? YES _____ Initials of Authorized Representative of Vendor

(D). Davis-Bacon Act

When required by Federal program legislation, contractor agrees that, for all prime construction contracts in excess of $2,000, contractor shall comply with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. Current prevailing wage determination issued by the Department of Labor are available at www.wdol.gov. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. Contractor further agrees that it shall also comply with the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the

construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The 1GPA Member must report all suspected or reported violations to the Federal awarding agency.

Pursuant to Federal Rule (D) above, when 1GPA Member expends federal funds during the term of an award for all contracts and subgrants for construction or repair, Vendor will be in compliance with all applicable Davis-Bacon Act provisions.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

(E). Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708)

Where applicable, all contracts awarded in excess of $100,000 that involve the employment of mechanics or laborers, Contractor agrees to comply with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor is required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

Pursuant to Federal Rule (E) above, when 1GPA Members expends federal funds, Vendor certifies that Vendor will be in compliance with all applicable provisions of the Contract Work Hours and Safety Standards Act during the term of an award for all contracts by 1GPA resulting from this procurement process.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

(F). Rights to Inventions Made Under a Contract or Agreement

If the Federal award meets the definition of "funding agreement" under 37 CFR §401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

Pursuant to Federal Rule (F) above, when federal funds are expended by 1GPA Member, Vendor certifies that during the term of an award for all contracts by 1GPA resulting from this procurement process, Vendor agrees to comply with all applicable requirements as referenced in Federal Rule (6) above.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

(G) Clean Air Act and Federal Water Pollution Act

Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended—Contracts and subgrants of amounts in excess of $150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251- 1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

Pursuant to Federal Rule (G) above, when federal funds are expended by 1GPA Member, Vendor certifies that during the term of an award for all contracts by 1GPA resulting from this procurement process, Vendor agrees to comply with all applicable requirements as referenced in Federal Rule (G) above.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

(H) Debarment and Suspension

Debarment and Suspension (Executive Orders 12549 and 12689)—A contract award (see 2 CFR 180.220) must not be made to parties listed on the government wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the

names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

Pursuant to Federal Rule (H) above, when federal funds are expended by 1GPA Member, Vendor certifies that during the term of an award for all contracts by 1GPA resulting from this procurement process, Vendor certifies that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation by any federal department or agency.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

(I) Byrd Anti-Lobbying Amendment

Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)—Contractors that apply or bid for an award exceeding $100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

Pursuant to Federal Rule (I) above, when federal funds are expended by 1GPA Member, Vendor certifies that during the term and after the awarded term of an award for all contracts by 1GPA resulting from this procurement process, the vendor certifies that it is in compliance with all applicable provisions of the Byrd Anti-Lobbying Amendment (31 U.S.C. 1352). The undersigned further certifies that:

(1) No Federal appropriated funds have been paid or will be paid for on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of congress, or an employee of a Member of Congress in connection with the awarding of a Federal contract, the making of a Federal grant, the making of a Federal loan, the entering into a cooperative agreement, and the extension, continuation, renewal, amendment, or modification of a Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of congress, or an employee of a Member of Congress in connection with this Federal grant or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all covered sub-awards exceeding $100,000 in Federal funds at all appropriate tiers and that all subrecipients shall certify and disclose accordingly.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

(J) Procurement of Recovered Materials

When federal funds are expended, Member and its contractors must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include: (1) procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000; (2) procuring solid waste management services in a manner that maximizes energy and resource recovery; and (3) establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

Pursuant to Federal Rule (J) above, when federal funds are expended by the Member, as required by the Resource Conservation and Recovery Act of 1976 (42 U.S.C. § 6962(c)(3)(A)(i)), the vendor certifies, by signing this document, that the percentage of recovered materials content for EPA-designated items to be delivered or used in the performance of the contract will be at least the amount required by the applicable contract specifications or other contractual requirements.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

EDGAR CERTIFICATIONS

RECORD RETENTION REQUIREMENTS FOR CONTRACTS INVOLVING FEDERAL FUNDS

When federal funds are expended by 1GPA Member for any contract resulting from this procurement process, Vendor certifies that it will comply with the record retention requirements detailed in 2 CFR § 200.333. Vendor further certifies that it will retain all records as required by 2 CFR § 200.333 for a period of three years after grantees or subgrantees submit final expenditure reports or quarterly or annual financial reports, as applicable, and all other pending matters are closed.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

CERTIFICATION OF COMPLIANCE WITH THE ENERGY POLICY AND CONSERVATION ACT

When 1GPA Member expends federal funds for any contract resulting from this procurement process, Vendor certifies that it will comply with the mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. 6321 et seq.; 49 C.F.R. Part 18).

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

CERTIFICATION OF EQUAL EMPLOYMENT STATEMENT

It is the policy of 1GPA not to discriminate on the basis of race, color, national origin, gender, limited English proficiency or handicapping conditions in its programs. Vendor agrees not to discriminate against any employee or applicant for employment to be employed in the performance of this Contract, with respect to hire, tenure, terms, conditions and privileges of employment, or a matter directly or indirectly related to employment, because of age (except where based on a bona fide occupational qualification), sex (except where based on a bona fide occupational qualification) or race, color, religion, national origin, or ancestry. Vendor further agrees that every subcontract entered into for the performance of this Contract shall contain a provision requiring non-discrimination in employment herein specified, binding upon each subcontractor. Breach of this covenant may be regarded as a material breach of the Contract.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

CERTIFICATION OF COMPLIANCE WITH BUY AMERICA PROVISIONS

1GPA has a preference for domestic end products for supplies acquired for use in the United States when spending federal funds (purchases that are made with non-federal funds or grants are excluded from the Buy America Act). Vendor certifies that it is in compliance with all applicable provisions of the Buy America Act.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

CERTIFICATION OF ACCESS TO RECORDS – 2 C.F.R. § 200.336

Vendor agrees that the District's Inspector General or any of their duly authorized representatives shall have access to any books, documents, papers and records of Vendor that are directly pertinent to Vendor's discharge of its obligations under the Contract for the purpose of making audits, examinations, excerpts, and transcriptions. The right also includes timely and reasonable access to Vendor's personnel for the purpose of interview and discussion relating to such documents.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

EDGAR CERTIFICATIONS

CERTIFICATION OF APPLICABILITY TO SUBCONTRACTRS

Vendor agrees that all contracts it awards pursuant to the Contract shall be bound by the foregoing terms and conditions.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

VENDOR AGREES TO COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, RULES, REGULATIONS, AND ORDINANCES. IT IS FURTHER ACKNOWLEDGED THAT VENDOR CERTIFIES COMPLIANCE WITH ALL PROVISIONS, LAWS, ACTS, REGULATIONS, ETC. AS SPECIFICALLY NOTED ABOVE.

Vendor's Name: _____

Address, City, State, and Zip Code: _____

Phone Number: _____ Fax Number: _____

Printed Name and Title of Authorized Representative: _____

Email Address: _____

Signature of Authorized Representative: _____

Date: _____

DEBARMENT CERTIFICATION

Neither my company nor an owner or principal of my company has been debarred, suspended or otherwise made ineligible for participation in Federal Assistance programs under Executive Order 12549, “Debarment and Suspension,” as described in the Federal Register and Rules and Regulations.

By signature below, I certify that the above is true, complete and accurate and that I am authorized by my company to make this certification.

_____

Company Name

_____

Signature of Authorized Company Official

_____

Printed Name

_____

Date

ANTITRUST CERTIFICATION STATEMENT

Texas Government Code
§2155.005

I affirm under penalty of perjury of the laws of the State of Texas that:

1. I am duly authorized to execute this contract on my own behalf or on behalf of the company, corporation, firm, partnership or individual (Company) listed below.
2. In connection with this bid, neither I nor any representative of the Company has violated any provision of the Texas Free Enterprise and Antitrust Act, Tex. Bus. & Comm. Code Chapter 15.
3. In connection with this bid, neither I nor any representative of the Company has violated any federal antitrust law; and
4. Neither I nor any representative of the company has directly or indirectly communicated any of the contents of this bid to a competitor of the company or any other company, corporation, firm, partnership, or individual engaged in the same line of business as the company listed.

Vendor Name _____
(Please Type or Print)

Address _____

_____

_____

_____

Phone _____ Fax _____

Email _____ Website _____

Name of Person Submitting Bid _____

Signature _____ Date _____

Position with Company _____

MINORITY/WOMEN BUSINESS ENTERPRISE (MWBE) AND HISTORICALLY UNDERUTILIZED BUSINESSES (HUB)

Bidding companies that have been certified as Historically Underutilized Business (HUB) or Minority/Women Business Enterprise (MWBE) entities are encouraged to indicate their HUB and MWBE status when responding to this Bid Invitation.

Vendor certifies that this firm is a MWBE (Required by some participating agencies)	☐ Yes	☐ No
Vendor certifies that this firm is a HUB (Required by some participating agencies)	☐ Yes	☐ No

Please scan a copy of MWBE and/or HUB certification letter and the percentage of your business with MWBE and/or HUB suppliers, if applicable, in your bid response in the Response Attachments section.

I, the authorized representative for the company named below, certify that the information concerning residency certification, and MWBE and HUB certifications have been reviewed by me and the information furnished is true to the best of my knowledge.

Vendor's Name/Company Name: _____

Address, City, State, and Zip Code: _____

Phone Number:_____ Fax Number: _____

Printed Name and Title of Authorized Representative: _____

Email Address: _____

Signature of Authorized Representative: _____ Date: _____

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)_____

PRIOR TO COMMENCING SERVICES UNDER THIS CONTRACT, THE CONTRACTOR MUST FURNISH THE MEMBER, CERTIFICATION FROM INSURER(S) FOR COVERAGES IN THE MINIMUM AMOUNTS AS STATED BELOW. THE COVERAGES SHALL BE MAINTAINED IN FULL FORCE AND EFFECT DURING THE TERM OF THIS CONTRACT, AND SHALL NOT SERVE TO LIMIT ANY OTHER CONTRACTOR OBLIGATIONS.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:		
	PHONE:	FAX:	
	E-MAIL ADDRESS:		
	INSURER(S) AFFORDING COVERAGE		NAIC #
	INSURER A:		
INSURED	INSURER B:		
	INSURER C:		
	INSURER D:		
	INSURER E:		
	INSURER F:		

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	☐ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☐ OCCUR ☐ _____ ☐ _____ GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☐ PRO-JECT ☐ LOC ☐ OTHER:						EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS – COMP/OP AGG 	$ $ $ $ $ $ $
	AUTOMOBILE LIABILITY ☐ ANY AUTO ☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS ☐ HIRED AUTOS ☐ NON-OWNED AUTOS ☐						COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) 	$ $ $ $ $
	☐ UMBRELLA LIAB ☐ OCCUR ☐ EXCESS LIAB ☐ CLAIMS-MADE ☐ DED ☐ RETENTION $						EACH OCCURRENCE AGGREGATE 	$ $ $
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/ EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y / N If yes, describe under DESCRIPTION OF OPERATIONS below	N / A					☐ PER STATUTE ☐ OTH-ER E.L. EACH ACCIDENT E.L. DISEASE-EA EMPLOYEE E.L. DISEASE-POLICY LIMIT	 $ $ $

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES

THE MEMBER SHALL BE ADDED AS ADDITIONAL INSURED AS REQUIRED BY STATUTE, CONTRACT, PURCHASE ORDER OR OTHERWISE REQUESTED. IT IS AGREED THAT ANY INSURANCE AVAILABLE TO THE NAMED INSURED SHALL BE PRIMARY OF OTHER SOURCES THAT MAY BE AVAILABLE. IT IS FURTHER AGREED THAT NO POLICY SHALL EXPIRE, BE CANCELLED OR MATERIALLY CHANGED TO AFFECT THE COVERAGE AVAILABLE TO THE MEMBER WITHOUT THIRTY (30) DAYS WRITTEN NOTICE TO THE MEMBER. THIS CERTIFICATE IS NOT VALID UNLESS COUNTERSIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE INSURANCE COMPANY.

CERTIFICATE HOLDER	CANCELLATION
1GPA 1910 W Washington Street Phoenix, AZ 85009	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE

ACORD 25 (2014/01)

SAMPLE

Form **W-9**
(Rev. December 2014)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Give Form to the requester. Do not send to the IRS.

Print or type
See Specific Instructions on page 2.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification; check only **one** of the following seven boxes:

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____

Note. For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.)

Requester's name and address (optional)

6 City, state, and ZIP code

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the instructions for line 1 and the chart on page 4 for guidelines on whose number to enter.

Social security number

			–			–				

or

Employer identification number

		–							

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 3.

Sign Here | **Signature of U.S. person** ▶ | **Date** ▶

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. Information about developments affecting Form W-9 (such as legislation enacted after we release it) is at *www.irs.gov/fw9*.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See *What is backup withholding?* on page 2.

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting?* on page 2 for further information.

EXHIBIT A

1GPA in conjunction with Pinal County ESA utilizes an online public portal known as ProcureNow to accept electronic copies of proposals. Please be advised that in addition to the requested electronic submission through ProcureNow, an original (paper format) proposal is to be submitted by the proposal due date and time at the address listed on the cover of this document. Both paper and electronic proposals must be identical and contain the same documentation.

Please contact ProcureNow at https://help.procurenow.com/en/ for technical questions related to your submission.

Please follow these instructions to submit via the ProcureNow public portal.

1. **Prepare your submission materials:**

Requested Information/Document	*File Type/Format*
PROPOSAL	PDF (.pdf)
EXCEL COST FORM	EXCEL (.xlsx)

- Note the type and number of files allowed.
- **Do not embed** any documents within your uploaded files, as they will not be accessible or evaluated.

2. **Upload your submission at: https://secure.procurenow.com/portal/1GPA**

- Your submission must be uploaded, submitted, and finalized prior to the Closing Time of:

FEBRUARY 18, 2021 AT 11:00 A.M. ARIZONA TIME

- We strongly recommend that you give yourself sufficient time and at least **ONE (1) day** before Closing Time to begin the uploading process and to finalize your submission.

Important Notes:

- Each item of Requested Information/Document will only be visible after the Closing Time.
- Uploading large documents may take significant time, depending on the size of the file(s) and your Internet connection speed.
- You will receive an email confirmation with a date/time stamp once you finalize your submission.
- Minimum system requirements: ProcureNow is compatible with major browsers such as Chrome, Firefox, Microsoft Internet Explorer, Edge and Safari. It can be accessed on all Andriod and IOS devices.

Prepared by Logicalis for
1Government Procurement Alliance (1GPA) and
Pinal County ESA

LOGICALIS
Architects of Change

Proposal for
Fire, Security and Communication System Solutions
Request for Proposal #21-07P

Proposal_1GPA4113526

February 15, 2021

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One Penn Plaza, 51st Floor
Suite 5130
New York, NY 10119

T: 212.596.7160
www.us.logicalis.com

February 15, 2021

Rebecca Seifert, Procurement Specialist
1Government Procurement Alliance (1GPA)
1910 W. Washington Street
Phoenix, AZ 85009

Jill Broussard, Superintendent
Pinal County ESA
75 Bailey Street
Florence, AZ 85132

Dear Ms. Seifert and Ms. Broussard:

On behalf of Logicalis, please find enclosed our proposal for Fire, Security and Communication System Solutions.

The pace of change in technology today is like nothing we have experienced in the past. Stakeholders' expectations have increased, and timelines for meeting those expectations have shrunk. Taking years to roll out Safety & Security projects is no longer acceptable. We are operating in a DevOps world in which things need to be done and produce value quickly.

Our Professional Services team members consider themselves an extension of your team, ready to implement your projects by following a process designed for success. We have hundreds of certified IT professionals and engineers who are dedicated to their assigned projects and who understand your expectations and the results you require. Our team can expand globally through our international counterparts to deliver the projects you need, regardless of the final destination.

For the Market Basket pricing, Logicalis has utilized what we have listed in this RFP for our discount structures. We almost always exceed these discounts however based on larger projects, promotions, and/or special pricing from the manufacturers. We always pass these savings directly on to the 1GPA Member and our Market Basket pricing is what single unit purchase price would be with standard contract pricing/discounts.

I look forward to speaking with you regarding this proposal. Please feel free to contact me directly with any questions.

Sincerely,

Pete Edwards, Area Sales Director
8945 S. Harl Avenue, Suite 102
Tempe, AZ 85284
480-612-8942
Pete.Edwards@us.logicalis.com

Logicalis Overview

Company Overview

Logicalis is an international solution provider helping shape, support and implement our customers' digital transformation. We embrace change, help our customers adapt to change, and lead the change.

We are Architects of Change.

Our Mission

We strive to make technology a business asset, not a business problem, by simplifying solutions and driving business transformation that delivers extraordinary user experience and value.

Local Support

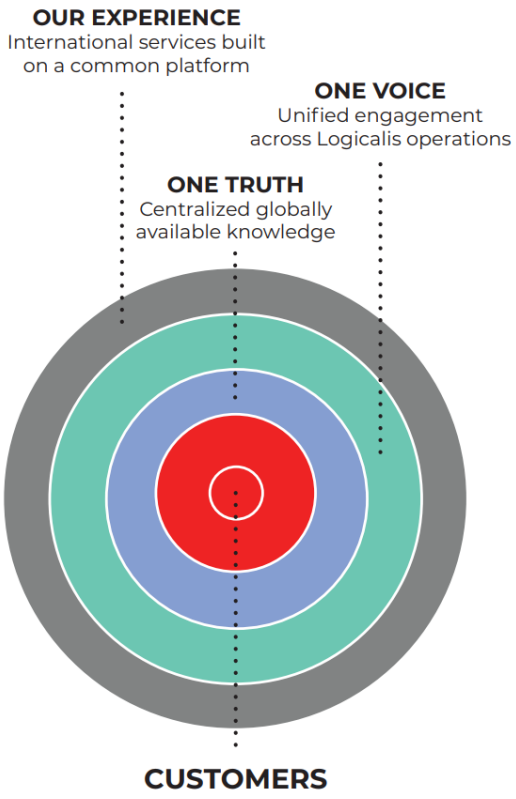
- Logicalis U.S. (New York Headquarters)
- $400 million in revenue
- 830+ employees
- Offices in 21 cities
- 3 cloud data centers
- 3 managed service provider centers

Practices and Offerings

- Cloud-Data Center
- Security
- IoT & Analytics
- Networking
- Collaboration

The Logicalis Approach

Logicalis designs, supports, and executes on our customers' digital transformation by blending their vision with our technological expertise and industry insights.



How We Engage with Customers

- Point of View – 1-hour cloud overview
- Executive Briefing – 1-day overview of Logicalis offerings
- Workshops – 1-day customized deep dive
- Planning & Road Mapping – Consultative strategy-building session
- Demonstrations – Deep dive into specific technologies
- Consulting – Project-based planning and implementation

Services for Business Growth

- Consulting – Alignment of technology with business goals
- Strategy – Results-driven strategy refinement and design
- Technology – Solution design with today's leading technologies
- Professional – Solution implementation via certified expert engineers
- Managed – Day-to-day operational support of hybrid cloud solutions
- End-User – Service desk, adoption, collaboration, and other support

Vertical Expertise

We serve all industries and have made significant investments in:

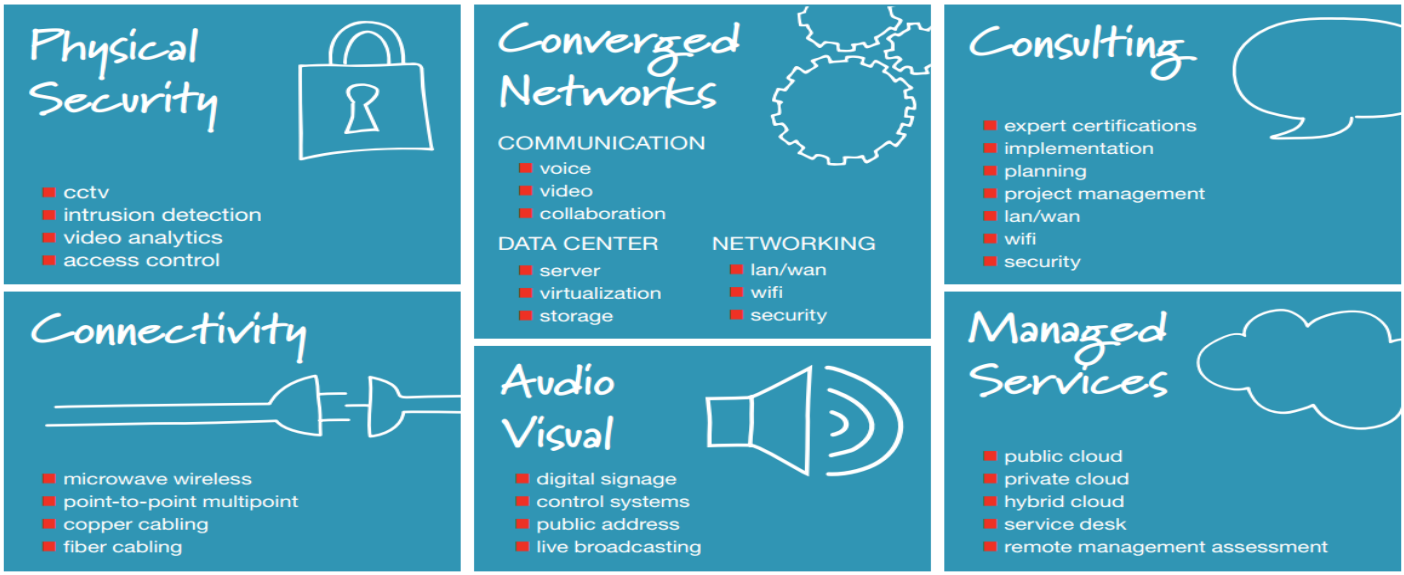
- Healthcare
- Education
- State & Local Government
- Industrial

Committed to Customer Success

We improve the value that customers receive from our solutions and services and believe that our business will grow when we help their business grow.

Our Solutions & Services

Logicalis offers a range of extensible services, from helping you define and design a cloud strategy to assisting with server and storage selection for your current environment. Below is an overview of our focus areas. All of our focus solutions provide a full range of assessments and health checks, perfect for those who need help determining what the next steps are.



Service Level Process

CRITICAL PRIORITY (Priority 1)

During support hours, an existing network is down or there is a critical impact to the end user's business operation. Network Hardware Service Provider, Logicalis and end user will commit full-time resources to the situation.

- 1 Hour: Service Coordinator
- 4 Hours: Service Manager
- 24 Hours: Director of Operations

HIGH PRIORITY (Priority 2)

Operation of an existing network that is severely degraded, or significant aspects of the end user's business operation are being negatively impacted by unacceptable network performance. The Network Hardware Service Provider, Logicalis and end user will commit full-time resources during standard business hours to address the situation.

- 4 Hours: Service Coordinator
- 24 Hours: Service Manager
- 48 Hours: Director of Operations

NORMAL PRIORITY (Priority 3)

Operational performance of the network is impaired while most business operations remain functional. The Network Hardware Service Provider, Logicalis and end user are willing to commit resources during standard business hours to restore service to satisfactory levels.

- 72 Hours: Service Coordinator
- 96 Hours: Service Manager

MyMaintenance

Logicalis' MyMaintenance puts all of our customer's IT asset information into a single, conveniently accessible repository. Our streamlined approach to asset and contract maintenance ensures that the assets are properly supported throughout their lifecycle, and at the same time, MyMaintenance has been proven to significantly reduce healthcare IT costs.

Maintenance contracts on our customer's technology are supposed to give our customers peace of mind. Managing service contracts, however, can be an administrative nightmare for an IT department. We have the people, the skills, and the systems to manage our customer's service contracts, so the customer can stay focused on managing their technology.

We can provide you with a wide range of cost-saving services, including 24/7 access to critical asset information, a single repository for tracking hardware and service assets, service contract audit assistance, a proactive notification system, and more.

Big Benefits with Contract Maintenance by Logicalis:
- Saves money. We evaluate and optimize service coverage to fit exact needs.
- Saves time. We coordinate all renewals and provide regular updates on service-level status.
- Cuts your risk. We help align service coverage, so it is appropriate to our customer's needs.
- Eliminates complexity. We are the single point of contact for all moves, additions and changes

Our flexible solution also provides unlimited customizable data fields that allow customers to track fields unique to their environment.

Alliances & Partnerships

Our focus on emerging and innovative technologies and our breadth of integration expertise encourages close cooperation with our key technology partners. Our close partner relationships mean we are often first to market and to deploy new technologies.

From mission-critical servers and complex wired and wireless networks to high-end storage and operating systems and much more, Logicalis maintains the highest certifications with industry-leading business partners to provide quality technology to serve all your business needs.

Logicalis + Cisco

Our trusted teams help you transform your business with flexible cloud, IoT, security, and collaboration solutions in your preferred consumption model.

Partnership

Of 67,000 Cisco Partners Worldwide and 850 Gold Partners...
Logicalis is 1 of 5 Global Gold Partners
#13 Globally Ranked
20+ Years of Partnership

20+ Awards

2019 Global IoT Industry Partner of the Year
2019 America's Security Partner of the Year
2019 America's SLED Solution Innovation Partner of the Year
National Cloud Reseller Partner of the Year
Meraki Elevate Partner of the Year

250+ Cisco Certifications

Demonstrating expertise across a wide variety of IT specialties

Sales and Technical Team

100+ Field and Inside Sales Executives
50+ Solution Architects

600+ Joint Customers

Better Together

Cisco + Ecosystem Partnerships enable digital innovations

Microsoft
AWS
NetApp
Veeam
Pure Storage
Intel

Logicalis + HPE

With Hewlett Packard Enterprise, we'll help you achieve your business goals with innovative technology solutions, no matter where your organization is in your digital transformation journey.

Partnership

National HPE Platinum
Platinum Aruba Partner
25+ Year Partnership
Top 10 HPE Partner
HPE Authorized Partner in 15 Countries

Awards and Achievements

HPE PartnerOne Enterprise Group Growth Reseller of the Year
HPE Storage Customer Excellence
HPE Solution Elite Partner

120+ Active Technical Solutions

6 Master Accredited Solution Architects
1 Quadruple Master Accredited Solution Architect

Sales and Technical Team

100+ Field and Inside Sales Executives
50+ Solution Architects

360+ Joint Customers

Education
Government
Healthcare
Manufacturing
Retail

HPE + Ecosystem

HPE + Ecosystem Partnerships enable digital innovations

Microsoft
Veeam
VMWare

Logicalis + IBM

Through our 25+ year partnership with IBM we're paving the way with trusted and proven methods for organizations to transform their business with Cognitive, Cloud-delivered, and Open Source Solutions.

Partnership

IBM Platinum Partner
Expert (IBM Power, TSS, Security Operations & Response)

Specialist (IBM Storage, Cloud & Cloud Automation, Spectrum Suite Solutions, Collaboration Solutions)

Awards and Achievements

North America IBM Edge Awards for System Storage and Power Systems
IBM Beacon Awards for Outstanding Competitive Solution, Outstanding IBM Storage Solution
IBM Business Partner Excellence Award
IBM Top Performer Leadership Award

65+ Active Technical Solutions

Technical expertise and competencies across a wide variety of IBM's solution portfolio

Sales and Technical Team

100+ Field and Inside Sales Executives
50+ Solution Architects

75+ Joint Customers

Education
Government
Healthcare
Manufacturing
Retail

Better Together

IBM+ Ecosystem Partnerships enable digital innovation

Microsoft
VMware
Logicalis Power Cloud
Veeam

Logicalis + NetApp

NetApp's complete data management portfolio of solutions aligned with Logicalis' Extensible IT services help customers strategically manage future innovation while tactically addressing the needs of their customers today.

Partnership

Star Partner Status
NetApp National Partner
CloudFirst Partner
HCI Acceleration Partner
FlexPod Specialization
OCI Approved Partner

Awards and Achievements

2019 Central Partner of the Year
2018 Central Area "Complete Portfolio" Partner of the Year
NetApp is Logicalis' #1 most profitable OEM in the 'storage' category

75 Active Technical Solutions

47 Sales certifications
9 PS certifications
14 Presales accreditations
5 HCI Incentive accreditations

Sales and Technical Team

60 Account Executives
9 IAEs
50+ Solution Architects

360+ Joint Customers

Education
Government
Healthcare
Manufacturing
Retail

Better Together

Cloud Investment Program
FlexPod Initiative
Healthcare Focus

Logicalis + AWS

Logicalis empowers your team to focus IT resources where they belong - on moving your business forward – while our AWS experts manage your cloud infrastructure and provide high levels of operational maturity.

Partnership

Standard Consulting Partner

Services

Consulting, Professional and Managed Services for AWS

Certifications

Certifications and specialties in 10 categories

Sales and Technical Team

100+ Field and Inside Sales Executives
50+ Solution Architects

Customers

Working with 100s of customers on Cloud Strategy + AWS

AWS + Extensible IT

Enable digital transformation with the Logicalis Extensible IT framework + AWS

Logicalis + Veeam

Veeam is the global leader in Intelligent Data Management for the Hyper-Available Enterprise, ensuring business continuity, reducing risk, and accelerating innovation for customers around the world. Together, we help businesses increase productivity, innovate faster and offer new digital services.

Partnership

Veeam Platinum Partner
Gold Veeam Cloud Service Provider
Top 7 US Partner
Strategic National Partner

Awards and Achievements

2018 Veeam Growth Partner of the Year
2017 Logicalis Ecosystem Partner of the Year
2016 Veeam Impact Partner of the Year

120+ Active Technical Solutions

92 sales certifications (VMSP)
23 technical certifications (VMTSP)
3 Veeam Certified Engineers (VMCE)

Sales and Technical Team

100+ Field and Inside Sales Executives
50+ Solution Architects

250+ Joint Customers

Education
Government
Healthcare
Manufacturing
Retail

Better Together

Alliances + Veeam enable the Hyper-Available Enterprise

Cisco
Microsoft
HPE
NetApp
Pure Storage
VMware

Logicalis + Microsoft

With the power and vast offerings of the Microsoft solutions portfolio – we help businesses build an intelligent cloud solution that's right for them, better leverage existing IT investments and optimize business productivity and efficiency.

Partnership Achievements

Microsoft Azure Expert MSP
Microsoft Gold Certified Partner
Microsoft Cloud Solution Provider
Gold Cloud Platform
Gold Datacenter
Gold Collaboration & Content
CSP Direct
Collab FastTrack Ready
Gold Messaging
Gold Enterprise Mobility

Solution Offerings

Collaboration Solutions
Messaging and Collaboration
Enterprise Mobility & Security
Teams
Virtual Desktop

Production Ready Cloud Solutions
Cloud Readiness Assessment
Cloud Security Assessment
PRCP Design & Deploy
Cloud Migration Services
Cloud Team Managed Service

Sales and Technical Team

100+ Field and Inside Sales Executives
50+ Solution Architects

Customer Segments

Education
Government
Healthcare
Manufacturing
Retail

Better Together

Partner alliances drive higher value across the Enterprise

Cisco
HPE
IBM
NetApp
Dell/VMware
Veeam
ServiceNow

Awards

Channel Partner Insight Magazine's MSP Innovation Best Project
Channel Futures MSP 501
NetApp Central Partner of the Year
Veeam Growth Partner of the Year, North America
CRN MSP 500 Elite 150

Logicalis + VMware

As a VMware National Principal Partner, we help organizations accelerate IT priorities in data center modernization, cloud integration, digital workspace, networking and security.

VMware Certifications

50+ technical certification in the US certified competencies across VMware's solutions portfolio to include master service competency

Managed Services

For private, public, and hybrid environments including VMware on AWS

Professional Services

Infrastructure Delivery
Software defined network, server and storage (SDDC)
Cloud Management

ELA Experts

Dedicated team to manage license deployment and compliance reporting to help customers realize actual software utilization

Sales and Technical Team

100+ Field and Inside Sales Executives
50+ Solution Architects

Better Together

HPE, IBM, NetApp

Logicalis + ServiceNow

Partnership

ServiceNow Premier Partner
Sales and Services
Partner Since 2012
ServiceNow Customer Since 2011

Customer Satisfaction Award

2017 Highest CSAT Globally

Sales and Technical Team

75+ Sales and Presales Accreditations
35 Technical Certifications

Customers

Manufacturing
Retail
GovEd
Healthcare
Finance
Services

Fortune 500 & Global 500 Customers

Better Together

Microsoft
Cisco
WorkDay
AWS
Salesforce
SAP

Implementation Services

Defined Methodology and Documents
Adhere to ServiceNow Framework
Over 300 Implementations Globally
Service Management Consulting

Public Sector Background

For over 20 years, Logicalis has been a leader in public sector sales and solutions. Our experienced government and education specialists know the issues you're facing, understand how your procurement process works, and can help guide you to the IT solution that best fits your needs and budget.

Through our GovEd practice, we offer technology evaluations, advice, solution sales and implementation as well as the professional services that tie it all together. In short, through the strategic use of technology, we help you deliver better services.

Public Sector Customers

A few of our public sector customers include the following. Case studies detailing the services provided to these customers are available at http://www.us.logicalis.com/.

- Central Catholic High School, Ohio
- Columbia County, Georgia
- Community College of Allegheny County, Pennsylvania
- Davenport University, Michigan
- Eaton County, Michigan
- Paradise Valley Unified School District, Arizona
- Sinclair Community College, Ohio
- Stark County Board of Developmental Disabilities, Ohio
- Trevecca Nazarene University, Tennessee
- Youngstown State University, Ohio

What our Customers Say

"Logicalis has not only provided an immediate solution to the wireless access challenges we were facing, but we have formed a long-term relationship that supports our educational mission." - *Chris Hamady, Director of Technology, Central Catholic High School*

"Logicalis exceeded my expectations throughout the whole range of the project from pre-sales to post-sales. It was a great relationship. We will definitely use Logicalis in anything we do going forward." - *Marcy Avelar, Communication Support Manager, Columbia County GA*

"I would recommend Cisco and Logicalis not only because you get the world-class equipment that Cisco provides, you're getting an amazing partnership with Logicalis during the implementation that provides a great experience for our students, future students, and our staff." - *Jason Ricci, Senior Network Architect, Community College of Allegheny County*

"We set the system up more than a year ago and haven't had to touch it once – no failed drives, no trouble tickets. It works flawlessly." - *Joe Bliss, Virtual Infrastructure Administrator, Davenport University*

"Partnering with Logicalis makes good business sense, even for organizations like ours that have a skilled internal IT team. We don't have the budget and bandwidth to help our IT staff to keep up with the latest innovations and best practices. That's why we turn to Logicalis." - *Dr. Robert J. Sobie, Director of Technology Services, Eaton County*

"Our students and teachers will enjoy an improved educational experience." - *Jeff Billings, Paradise Valley Unified School District*

"Logicalis has the skills and experience with technologies that we have not used before. They are a good partner." - *Scott McCollum, Sinclair Community College*

"We stay in touch quite regularly with our sales team at Logicalis. The SLED reps that they have are second to none. They come from engineering backgrounds which is a definite bonus for us because they understand how these products work – they're not just selling licenses and pieces, they're selling solutions." - *Brandon Haney, IT Manager, Stark County Board of Developmental Disabilities*

"They've always been very helpful in helping us find the right vendors, make recommendations, and help us understand the technical side of things." - *Dr. John Eberle, Chief Information Officer, Trevecca Nazarene University*

"This started as simply a dream and a grant. Now, we have not only expanded the university's reach through this program, but more importantly, we can offer education 365 days a year, 24 hours a day. We've particularly valued Logicalis' expertise in higher education, especially when it comes to identifying use cases and its strong partner relationships, as they helped guide us through from start-to-finish." - *Jim Yukech, Youngstown State University*

"Logicalis has been invaluable in supporting our Classroom of the Future initiative. These technically advanced teaching spaces eliminate physical walls and allow the educational experience to occur anywhere and at any time." - *Jim Tressel, Youngstown State University*

Tab 1 Cost

The following pages include the completed:

- Discount Schedule
- Market Basket Pricing
- Inspections and Testing
- Maintenance and Repairs
- Monitoring

RFP 21-07P Fire, Security and Communication System Solutions

PRODUCTS: Minimum Percent Discount Off Manufacturer's Price Lists

Company Name: ***Logicalis, Inc.***

Instructions: Firms are to complete this form by indicating the MINIMUM PERCENTAGE of discount to be offered under the contract to 1GPA members. This discount may increase depending on actual orders placed, however, the discount can not decrease after contract implementation. Minimum Discount Offered will be evaluated to assign cost points. If your firm does not supply the manufacturers listed below, please state "N/A" or "No Bid". If your firm supplies the manufacturer at no discount, please enter "0 %". Offerors may include additional manufacturers offered but not specifically listed below in the blanks provided beginning on line 1.96.

SECTION A: Indicate the minimum percentage of discount off vendor's catalog if applicable (list below)		
Line	**Catalog Title/Date**	**Minimum % Discount Off Catalog Price**
1.1	**N/A - See Below**	
1.2		
1.3		
1.4		

SECTION B: Indicate the Minimum Percentage Discount off of specific Manufacturers (list below):				
Line	**Manufacturer**	**Product Category**	**Minimum % Discount Off Manufacturer List Price**	**Link to Manufacturer Price List (may provide Manufacturer's Price List on a flash drive if link is unavailable)**
1.5	Ademco	Security	20%	Price list provided separately.
1.6	Aiphone	Intercom	40%	Price list provided separately.
1.7	Alerton	Fire Alarm and Suppression	N/A	
1.8	Allegion	Security	N/A	
1.9	Altronix	Security	15%	Price list provided separately.
1.10	Amerex	Fire Alarm and Suppression	N/A	
1.11	Ames	Fire Alarm and Suppression	N/A	
1.12	Ansul	Fire Alarm and Suppression	N/A	
1.13	Antaira	Closed Circuit TV and Video Surveillance	5%	Price list provided separately.
1.14	APC	Related Products	N/A	
1.15	Arecont	Closed Circuit TV and Video Surveillance	N/A	
1.16	Assa Alboy	Security	N/A	
1.17	Avigilon	Closed Circuit TV and Video Surveillance	N/A	
1.18	Axis	Closed Circuit TV and Video Surveillance	10%	Price list provided separately.
1.19	BEA Security	Security	N/A	

Company Name: ***Logicalis, Inc.***

Line	Manufacturer	Product Category	Minimum % Discount Off Manufacturer List Price	Price list provided separately.
1.20	Bogen	Intercom	40%	Price list provided separately.
1.21	Bogen	Related Products	40%	Price list provided separately.
1.22	Bolide	Closed Circuit TV and Video Surveillance	N/A	
1.23	Bosch	Closed Circuit TV and Video Surveillance	20%	Price list provided separately.
1.24	Bosch	Security	30%	Price list provided separately.
1.25	Brivo	Security	N/A	
1.26	Buckeye	Fire Alarm and Suppression	N/A	
1.27	Carehawk	Intercom	N/A	
1.28	Cisco	Related Products	40%	Price list provided separately.
1.29	Cobra	Security	N/A	
1.30	Command Access	Security	N/A	
1.31	Corbin Russwin	Security	N/A	
1.32	CyberLock	Security	N/A	
1.33	Ditek	Related Products	N/A	
1.34	Dortronics	Security	N/A	
1.35	DSC	Security	N/A	
1.36	DSX Access Control	Security	N/A	
1.37	EST	Fire Alarm and Suppression	N/A	
1.38	Exacq	Closed Circuit TV and Video Surveillance	N/A	
1.39	Fargo	Security	35%	Price list provided separately.
1.40	FEBCO	Fire Alarm and Suppression	N/A	
1.41	Fenwal	Fire Alarm and Suppression	N/A	
1.42	Ferguson	Fire Alarm and Suppression	N/A	
1.43	Fire Lite	Fire Alarm and Suppression	N/A	
1.44	Fire Lite	Intrusion	N/A	
1.45	First Alert	Fire Alarm and Suppression	N/A	

RFP 21-07P Fire, Security and Communication System Solutions

PRODUCTS: Minimum Percent Discount Off Manufacturer's Price Lists

Company Name: ***Logicalis, Inc.***

Line	Manufacturer	Product Category	Minimum % Discount Off Manufacturer List Price	Price list provided separately.
1.46	FLIR	Closed Circuit TV and Video Surveillance	5%	Price list provided separately.
1.47	Gallagher Security	Security	N/A	
1.48	General Cable	Related Products	45%	Price list provided separately.
1.49	Genetec	Closed Circuit TV and Video Surveillance	20%	Price list provided separately.
1.50	HES	Security	25%	Price list provided separately.
1.51	HID	Security	50%	Price list provided separately.
1.52	Hikvision Inc.	Closed Circuit TV and Video Surveillance	15%	Price list provided separately.
1.53	Honeywell	Fire Alarm and Suppression	N/A	
1.54	Hubbell	Closed Circuit TV and Video Surveillance	21%	Price list provided separately.
1.55	Innovonics	Security	N/A	
1.56	Interstate Batteries	Related Products	N/A	
1.57	Kantech	Security	N/A	
1.58	Keyscan Inc.	Security	30%	Price list provided separately.
1.59	Kidde	Fire Alarm and Suppression	N/A	
1.60	Lenel	Security	N/A	
1.61	Linear	Security	N/A	
1.62	Lowell	Intercom	40%	Price list provided separately.
1.63	Moose	Security	N/A	
1.64	Notifier	Fire Alarm and Suppression	N/A	
1.65	Notifier	Security	N/A	
1.66	NuOptic	Closed Circuit TV and Video Surveillance	15%	Price list provided separately.
1.67	Optex	Security	N/A	
1.68	Panasonic	Closed Circuit TV and Video Surveillance	25%	Price list provided separately.
1.69	Panduit	Related Products	6%	Price list provided separately.
1.70	Pelco	Closed Circuit TV and Video Surveillance	N/A	
1.71	Potter	Fire Alarm and Suppression	N/A	

Company Name: ***Logicalis, Inc.***

Line	Manufacturer	Product Category	Minimum % Discount Off Manufacturer List Price	Price list provided separately.
1.72	Quam Nichols Company	Intercom	N/A	
1.73	Radionics	Security	N/A	
1.74	RCI	Security	47%	Price list provided separately.
1.75	SDC	Security	15%	Price list provided separately.
1.76	Securitron	Security	12%	Price list provided separately.
1.77	Sentrol	Security	N/A	
1.78	Siemens	Fire Alarm	N/A	
1.79	Silent Knight	Security	N/A	
1.80	Simplex	Security	N/A	
1.81	Software House	Security	N/A	
1.82	Sony	Security	15%	Price list provided separately.
1.83	Spotter RF	Security	N/A	
1.84	STI	Security	N/A	
1.85	Three Sixty	Intercom	N/A	
1.86	UTC Fire and Security	Fire Alarm and Suppression	N/A	
1.87	UTC Fire and Security	Security	N/A	
1.88	Viking	Fire Alarm and Suppression	N/A	
1.89	Viking	Intercom	N/A	
1.90	Visonic	Security	N/A	
1.91	WATTS	Fire Alarm and Suppression	N/A	
1.92	West Penn Wire	Related Products	11%	Price list provided separately.
1.93	Wilkens	Fire Alarm and Suppression	N/A	
1.94	Windy City Wire	Related Products	20%	Price list provided separately.
1.95	Winstead	Related Products	N/A	
1.96	Advanced Network Devices (AND)	*ICOM,RP	18%	Price list provided separately.
1.97	AFL TELECOMMUNICATIONS	*SEC	21%	Price list provided separately.

Company Name: ***Logicalis, Inc.***

Line	Manufacturer	Product Category	Minimum % Discount Off Manufacturer List Price	Price list provided separately.
1.98	AKG	*SEC	15%	Price list provided separately.
1.99	Allen Tel	*SEC, CCTV/VS,RP,IS	25%	Price list provided separately.
1.100	ALLEN TEL PATCH	*SEC,RP,CCTV/VS,INTR,ICS	64%	Price list provided separately.
1.101	AMSECO/POTTER	*SEC	20%	Price list provided separately.
1.102	AMX	*SEC,CCTV/VS,ICS,IS	25%	Price list provided separately.
1.103	APC HARDWARE	*SEC,CCTV/VS,INTR,ICS	12%	Price list provided separately.
1.104	APC MAINT	*SEC,CCTV/VS,INTR,ICS	3%	Price list provided separately.
1.105	ARLINGTON INDUSTRIES	*SEC	0%	Price list provided separately.
1.106	ARNCO	*SEC	10%	Price list provided separately.
1.107	ASTATIC	*SEC	25%	Price list provided separately.
1.108	ATLAS SOUND	*AC,ICS	20%	Price list provided separately.
1.109	AVER	*SEC	5%	Price list provided separately.
1.110	BARRACUDA	*AC,CCTV/VS,IS	10%	Price list provided separately.
1.111	Belden	*SEC, CCTV/VS,RP,IS	25%	Price list provided separately.
1.112	BERK-TEK	*SEC, CCTV/VS,RP,IS	25%	Price list provided separately.
1.113	BERK-TEK	*SEC,LV	55%	Price list provided separately.
1.114	BLFCORP PATCH	*RP	30%	Price list provided separately.
1.115	BLONDER TONGUE	*ICOM	10%	Price list provided separately.
1.116	BLOXX	*SEC,INTR,VS	20%	Price list provided separately.
1.117	BSS	*SEC,ICS	10%	Price list provided separately.
1.118	CABLOFIL	*SEC,LV	11%	Price list provided separately.
1.119	CARLON	*SEC,LV	25%	Price list provided separately.
1.120	CHATSWORTH (CPI)	*SEC,LV	19%	Price list provided separately.
1.121	CHIEF	*SEC,RP,ICS	20%	Price list provided separately.
1.122	CIRCA	*SEC	21%	Price list provided separately.
1.123	CISCO LEARNING CREDITS	*SEC,INTR,ICS,VS	0%	Price list provided separately.
1.124	CISCO UCS	*SEC,INTR,ICS,VS	53%	Price list provided separately.

Company Name: ***Logicalis, Inc.***

1.125	CISCO UCS-BUNDLE	*SEC,INTR,ICS,VS	5%	Price list provided separately.
1.126	CISCO UCS-BUNDLE 1	*SEC,INTR,ICS,VS	40%	Price list provided separately.
1.127	CISCO UCS-BUNDLE 2	*SEC,INTR,ICS,VS	4%	Price list provided separately.
1.128	COMMSCOPE	*SEC,LV	21%	Price list provided separately.
1.129	COMMSCOPE-AMP NETCONNECT GPON	*RP	1%	Price list provided separately.
1.130	COMMVAULT	*SEC,LV	5%	Price list provided separately.
1.131	COOPER B-LINE SYSTEMS	*SEC,LV	1%	Price list provided separately.
1.132	CORNING GILBERT	*SEC,LV	1%	Price list provided separately.
1.133	CRESTRON	*SEC,ISC	30%	Price list provided separately.
1.134	CROWN	*SEC,ISC	22%	Price list provided separately.
1.135	D&M PRO	*SEC,ISC	18%	Price list provided separately.
1.136	DBX	*SEC,ISC	20%	Price list provided separately.
1.137	DELL	*SEC,VS	5%	Price list provided separately.
1.138	DELL MAINT	*SEC,VS	0%	Price list provided separately.
1.139	DELL SERVERS	*SEC,VS	5%	Price list provided separately.
1.140	DIGITAL SECURITY CONTROLS	*SEC,VS	30%	Price list provided separately.
1.141	DOORKING	*SEC,VS	20%	Price list provided separately.
1.142	DRAPER	*SEC	20%	Price list provided separately.
1.143	EASTERN WIRE & CABLE	*SEC, LV	11%	Price list provided separately.
1.144	EDU-CISCOBASE	*SEC,INTR,ICS,VS	20%	Price list provided separately.
1.145	EDU-SMARTNET	*SEC,INTR,ICS,VS	20%	Price list provided separately.
1.146	EMC	*SEC,VS	20%	Price list provided separately.
1.147	EMC MAINT	*SEC,VS	20%	Price list provided separately.
1.148	EPSON	*SEC, LV	30%	Price list provided separately.
1.149	ERICO-CADDY	*SEC, LV	20%	Price list provided separately.
1.150	EXTREME	*SEC,CCTV/VS,ICS	40%	Price list provided separately.
1.151	EXTREME - HARDWARE MAINT	*SEC,CCTV/VS,ICS	0%	Price list provided separately.
1.152	EXTREME - SERVICES	*SEC,CCTV/VS,ICS	0%	Price list provided separately.
1.153	EXTREME - SOFTWARE MAINT	*SEC,CCTV/VS,ICS	0%	Price list provided separately.
1.154	EXTRON	*SEC,ICS	25%	Price list provided separately.
1.155	F5	*SEC,CCTV/VS,IS	20%	Price list provided separately.

Company Name: ***Logicalis, Inc.***

1.156	F5 MAINT	*SEC,CCTV/VS,IS	2%	Price list provided separately.
1.157	F5 SERVICES	*SEC,CCTV/VS,IS	0%	Price list provided separately.
1.158	FUSION-IO	*CCTV/VS	5%	Price list provided separately.
1.159	GOV-SMARTNET	*SEC,INTR,ICS,VS	5%	Price list provided separately.
1.160	GREENLEE	*SEC,LV	21%	Price list provided separately.
1.161	HD	*SEC,LV	10%	Price list provided separately.
1.162	HITACHI	*SEC,CCTV/VS,LV	26%	Price list provided separately.
1.163	Hoffman	*CCTV/VS,RP,INTR,ICS	15%	Price list provided separately.
1.164	Honeywell	*SEC	20%	Price list provided separately.
1.165	HP	*SEC,CCTV/VS,ICS	0%	Price list provided separately.
1.166	HP MAINT	*SEC,CCTV/VS,ICS	25%	Price list provided separately.
1.167	HP PROCURVE	*SEC,CCTV/VS,ICS	25%	Price list provided separately.
1.168	HP PROCURVE MAINT	*SEC,CCTV/VS,ICS	0%	Price list provided separately.
1.169	IC Realtime	*CCTV/VS	20%	Price list provided separately.
1.170	IDEAL	*SEC	10%	Price list provided separately.
1.171	INFOCUS	*SEC,ICS	15%	Price list provided separately.
1.172	INFOCUS Services	*SEC,ICS	2%	Price list provided separately.
1.173	iOmniscient	*SEC	25%	Price list provided separately.
1.174	IRONPORT	*SEC,CCTV/VS,IS	40%	Price list provided separately.
1.175	JBL	*SEC,ICS	15%	Price list provided separately.
1.176	Juice Goose	*SEC	15%	Price list provided separately.
1.177	KBC	*CCTV/VS	20%	Price list provided separately.
1.178	KEMP TECHNOLOGIES	*SEC,CCTV/VS,IS	3%	Price list provided separately.
1.179	Lenovo	*SEC,LV	10%	Price list provided separately.
1.180	LEVITON	*SEC,LV	55%	Price list provided separately.
1.181	LEXICON	*SEC	25%	Price list provided separately.
1.182	LG ELECTRONICS	*SEC,ICS	20%	Price list provided separately.
1.183	Lift	*CCTV/VS,RP,INTR,ICS	0%	Price list provided separately.
1.184	Logicalis	*CCTV/VS,RP,INTR,ICS	25%	Price list provided separately.
1.185	LOGITECH	*SEC,ICS	0%	Price list provided separately.
1.186	MAXCELL	*SEC,LV	0%	Price list provided separately.

Company Name: ***Logicalis, Inc.***

1.187	MERAKI HARDWARE	*SEC,VS	25%	Price list provided separately.
1.188	MERAKI LICENSING	*SEC,VS	15%	Price list provided separately.
1.189	MICROSOFT	*SEC,VS	2%	Price list provided separately.
1.190	MID ATLANTIC	*SEC,LV	0%	Price list provided separately.
1.191	Milestone	*CCTV/VS	15%	Price list provided separately.
1.192	Milestone Care	*CCTV/VS	0%	Price list provided separately.
1.193	Milestone Education	*CCTV/VS	20%	Price list provided separately.
1.194	MOHAWK	*AV,LV	21%	Price list provided separately.
1.195	NEC	*SEC, ICS	3%	Price list provided separately.
1.196	NETAPP	*SEC,VS	12%	Price list provided separately.
1.197	NETAPP ACC	*SEC,VS	0%	Price list provided separately.
1.198	NETAPP MAINT	*SEC,VS	0%	Price list provided separately.
1.199	Nimble	*SEC,VS	9%	Price list provided separately.
1.200	Nimble Maint	*SEC,VS	0%	Price list provided separately.
1.201	NUTANIX	*SEC,VS	30%	Price list provided separately.
1.202	NUTANIX CONSULTING	*SEC,VS	10%	Price list provided separately.
1.203	NUTANIX SUPPORT	*SEC,VS	16%	Price list provided separately.
1.204	ORTRONICS	*RP	21%	Price list provided separately.
1.205	OWI	*SEC	38%	Price list provided separately.
1.206	Peerless	*CCTV/VS	30%	Price list provided separately.
1.207	PIVOT 3 HARDWARE	*SEC,INTR,ICS,VS	8%	Price list provided separately.
1.208	PIVOT 3 SERVICE SUPPORT	*SEC,INTR,ICS,VS	2%	Price list provided separately.
1.209	PowerDsine	*SEC,VS	15%	Price list provided separately.
1.210	QUANTUM	*SEC	15%	Price list provided separately.
1.211	RAZBERI	*SEC	0%	Price list provided separately.
1.212	RHOMBUS SYSTEMS	*CCTV/VS	5%	Price list provided separately.
1.213	RS2	*SEC	25%	Price list provided separately.
1.214	RSA SECURITY	*SEC, IS	10%	Price list provided separately.
1.215	RSA SECURITY MAINT	*SEC, IS	0%	Price list provided separately.
1.216	RUCKUS HARDWARE	*SEC,VS	35%	Price list provided separately.
1.217	RUCKUS LICENSE	*SEC,VS	35%	Price list provided separately.

Company Name: ***Logicalis, Inc.***

1.218	RUCKUS MAINTENANCE	*SEC,VS	10%	Price list provided separately.
1.219	RUCKUS WIRELESS	*SEC,VS	10%	Price list provided separately.
1.220	SAMSUNG	*SEC,CCTV/VS,ICS	14%	Price list provided separately.
1.221	SCHOOLVIEW	*SEC,CCTV/VS,ICS	2%	Price list provided separately.
1.222	SECO-LARM	*SEC	10%	Price list provided separately.
1.223	SEMTRON (VIA TE CONNECTIVITY)	*SEC,CCTV/VS,ICS	6%	Price list provided separately.
1.224	SHARP	*SEC	27%	Price list provided separately.
1.225	SHURE	*SEC	15%	Price list provided separately.
1.226	SINGLEWIRE INFORMACAST LICENSES AND REMOTE PHONE CONTROL LICENSES	*SEC, ICS	38%	Price list provided separately.
1.227	SINGLEWIRE INFORMACAST MOBILITY	*SEC, ICS	5%	Price list provided separately.
1.228	SINGLEWIRE INFORMACAST PLUG-IN, LEGACY, PAGING HARDWARE/SOFTWARE, DIRECTOR, PUSH TO TALK PRODUCTS	*SEC, ICS	38%	Price list provided separately.
1.229	SINGLEWIRE INFORMACAST SUBSCRIPTION	*SEC, ICS	10%	Price list provided separately.
1.230	SINGLEWIRE MAINT 1YEAR	*SEC, ICS	0%	Price list provided separately.
1.231	SINGLEWIRE MAINT 2YEAR	*SEC, ICS	5%	Price list provided separately.
1.232	SINGLEWIRE MAINT 3YEAR	*SEC, ICS	10%	Price list provided separately.
1.233	SINGLEWIRE MAINT 4YEAR	*SEC, ICS	11%	Price list provided separately.
1.234	SINGLEWIRE MAINT 5YEAR	*SEC, ICS	12%	Price list provided separately.
1.235	SINGLEWIRE PAGING REPLACEMENT & PROFESSIONAL SERVICES	*SEC, ICS	0%	Price list provided separately.
1.236	SOLARWINDS	*SEC, ICS	0%	Price list provided separately.
1.237	SOLARWINDS MAINT	*SEC, ICS	0%	Price list provided separately.
1.238	SOTER TECHNOLOGIES	*SEC, ICS	0%	Price list provided separately.
1.239	SOUNDCRAFT	*SEC	20%	Price list provided separately.
1.240	SPECIFIED TECHNOLOGIES INC (STI)	*SEC	6%	Price list provided separately.
1.241	SPECTRUM	*SEC, ICS	30%	Price list provided separately.
1.242	SUPERIOR ESSEX	*SEC,LV	21%	Price list provided separately.
1.243	SYMANTEC	*SEC,IS	0%	Price list provided separately.
1.244	SYN-APPS	*SEC, ICS	5%	Price list provided separately.

Company Name: ***Logicalis, Inc.***

1.245	SYN-APPS MAINT	*SEC, ICS	0%	Price list provided separately.
1.246	SYSTIMAX	*RP	16%	Price list provided separately.
1.247	TERRAWAVE	*SEC,VS	15%	Price list provided separately.
1.248	THE SIEMON COMPANY	*RP	11%	Price list provided separately.
1.249	THOMAS-BETTS	*RP	11%	Price list provided separately.
1.250	TREND MICRO	*INTR	10%	Price list provided separately.
1.251	TRENDNET	*INTR	20%	Price list provided separately.
1.252	TRIPPLITE	*CCTV/VS	16%	Price list provided separately.
1.253	UBIQUITI NETWORKS	*CCTV/VS	50%	Price list provided separately.
1.254	UNIPRISE	*CCTV/VS	6%	Price list provided separately.
1.255	VADDIO	*ICOM	23%	Price list provided separately.
1.256	VADDIO 2	*ICOM	17%	Price list provided separately.
1.257	VADDIO 3	*ICOM	9%	Price list provided separately.
1.258	VADDIO/CANON	*ICOM	23%	Price list provided separately.
1.259	VADDIO/PANASONIC	*ICOM	23%	Price list provided separately.
1.260	VBRICK	*ICOM	20%	Price list provided separately.
1.261	VBRICK SERVICES	*ICOM	10%	Price list provided separately.
1.262	VEEAM	*CCTV/VS	0%	Price list provided separately.
1.263	VELCRO USA	*SEC,LV	21%	Price list provided separately.
1.264	VERKADA	*CCTV/VS	25%	Price list provided separately.
1.265	Videolarm	*CCTV/VS	25%	Price list provided separately.
1.266	VISIX	*SEC,ICS	9%	Price list provided separately.
1.267	VISIX SERVICES	*SEC,ICS	7%	Price list provided separately.
1.268	VIZIO-HOME AV	*SEC,VS	0%	Price list provided separately.
1.269	VMWARE	*SEC,VS	27%	Price list provided separately.
1.270	VMWARE MAINT	*SEC,VS	0%	Price list provided separately.
1.271	VMWARE-EDU	*SEC,VS	10%	Price list provided separately.
1.272	VON DUPRIN	*SEC	10%	Price list provided separately.
1.273	WIREMOLD	*SEC,LV	19%	Price list provided separately.
1.274	Zebra Card	*SEC	15%	Price list provided separately.
1.275	ZEBRA TECHNOLOGIES MAINT	*SEC	0%	Price list provided separately.

PRODUCTS: Minimum Percent Discount Off Manufacturer's Price Lists

Company Name: ***Logicalis, Inc.***

1.276	ZHONE 5	*SEC,LV	5%	Price list provided separately.
1.277	ZHONE 10	*SEC,LV	10%	Price list provided separately.
1.278	ZHONE 20	*SEC,LV	20%	Price list provided separately.
1.279	ZHONE 30	*SEC,LV	30%	Price list provided separately.
1.280	ZHONE 40	*SEC,LV	40%	Price list provided separately.
1.281	ZHONE 50	*SEC,LV	50%	Price list provided separately.
1.282	ZHONE 60	*SEC,LV	60%	Price list provided separately.
1.283	ZHONE SVC & MAINT	*SEC	2%	Price list provided separately.
	*CCTV/VS = Closed Circuit TV and Video Surveillance			
	*FA = Fire Alarm			
	*FAS = Fire Alarm and Suppression			
	*ICOM = Intercom			
	*INTR = Intrusion			
	*RP = Related Products			
	*SEC = Security			

SECTION C: Provide a shipping rate schedule for products purchases. If left blank, 1GPA will assume your firm offers free shipping.

Shipping fees are inclusive of the product or service price when quoted unless expedited shipping is requested. Expedited shipping fees are based on weight of the product and the zip code that we are shipping to. These fees are a pass-through to the client.

Market Basket Pricing

Company Name: Logicalis, Inc.

Instructions: For evaluation purposes, firms shall provide pricing for the following items. Pricing shall show the material cost AFTER the minimum discount is applied. The items listed are common items purchased by school districts/public agencies however, actual items purchased under this contract are not limited to these items. Brand name/product numbers listed are for the purpose of describing and/or establishing the quality, design and performance required. Any such reference is not intended to limit or restrict competition. Any items proposed of similar quality, design or performance will be evaluated.

FIRE ALARMS AND SUPPRESSION SYSTEMS

Line	*Mfr/Product #*	*Description*	*Alternative Mfr/Product #*	*Unit of Measure*	*List Price*	*Minimum Discount Percentage*	*Final Price*
2.1	Firelite MS-2	Fire Alarm Control Panel, 2 Zone, Class B, 24VDC, One Class B NAC	N/A	N/A	N/A	N/A	N/A
2.2	Firelite MRP2001E	Pre-Action Deluge Control Panel, 220V	N/A	N/A	N/A	N/A	N/A
2.3	Alerton Compass 1-LG	Ascent Compass 1 Software Large license supporting up to 450 devices.	N/A	N/A	N/A	N/A	N/A
2.4	Alerton MS4-TH	Microset 4 with temperature and humidity sensors	N/A	N/A	N/A	N/A	N/A
2.5	Honeywell H20-600400-R-D-KIT-NS	Class 200 Meter, 600V, 400A, NEMA 4X Enclosure, Pulse Output, Demand, No 2V Output Current Sensors Included	N/A	N/A	N/A	N/A	N/A
2.6	EST 100SBC-N5	Rotating beacon with powerful dual sealed beam lamps that rotate 360 degrees within a high impact polycarbonate dome.	N/A	N/A	N/A	N/A	N/A
2.7	EST 10781	Air horn control valve - 1/2 in. manual	N/A	N/A	N/A	N/A	N/A
2.8	EST 12V50A	50Ah Sealed Lead Acid Battery - 12 Vdc. 11.8 inch x 5.0 inchw x 7.5 inchh x 7.9 inchot	N/A	N/A	N/A	N/A	N/A
2.9	Watts 10-507301	Backflow: 1/2" 009 QT LF Assembly	N/A	N/A	N/A	N/A	N/A
2.10	Watts 10-501325	Backflow: 40-200 3/4-1" Major Repair Kit	N/A	N/A	N/A	N/A	N/A
2.11	Grainger #3ATP4	Double Jacket Reel Fire Hose, 2-1/2" Pin Coupling Lug Style, 250 psi max, Brass Fittings, 50'	N/A	N/A	N/A	N/A	N/A
2.12	Potter PTAMPERKIT	VSR Flow Switch Kit	N/A	N/A	N/A	N/A	N/A
2.13	Potter RTSC	RTS Series Room Temperature Switch	N/A	N/A	N/A	N/A	N/A
2.14	Kidde PRO5MP	5# ABC Dry Chemical with tag	N/A	N/A	N/A	N/A	N/A
2.15	Amerex B456	10# ABC Dry Chemical with tag	N/A	N/A	N/A	N/A	N/A

Market Basket Pricing

Company Name: Logicalis, Inc.

Line	Mfr/Product #	Description	Alternative Mfr/Product #	Unit of Measure	List Price	Minimum Discount Percentage	Final Price
2.16	Buckeye 12350	20# ABC Dry Chemical with tag	N/A	N/A	N/A	N/A	N/A
2.17	Ansul K-Guard	6 Liter Class K Fire Extinguisher with tag	N/A	N/A	N/A	N/A	N/A

CLOSED CIRCUIT TELEVISION AND VIDEO SURVEILLANCE SYSTEMS

line	Mfr/Product #	Description	Alternative Mfr/Product #	Unit of Measure	List Price	Minimum Discount Percentage	Unit Price
2.18	Avigilon 48C-ACC6-ENT	ACC 6 Enterprise License for up to 48 Camera Channels	MIL-XPETDL	48	$ 12,912.00	15%	$ 10,975.20
2.19	Avigilon HD-RMWS4-4MN-AU	Professional Remote Monitoring Workstation for Viewing on up to Four Monitors, AU Power Cord	Axis / 01617-001	1	$ 3,299.00	10%	$ 2,969.10
2.20	Axis Canon Network Camera VB-M740E 0313C001	Outdoor Fixed Box Network Camera. 2.4x Optical Zoom, Day/Night Switching. Multiple H.264 and Motion JPEG Streams; Area-specific Data Size Reduction Technology. 6 In-built Video Intelligent Analytic Functions. SD/SDHC/SDHX Card Slot for Edge Storage.	Panasonic / WV-S1511LN	1	$776.00	25%	$ 582.00
2.21	Axis P3905-RE 0662-001	Fixed Dome Mobile Surveillance Camera for Outdoors use on Buses, Trams, Trucks and Emergency Vehicles. Fixed 6 mm Lens Providing 55° Horizontal FOV. Flat, Discreet and Tamper-Resistant Casing. Video Motion Detection and Active Tampering Alarm. MicroSD card Slot for Edge Storage Support. Includes Lens Tool and Top Cover Tool.	Panasonic / WV-S3531L	1	$458.94	25%	$ 344.21
2.22	Bosch DIP-7180-00N	Divar IP 7000 Video Management Appliance, 2U Rackmount (8-Bay), Includes BVMS Server/Client/VRM/VSG, 4 Mini DP Monitor Output, INCL 32 Channels (Expandable to 128 Channels), 5 WKSTN, 5 Forensic Search, 1 KBD I/F, 1 DVR I/F, 1 MVS I/F and Built-in Dynamic Transcoder; Windows Storage Server 2012 R2		1	$ 8,949.00	20%	$ 7,159.20

Market Basket Pricing

Company Name: Logicalis, Inc.

SECURITY SYSTEMS

Line	Mfr/Product #	Description	Alternative Mfr/Product #	Unit of Measure			Unit Price
2.23	Cobra Controls CC3800 EM	Digital Keypad and Proximity Reader, Weatherproof, Indoor/Outdoor	HID / 5355AGK00	*1*	*$ 571.22*	*50%*	*$ 399.85*
2.24	RCI 932-10UCP	Unencoded Card Token, 10 Pack		*1*	*$ 81.00*	*47%*	*$ 52.65*
2.25	Bosch B9512G	Intursion/Fire/Access Control Panel 599 Points 32 Doors	Keyscan / CA8500	1	$ 5,276.53	47%	$ 3,693.57
2.26	Bosch D1255B	Alpah Numeric Command Center with Vacujm Flourescent Display	Ademco / 6160	1	$ 160.00	20%	$ 128.00
2.27	Bosch RFGB-A	Glass Break Detector		1	$ 149.00	30%	$ 104.30
2.28	Lenel PCC-HPC-ADVI	OnGuard ADVI High Performance Client System with PC – Includes PC with Microsoft Windows Client OS (see PC Config) and Loaded with OnGuard Client software License which Includes; System Administration; Alarm Monitoring; Map Designer; Login Driver; ID Credential Center Application; Badge Designer Application; Image Capture; ID Printing; Cardholder Image Export and Enhanced Imaging Option (Chromakey and Ghosting. (Includes PC-CONFIG#7 Platform)	HP Z2 G4 Tower Workstation	1	$ 1,532.45	0%	$ 1,532.45

INTERCOM SYSTEMS

Line	Mfr/Product #	Description	Alternative Mfr/Product #	Unit of Measure	List Price	Minimum Discount	Unit Price
2.29	Aiphone AX-8MV	Audio/Video Master with Buttons for Up to 8 Masters and 8 Doors/Subs		1	$ 1,264.00	40%	$ 758.40
2.30	Aiphone 871802P10C	2 Conductor, 18AWG, Soid, FEP Insulated, Plenum Wire, 1000'		1	$ 1,018.00	40%	$ 610.80
2.31	Aiphone AX-DV-P	Video Door Stateion with HID Proxpoint Plus Reader, Surface Mount		1	$ 842.00	40%	$ 505.20
2.32	Aiphone DA-1MD	Audio Handset, DA Series		1	$ 102.00	40%	$ 61.20

Market Basket Pricing

Company Name: Logicalis, Inc.

Line	Mfr/Product #	Description	Alternative Mfr/Product #	Unit of Measure	List Price	Minimum Discount Percentage	Unit Price
2.33	Bogen TPU250	Amplifier 250 WATT	Lowell/MA250	1	$ 1,268.64	40%	$ 761.18
2.34	Bogen CSD2X2VR	Speaker, Ceiling 2X2 W/VR		1	$ 153.03	40%	$ 91.82
2.35	Carehawk 9A1875B	Remote Intercom Amplifier	Bogen/MCACC	1	$ 896.43	40%	$ 537.86
2.36	Lowell JR410	Speaker-4in Cone, 10oz Magnet, 15W, 8 ohm		1	$ 26.30	40%	$ 15.78
2.37	Three Sixty A1701-3	Multicast Software Package	Advanced Network Devices/ClockWise Campus	1	Free	18%	Free

RFP 21-07P Fire, Security and Communication System Solutions

Inspections and Testing Rates

Company Name: Logicalis, Inc.

Instructions: Offerors shall provide pricing for the following services. Pricing submitted should be in accordance with the specifications, current Federal, State, and Municipal codes, rules, regulations, ordinances and industry standards. No additional trip charges or service fees allowed unless clearly indicated below.

FIRE SPRINKLER SYSTEM INSPECTION (per NFPA 25) - includes inspection, testing and routine maintenance				
line	**Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.1	Fire sprinkler inspection	Per Riser	N/A	N/A
COMMERCIAL KITCHEN EXHAUST HOOD SYSTEM INSPECTION (per NFPA 13, 17, 17A and 96) - includes inspection, testing and routine maintenance				
line	**Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.2	Kitchen hood inspection	Per System	N/A	N/A
AFFF FOAM SYSTEM INSPECTION (per NFPA 16 and 25) - includes inspection, testing and routine maintenance				
3.3	**Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.4	AFFF foam / water sprinkler inspection	Per System	N/A	N/A
INTERNAL VALVE / OBSTRUCTION INVESTIGATION INSPECTION (per NFPA 25) - includes internal inspection, testing and routine maintenance				
line	**Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.5	Internal valve/ obstruction investigation inspection	Per System	N/A	N/A
3.6	MIC Testing	N/A	N/A	N/A

Inspections and Testing Rates

Company Name: Logicalis, Inc.

PORTABLE FIRE EXTINGUISHER INSPECTION (per NFPA 10)- includes inspections, testing, routine maintenance, worn part replacement (valve stems, pull pin, O-rings, etc.), new tamper seal and tagging				
line	**Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.7	Portable fire extinguisher inspection - 5-6#	Per Extinguisher	N/A	N/A
3.8	Portable fire extinguisher inspection - 10#	Per Extinguisher	N/A	N/A
3.9	Portable fire extinguisher inspection - 20#	Per Extinguisher	N/A	N/A
3.9	Service fee for under minimum number of units (if applicable)	Per Site	N/A	N/A
3.10	Minimum number of extinguishers inspected per site to waive Service Fee (if applicable).	N/A		
PORTABLE FIRE EXTINGUISHER 6-YEAR MAINTENANCE (per NFPA 10)- includes complete tear down and rebuild with OEM parts as required by the manufacturer, recharge				
line	**Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.11	6-year maintenance - 5-6# - includes dry chemical	Per Extinguisher	N/A	N/A
3.12	6-year maintenance - 10# - includes dry chemical	Per Extinguisher	N/A	N/A

Inspections and Testing Rates

Company Name: Logicalis, Inc.

line	Description	Unit	Price	Exclusions, Exceptions, Notes
3.13	6-year maintenance - 20# - includes dry chemical	Per Extinguisher	N/A	N/A
3.14	6 Liter Class K 5 year recharge (includes 6 liters of new chemical)	Per Extinguisher	N/A	N/A
PORTABLE FIRE EXTINGUISHER HYDROSTATIC TEST (per NFPA 10) - includes hydrostatic test, complete tear down and rebuild with OEM parts as required by the manufacturer, recharge				
line	**Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.15	Hydrostatic test - 5-6# - includes dry chemical	Per Extinguisher	N/A	N/A
3.16	Hydrostatic test - 10# - includes dry chemical	Per Extinguisher	N/A	N/A
3.17	Hydrostatic test per - 20# - includes dry chemical	Per Extinguisher	N/A	N/A
3.18	6 Liter Class K 5 hydrostatic test (includes 5 year maintenance/recharge)	Per Extinguisher	N/A	N/A
PORTABLE FIRE EXTINGUISHER OTHER				
3.19	5#, 6# ABC/BC Dry Chemical Recharge	Per Extinguisher	N/A	N/A

RFP 21-07P Fire, Security and Communication System Solutions

Inspections and Testing Rates

Company Name: Logicalis, Inc.

line	Description	Unit	Price	Exclusions, Exceptions, Notes
3.20	10# ABC/BC Dry Chemical Recharge	Per Extinguisher	N/A	N/A
3.21	20# ABC/BC Dry Chemical Recharge	Per Extinguisher	N/A	N/A
3.22	5.5# CO2 Recharge	Per Extinguisher	N/A	N/A
3.23	10# CO2 Recharge	Per Extinguisher	N/A	N/A
3.24	15# CO2 Recharge	Per Extinguisher	N/A	N/A
3.25	Pressure Water -- Recharge	Per Extinguisher	N/A	N/A
3.26	Foam Recharge	Per Extinguisher	N/A	N/A

Inspections and Testing Rates

Company Name: Logicalis, Inc.

3.27	Class D -- Recharge	Per Extinguisher	N/A	N/A
line	**Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.28	Class K -- Recharge	Per Extinguisher	N/A	N/A
VOLUME DISCOUNTS - provide volume discounts available (percentage in addition to discount listed in TAB 1) for new/replacement extinguishers (add lines as needed)				
line	**Description/Manufacturer**	**Number of Extinguishers to Apply Volume Discount Percentage**	**Discount Percentage (In addition to discount listed in TAB 1)**	**Exclusions, Exceptions, Notes**
3.29	N/A	N/A	N/A	N/A
3.30	N/A	N/A	N/A	N/A
3.31	N/A	N/A	N/A	N/A
FIRE PUMP TESTING (per NFPA 20) - includes inspection, testing and routine maintenance				
line	**Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.32	Fire pump inspection	Per System	N/A	N/A

Inspections and Testing Rates

Company Name: Logicalis, Inc.

ROLLING STEEL FIRE DOOR INSPECTION - (per NFPA 80) - includes inspection, drop test and routine maintenance				
line	**Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.33	Rolling steel fire door inspection	Per System	N/A	N/A
FIRE HOSES (per NFPA 1962) - inlcudes inspection, testing and routine maintenance including hose cabinet				
line	**Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.34	Fire hose inpsection	Per System	N/A	N/A
FIRE HYDRANT TEST AND INSPECTION (per NFPA 25 and 291) - includes inspection, testing and routine maintenance, pressure regulator and hoses				
line	**Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.35	Fire hydrant inspection	Per Hydrant	N/A	N/A
BACKFLOW FIRE SUPPRESSION TEST AND INSPECTION (per NFPA 25 and AWWA Standards)- includes inspection, testing and routine maintenance				
line	**Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.36	Backflow, fire suppression, 1/2" - 1-1/2"	Per System	N/A	N/A
3.37	Backflow, fire suppression, 2" - 4"	Per System	N/A	N/A
AFFF FOAM SYSTEM INSPECTION (per NFPA 16 and 25) - includes inspection, testing and routine maintenance				
3.38	**Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.39	AFFF foam / water sprinkler inspection	Per System	N/A	N/A

RFP 21-07P Fire, Security and Communication System Solutions

Inspections and Testing Rates

Company Name: Logicalis, Inc.

SMOKE DETECTOR SENSITIVITY TESTING (per NFPA 72) - includes inspection, testing and routine maintenance				
line	**Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.40	Smoke detector sensitivity testing	Per Device	N/A	N/A
CLEAN AGENT INSPECTION (FM-200, HALON, ETC. per NFPA 2001) - includes inspection, testing and routine maintenance				
line	**Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.41	Clean agent inspection	Per System	N/A	N/A
3.42	Recharge	Per System	N/A	N/A
FIRE ALARM SYSTEM INSPECTION - (per NFPA 72) - includes inspection, testing and routine maintenance				
line	**Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.43	Fire Alarm Inspection	Per System	N/A	N/A
OTHER LOW VOLTAGE SYSTEMS				
line	**Service Description**	**Unit**	**Price**	**Exclusions, Exceptions, Notes**
3.44	**Intercom System Inspection**	**Per 24 stations**	**$410**	**Includes a report with all findings and recommendations on issues found during the inspection**
3.45	**N/A**	**N/A**	**N/A**	**N/A**

Inspections and Testing Rates

Company Name: Logicalis, Inc.

3.46	**N/A**	**N/A**	**N/A**	**N/A**

OTHER - include any other fees that may be incurred during inspection, testing and routine maintenance of the system listed above such as repair parts (add more lines if needed).

line	Manufacturer and/or Item Description	Maximum Percentage of Discount or Fixed Price	Link to Manufacturer Price List (may provide Manufacturer's Price List on a flash drive if link is unavailable)
3.47	N/A	N/A	N/A
3.48	N/A	N/A	N/A
3.49	N/A	N/A	N/A
3.50	N/A	N/A	N/A

RFP 21-07P Fire, Security and Communication System Solutions

Labor Rates and Other Fees

Company Name: Logicalis, Inc.

Instructions: Provide hourly labor rates for services provided under this RFP. Provide service rates for any other levels of service or expertise your firm offers in the blank lines provided (installers, product support, software engineers, etc.) Add as many lines as needed to thoroughly represent your service offering.

LABOR RATES- HOURLY RATES

line	Description	Normal Business Hours Rate	After Hours Rate	Weekend/Holiday Rate	
4.1	Service Apprentice	$55.00	$55.00	$85.50	
4.2	Service Technician	$80.00	$80.00	$120.00	
4.3	Certified Technician	$100.00	$100.00	$150.00	
4.4	Backflow Certified Technician	N/A	N/A	N/A	
4.5	Trip Charge For Services (Repairs)	N/A	N/A	N/A	
4.6	MW, Security or AV Engineer	$123.75	$123.75	$185.63	Added In
4.7	Sr. MW, Sr. Security or Sr AV Engineer	$157.50	$157.50	$236.25	Added In

LOW VOLTAGE SYSTEMS

line	Description	Normal Business Hours Rate	After Hours Rate	Weekend/Holiday Rate	
4.16	Install Labor	$46.90	$46.90	$70.35	
4.17	Trim Labor	$52.10	$52.10	$78.15	
4.18	Programming	N/A	N/A	N/A	
4.19	Technician I	$31.20	$31.20	$46.80	Added In
4.20	Technician II	$36.50	$36.50	$54.75	Added In
4.21	Technician III	$41.70	$41.70	$62.55	Added In
4.22	Technician IV	$46.90	$46.90	$70.35	Added In
4.23	Lead Technician	$52.10	$52.10	$78.15	Added In
4.24	CAD Operator	$52.00	$52.00	$78.00	Added In
4.25	Certified Fiber Tech	$49.00	$49.00	$73.50	Added In
4.26	Supervisor/Foreman	$69.00	$69.00	$103.50	Added In

MISCELLANEOUS

line	Description	Normal Business Hours Rate	After Hours Rate	Weekend/Holiday Rate
4.27	Certified Designer	$135.00	$135.00	$202.50
4.28	System Engineer	$125.00	$125.00	$187.50
4.29	Project Manager	$95.00	$95.00	$142.50

Labor Rates and Other Fees

Company Name: Logicalis, Inc.

4.30	Certified Service Programmer	$185.00	$185.00	$277.50	
4.31	Draftsman	$85.00	$85.00	$127.50	
4.32	Network Technician	$85.00	$85.00	$127.50	Added In
4.33	Network Engineer	$160.00	$160.00	$240.00	Added In
4.34	Network Consultant	$215.00	$215.00	$322.50	Added In
4.35	Project Engineer/Asst PM	$59.90	$59.90	$89.85	Added In
4.36	Senior Project Manager	$135.00	$135.00	$202.50	Added In
4.37					
4.38					

OTHER: Include any fees associated to value-added services offered by your firm (see RFP page 54)

line	Description	Unit of Measure	Rate	
4.39	Travel Expenses	EA	Variable. Reasonable travel expenses will be tracked separately and billed directly to the customer. Travel expenses will include cost incurred from travel (airfare, rental car, mileage, tolls, lodging, and meal per diem). These fees will not exceed state allowable rates, if any.	Added In
4.40	Travel Time	EA	Variable. Travel time rates are based on the Service Rates charged for the individual traveling and begins one hour from Logicalis' closest office.	Added In
4.41				
4.42				
4.43				

RFP 21-07P Fire, Security and Communication System Solutions

Monitoring Services

Company Name: Logicalis, Inc.

Instructions: Firms are to complete this form by indicating the costs associated for Monitoring Services.

MONITORING SERVICES

line	Description	Unit	Price
5.1	Monthly Fee for Monitoring Services: FIRE ONLY	Per Line Reporting	N/A
5.2	Monthly Fee for Monitoring Services: INTRUSION ONLY	Per Line Reporting	N/A
5.3	Monthly Fee for Monitoring Services BOTH FIRE AND INTRUSION	Per Line Reporting	N/A
5.4	Set Up Fee for Monitoring Services: Consider costs of programming panels/dialers to work with your firm's systems. Indicate in the unit column whether the price is per location or per hour.	N/A	N/A

Tab 2 Products and Services Offered

The following pages include the completed:

- Form 2A: Products and Services Offered
- Form 2B: Subcontractor Questionnaire

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

Additional pages may be utilized.

1. Indicate below the categories of products and/or services your firm offers by placing and "X" in the appropriate box.

Description of Products:	Product	Services	Notes, Limitations or Exceptions:
Fire Alarm and Suppression Systems			Logicalis, Inc. is not offering these products or services as part of this proposal.
Closed Circuit Television and Video Surveillance Systems	X	X	
Security Systems	X	X	
Intercom Systems	X	X	
Alarm Monitoring Services			Logicalis, Inc. is not offering these products or services as part of this proposal.
Related Products/Services (List in the "Notes" Column	X	X	Please see Logicalis' Cost Form for the related products and services.

2. Describe your firm's method to satisfying the Scope of Work Items listed on pages 27-32

2a. General Requirements (Scope of Work page 27)

1. General Requirements
1.1 Offeror shall be properly licensed and certified to perform the work in accordance with all applicable federal, state and local laws and industry standards including, but not limited to:
• American National Standards Institute (ANSI)
• American Society for Testing and Materials (ASTM)
• American Waterworks Association (AWWA)
• FM Global (FM)
• National Fire Protection Association (NFPA)
• National Institute of Standards and Technology (NIST)
• Occupational Health and Safety Administration (OSHA)
• Security Industry Association (SIA)
• Underwriters Laboratories (UL)

Understood. Please see the attached Certifications and Contracts in Tab 2A which reflects our licenses and certifications.

1.2 All work and any phase thereof is subject to inspection by the Member and/or the State Fire Marshall. Any discrepancies found shall be corrected at no additional charge.

Understood. Any discrepancies found that is directly caused by Logicalis will be corrected at no additional charge to the Member.

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

1.3 Offeror shall make a reasonable effort to provide consistency in the service technicians assigned to the Members.

Understood. Logicalis understands the importance of institutional knowledge by service technicians and will always make a reasonable effort to provide consistency to our customers in regards to the technicians they work with depending on the technology.

1.4 Under no circumstances shall a system be left in a disabled condition without notification and approval of the Member.

Understood. Any system with a disabled condition found by Logicalis will be directed to the Member and work with Member to remediate the issue as appropriate for the circumstances.

Certifications and Contracts

CISCO SYSTEMS
- CCIE (Internetworking Expert)
- CCNA (Network, Wireless, Security Associate)
- CCNP (Routing, Switching, Collaboration Professional)
- CCDA (Design Associate)
- CCDP (Design Professional)
- CCVP (Voice Professional)
- CSE (Sales Expert)

VEEAM
- Veeam Certified Engineer (VMCE)
- Veeam Certified Professional (VMCP)

HP/ARUBA
- HP Master Accredited Solutions Expert (MASE)

SECURITY
- Panasonic iPro Certification
- Milestone Certified Design Engineer
- Milestone Certified Integration Technician
- Pivot3 Certified Presales Tech Professional
- Genetec Security Center Synergis Technical Certification
- Security Center Omnicast Technical Certification

AUDIO VISUAL
- Bogen Mass Notification and Emergency Communications Systems Training
- Bogen Quantum Multicom IP Technical Training
- Bogen Multicom 2000 Technical Training
- Dante certification level 2 This one is new
- Extron Certified Control Associate
- Extron Certified Control Professional
- Extron Configurable Control Systems Training
- Extron XTP Systems Training
- Extron AV Associate
- Extron School of Emerging Technologies
- Extron AV Systems Designer
- Chief Certified Partner
- Configuration of Crestron Systems Training
- AMX ACE Certified Installer
- AMX ACE Certified Designer
- InfoComm Certified Technology Specialist
- Teradon Video & OVC Certification

WIRELESS
- Ceragon FibeAir Technical Training Certification
- Redline Certified Support Professional
- Certified in ComTrain’s Advanced Tower Climbing Safety and Rescue

CABLING
- Commscope Installer Certification
- Bicsi RCDD Certification

STATE CONTRACTS
- ADSPO17-184586 (AV, Intercom Cameras, Cabling)

MOHAVE CONTRACTS
- 17L-LOGIC-1115 (Networking Services, Fire Alarm Systems, Intercom Systems, Master Clocks)
- 19B-ELOG1-0307 (E-RATE Internal Connections)
- 16B-LOGIC2-0723 (Telephone Systems)

1GPA CONTRACTS
- 1GPA-16-04P-09 (Security)
- 1GPA-19-07PV-03 (Internal Connections)
- 1GPA-16-11PV-12 (Technology and Audio-Visual Solutions)

NASPO CONTRACT
- NASPO ValuePoint #CTR045677 (HPE)

SPIN NUMBER
- 143004779

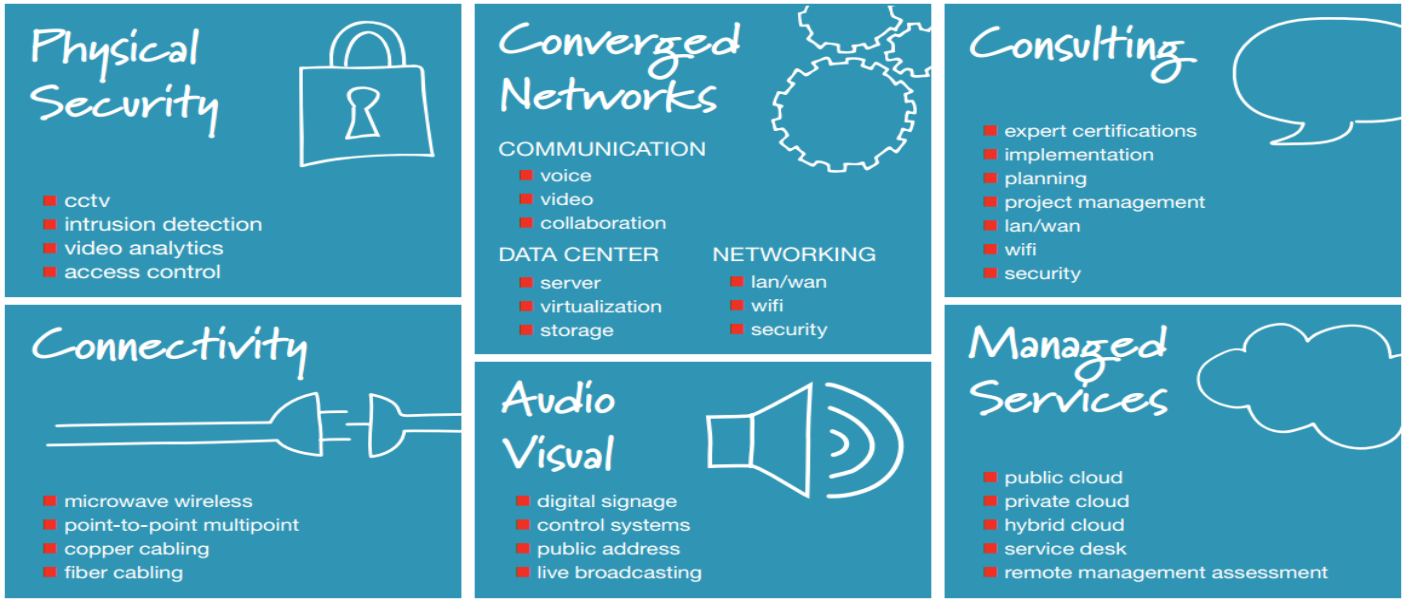
LICENSES
- CR67 ROC278234 (Low Voltage Communication Systems)
- 07-595843-B (Arizona State Tax License)

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

2b. Products (Scope of Work pages 28-29)

Logicalis is proposing products and services for subsections 2.2 Closed Circuit Television and Video surveillance Systems, 2.3 Security Systems, and 2.4 Intercom Systems.

We select manufacturer's products based on the specific requirements of each customer's application. Our key goal is find the best technology solutions to enhance our customer's business. Our solutions are based on meeting the highest standards of engineering certifications, value- added services, and customer satisfaction. Logicalis's team of professionals combine a wide range of experience in information technology. Our hands-on experience gives us a definite edge in providing technical solutions that really work. Logicalis provides these solutions by practicing an internal policy of education. Our engineers are constantly trained and certified in the latest technology solutions and enhancements. Our installers are certified in structured cabling systems and quality delivery of workmanship. Our designers are BICSI registered and RCDD certified. Our marketing and project management staff is experienced in delivering total customer satisfaction by providing immediate customer responses on time and on budget.



Does your firm enforce minimum orders? ☐ **Yes** ☒ **No**

If yes, please describe:

Not applicable.

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

How many days to deliver, on average, after receipt of order? This is dependent on product availability in our warehouse and/or by the manufacturer/distributor, as well as the need for expedited shipping; however, it is typically 10 business days or less. For items in our warehouse, it can be the same day as receipt of the member's purchase order. Services scheduling is agreed upon with the member for coordination of products and services and the timeline of the project.

Describe your firm's return policy:

Logicalis abides by the manufacturers' and/or distributors' return policy. Logicalis will work with the members in facilitating returns in accordance with those policies. Members would be responsible for return shipping charges unless the product was shipped to them by Logicalis in error.

Does your firm offer online ordering capabilities? ☐ **Yes** ☒ **No**

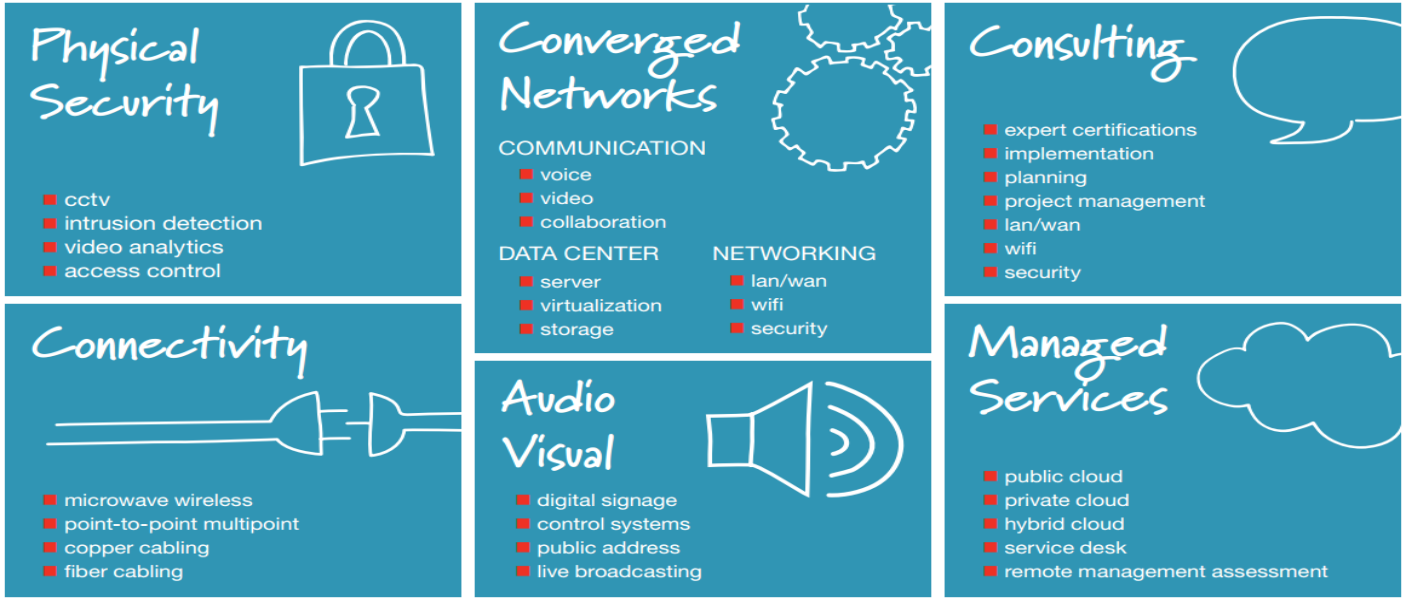
If yes, please describe:

Not applicable.

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

2c. System Design, Installation and Training (Scope of Work page 29)

Our solutions are based on meeting the highest standards of engineering certifications, value-added services, and customer satisfaction. Logicalis' team of professionals combine a wide range of experience in information technology. Our hands-on experience gives us a definite edge in providing technical solutions that really work. Logicalis provides these solutions by practicing an internal policy of education. Our engineers are constantly trained and certified in the latest technology solutions and enhancements. Our installers are certified in structured cabling systems and quality delivery of workmanship. Our designers are BICSI registered and RCDD certified. Our marketing and project management staff is experienced in delivering total customer satisfaction by providing immediate customer responses on time and on budget.



FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

2d. Inspection and Testing (Scope of Work pages 29-30)

Logicalis is proposing products and services for subsections 4.9 Low Voltage Systems. Please see the inspection checklists / sample reports provided in Tab 2A for examples of the level of information gathered and provided.

Provide sample inspection checklists or sample reports for each of the following inspection services offered

Included TAB 2	OR	Not Applicable	Description
☐		☒	Fire Risers and Sprinklers
☐		☒	Commercial Kitchen Exhaust Hoods
☐		☒	Portable Fire Extinguishers
☐		☒	Fire Pumps
☐		☒	Rolling Steel Fire Doors
☐		☒	Fire Hoses
☐		☒	Fire Hydrants
☐		☒	Backflow Preventers
☐		☒	Low Voltage Systems – Fire Alarm System
☒		☐	Low Voltage Systems - Security
☒		☐	Low Voltage Systems – Closed Circuit Television and Video Surveillance System
☒		☐	Low Voltage Systems – Intercom Communication System

BUILDING	ROOM #	SPKR QTY	Ceiling or Wall	Recessed or Surface	Tap Wattage	25V, or 70V	Speaker or Horn	Operational?	Call Switch	Operational?	Intercom Port	Extension	NOTES	Cabling Route Notes
A	100	2	C	R	1	25	S	Y	Y	N	2	1101	Call Switch behind cabinet and damaged	All speaker cabling passes through an exterior pull box not an IDF.
A	102	1												
A	103	1											Call Switch behind cabinet and damaged	
A	104	1												
A	116	1												
A	118	2												
A	119	2												
A	122	1												
A	130	1												
A	156	9												
A	159	1												
A	161	19												
A	169	1												
A	179	1												
A	180	1												
A	181	1												
A	184	1												
A	KITCHEN	4	C	R	1	25	S	N	N	N/A	14	1184	3 of 4 speakers work. The non-working needs to be replaced	
A	HALL	14												
A	RR	2												
A	EXTERIOR	7	W	S	7.5	25	H	N	N/A	N/A	AMP	N/A	Trumpet horn 30watt version needs re-wired	
		73												
C	100	1												
C	102	1												
C	103	1												
C	104	1												
C	105	1												
C	106	1												
C	107	1												
C	108	1												
C	110	1												
C	111	1												
C	113	1												
C	114	1												
C	119	1												
C	121	1												
C	122	1												
C	123	1												
C	124	1												
C	HALL	6												
C	RR													
C	EXTERIOR	2												
		25												
D	104	1												
D	110	1												
D	111	1												
D	116	1												
D	118	1												
D	120	1												
D	121	1												
D	122	1												
D	123	1												
D	125	1												
D	126	1												
D	127	1												
D	128	1												
D	135	1												
D	GUIDANCE	11												
D	HALL	15												
D	RR													
D	EXTERIOR	2												
		42												
E	101	1												
E	102	1												
E	103	1												
E	104	1												
E	108	1												
E	109	1												
E	113	1												
E	114	1												
E	115	1												
E	116	1												
E	HALL													
E	RR													
E	EXTERIOR	2												
		12												
F	100	1												
F	101	1												

SAMPLE

BUILDING	ROOM #	SPKR QTY	Ceiling or Wall	Recessed or Surface	Tap Wattage	25V, or 70V	Speaker or Horn	Operational?	Call Switch	Operational?	Intercom Port	Extension	NOTES	Cabling Route Notes
F	102	1												
F	103	1												
F	109	1												
F	112	1												
F	HALL	2												
F	RR													
F	EXTERIOR	1												
		9												
G	100	1												
G	103	1												
G	112	1												
G	116	1												
G	118	1												
G	120	1												
G	121	1												
G	123	1												
G	123	1												
G	124	1												
G	126	1												
G	128	1												
G	131	1												
G	131	1												
G	137	1												
G	139	1												
G	145	1												
G	148	1												
G	HALL													
G	RR													
G	EXTERIOR	1												
		19												
H	100	2												
H	105	1												
H	110	1												
H	113	1												
H	118	3												
H	122	4												
H	125	1												
H	126													
H	UN-NAMED	1												
H	OFFICE													
H	HALL	2												
H	RR													
H	EXTERIOR	5												
		21												
M	SCHOOL OFFICES	5												
M	LIBRARY	13												
M	RR													
M	EXTERIOR	3												
		21												
K	BARN													
K	100	1												
		1												
P	101	1												
P	102	1												
P	103	1												
P	104	1												
P	105	1												
P	106	1												
P	107	1												
P	108	1												
P	109	1												
P	110	1												
P	111	1												
P	112	1												
P	113	1												
P	114	1												
P	115	1												
P	116	1												
P	118	1												
P	120	1												
		18												

SAMPLE

Customer _____

Site _____

Date _____

Tech _____

MDF

# of Racks	# of Patch Panels	# of Open Patch Panel Ports	Condition of Cabling	# of Open Switch Ports	# of Open POE Switch Ports

IDF 1

# of Racks	# of Patch Panels	# of Open Patch Panel Ports	Condition of Cabling	# of Open Switch Ports	# of Open POE Switch Ports

IDF 1

# of Racks	# of Patch Panels	# of Open Patch Panel Ports	Condition of Cabling	# of Open Switch Ports	# of Open POE Switch Ports

IDF 2

# of Racks	# of Patch Panels	# of Open Patch Panel Ports	Condition of Cabling	# of Open Switch Ports	# of Open POE Switch Ports

IDF 3

# of Racks	# of Patch Panels	# of Open Patch Panel Ports	Condition of Cabling	# of Open Switch Ports	# of Open POE Switch Ports

IDF 4

# of Racks	# of Patch Panels	# of Open Patch Panel Ports	Condition of Cabling	# of Open Switch Ports	# of Open POE Switch Ports

IDF 5

# of Racks	# of Patch Panels	# of Open Patch Panel Ports	Condition of Cabling	# of Open Switch Ports	# of Open POE Switch Ports

IDF 6

# of Racks	# of Patch Panels	# of Open Patch Panel Ports	Condition of Cabling	# of Open Switch Ports	# of Open POE Switch Ports

IDF 7

# of Racks	# of Patch Panels	# of Open Patch Panel Ports	Condition of Cabling	# of Open Switch Ports	# of Open POE Switch Ports

IDF 8

# of Racks	# of Patch Panels	# of Open Patch Panel Ports	Condition of Cabling	# of Open Switch Ports	# of Open POE Switch Ports

SAMPLE

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

2e. Maintenance and Repairs (Scope of Work pages 30-31)

For Basic Maintenance Services under this agreement, Logicalis Service Administrator shall receive incoming requests via email, web portal, or telephone from Customer, and log them into the Logicalis Services Management System.

The Logicalis service administrator shall identify the type of call, location of the trouble; provide that call with an authorized Logicalis Services Management ID# and document the problem to ensure that the applicable service level is identified and that the call is processed accordingly.

The Logicalis service administrator will then manage the categorized request to completion.

A log of all Customer service calls will be added to the Logicalis service database along with accompanying call request tickets through the Service Desk located at the Logicalis Service Center.

Once a Logicalis engineer, representative and/or a vendor resource has completely addressed the request for resolution of a problem or performance of a service, the Service Administrator will document the closure of the call.

Our normal business hours are 8:00 AM to 5:00 PM Arizona time; however, Logicalis provides customers with 24x7 service, real-time system monitoring, proactive maintenance agreements, customized service level agreements and business recovery planning. Logicalis maintains control of our customers' service tickets and documents all service activity from ticket entry to resolution. Logicalis maintains an inventory of spares that can be deployed when needed. When not responding to service emergencies, the Logicalis team members are participating in additions, moves, changes, documentation and preventative maintenance activities.

Logicalis' standard response time for maintenance and repair needs is as follows.

Priority	Descriptions	Escalation Policy
CRITICAL PRIORITY (priority 1)	An existing network is down or there is a critical impact to the end user's business operation. Network Hardware Service Provider, NIC and end user will commit full-time resources to the situation.	1 Hours: Customer Support Supervisor 4 Hours: Department Manager 24 Hours: Director of Service Operations 48 Hours: President / CEO
HIGH PRIORITY (priority 2	Operation of an existing network is severely degraded, or significant aspects of the end user's business operation are being negatively impacted by unacceptable network performance. The Network Hardware Service Provider*, NIC and end user will commit full-time resources during standard business hours to address the situaton.	4 Hours: Customer Support Supervisor 24 Hours: Department Manager 48 Hours: Director of Service Operations 96 Hours: President / CEO
NORMAL PRIORITY (priority 3)	Operational performance of the network is impaired while most business operations remain functional. The Network Hardware Service Provider*, NIC and end user are willing to commit resources during standard business hours to restore service to satisfactory levels.	72 Hours: Customer Support Supervisor 96 Hours: Department Manager
LOW PRIORITY (priority 4)	Information or assistance is required on Network hardware manufacture product capabilities, installation or configuration. There is clearly little or no impact to the end user's business operation. The Network Hardware Service Provider*, NIC and end user are willing to provide resources during standard business hours to provide information or assistance as requested.	96 Hours: Customer Support Supervisor

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

Provide a list of holidays your firm observes.

Logicalis observes most major US holidays as noted below.

- New Year's Day
- Good Friday
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving
- Day after Thanksgiving
- Christmas Eve
- Christmas Day

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

2f. Monitoring Services (Scope of Work pages 31-32)

Not Applicable

Provide a copy of the central station's UL or FM Certification ☐ **Included in Tab 2 or** ☒ **Not Applicable**

What is the monthly capacity for receiving and storing activities and what brands of fire/security panels has your system successfully integrated with?

Not Applicable.

Describe your approach to new client set up. Include if manually programming dialers/panels is included.

Not Applicable.

Provide a sample activity report. ☐ **Included in Tab 2 or** ☒ **Not Applicable**

Describe your firm's procedure for responding to an alarm notification.

Not Applicable

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

2g. Related Products and Services (Scope of Work page 32)

Describe any products or services related to fire, security and communication system solutions your firm offers.

Logicalis offers thousands of products by hundreds of manufacturers for security and communication system solutions, such as master clocks, storage and management of video data, system integration and design, and public warning/mass notification systems. Please see Logicalis' Cost Form for the proposed related products and services.

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

3. Warranty - Provide a detailed statement of warranty for the products and/or services your firm offers.

Logicalis' standard warranty is provided below.

Product Returns and Warranty Assistance.
(a) CUSTOMER acknowledges that LOGICALIS is reselling (and not itself providing) all Products purchased by CUSTOMER, including, without limitation, software and Services Sold by Part Number.
(b) LOGICALIS shall pass through to CUSTOMER, the manufacturer's warranties for each product and agrees to facilitate utilization of manufacturer's product return policies. In no event will LOGICALIS provide product return or warranty coverage beyond that provided by the manufacturer. Products that are accepted for return are subject to the manufacturer's applicable restocking fee(s).
(c) CUSTOMER acknowledges the terms and conditions governing the use of such Products shall be solely between CUSTOMER and the manufacturer.

Product Use and Product Warranty Disclaimer.
CUSTOMER will not use the Products sold by LOGICALIS for use in life support, life sustaining, nuclear or other applications in which failure of such Products could reasonably be expected to result in personal injury, loss of life or catastrophic property damage. CUSTOMER agrees that LOGICALIS and the manufacturer of Products are not liable, in whole or in part, for any claim or damage arising from such use.

LOGICALIS MAKES NO WARRANTIES OF ANY KIND WITH REGARD TO THE PRODUCTS. LOGICALIS DISCLAIMS ALL REPRESENTATIONS AND WARRANTIES, EXPRESS OR IMPLIED, AS TO THE PRODUCTS, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR NONINFRINGEMENT.

Limited Warranty and Acceptance of Services.
LOGICALIS represents and warrants to Customer that the Services shall be performed in a good, workmanlike, professional and conscientious manner by experienced and qualified employees of Logicalis according to the generally accepted standards of the industry to which the Services pertain. All Service deliverables will be deemed accepted by CUSTOMER if not rejected in a reasonably detailed writing within five (5) days, or as otherwise identified in the applicable Statement of Work, of submission to CUSTOMER. In the event the Services provided by Logicalis are not in conformance with this warranty, LOGICALIS will take the steps necessary to correct the deficiency at no charge to the CUSTOMER. THIS IS CUSTOMER's SOLE AND EXCLUSIVE REMEDY FOR BREACH OF THIS WARRANTY.

Service Warranty Disclaimer.
EXCEPT AS PROVIDED FOR UNDER Limited Warranty and Acceptance of Services, LOGICALIS MAKES NO WARRANTIES OF ANY KIND WITH REGARD TO THE Services. LOGICALIS DISCLAIMS ALL OTHER REPRESENTATIONS AND WARRANTIES, EXPRESS OR IMPLIED, AS TO THE Services, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NONINFRINGEMENT.

FORM 2A: PRODUCTS AND SERVICES OFFERED (TAB 2)

4. Reporting – Describe your firm's online reporting capabilities.

Logicalis currently has this process set up and in place based on the numerous contracts we hold for public sector that all require reporting and administrative fees to be paid based on contract usage.

Provide a list of subcontractors your firm may use to fulfill the requirements of the Scope of Work (pages 27-32)

Subcontractors are the sole responsibility of the vendor and are not employed directly by the Member. All purchase orders will be issued to the vendor. Central stations for monitoring shall be UL or FM certified (provide a copy of certification).

	Subcontractor	**License and/or Certification**
1.	Logicalis plans to utilize our highly trained and skilled employees for this project. In the event additional staff and/or specialized staff are needed, and cannot be fulfilled with Logicalis employee personnel, we may utilize individuals on a subcontractor basis. Logicalis will work with 1GPA and/or the Member to ensure staff assigned to the project are suitable to both parties.	
2.		
3.		
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Tab 3 Experience, Expertise and Qualifications

The following pages include the completed:

- Form 3A: Qualifications/Experience
- Form 3B: Past Performance
- Form 3C: References
- Form 3D: Performance Evaluation Survey
- Form 3E: Financial Disclosure Questionnaire

FORM 3A: QUALIFICATIONS/EXPERIENCE (TAB 3)

QUALIFICATIONS AND EXPERIENCE OF OFFER: *Additional sheets may be utilized.*

Please provide an executive summary of your firm's history, qualifications, and experience in providing products and services as referenced in the scope of work for this solicitation. It is the vendor's responsibility to demonstrate competence and experience in the industry. Please include a history of the firm, including the length of time in business, location of office(s) and specifically experience as it relates to the Scope of Work.

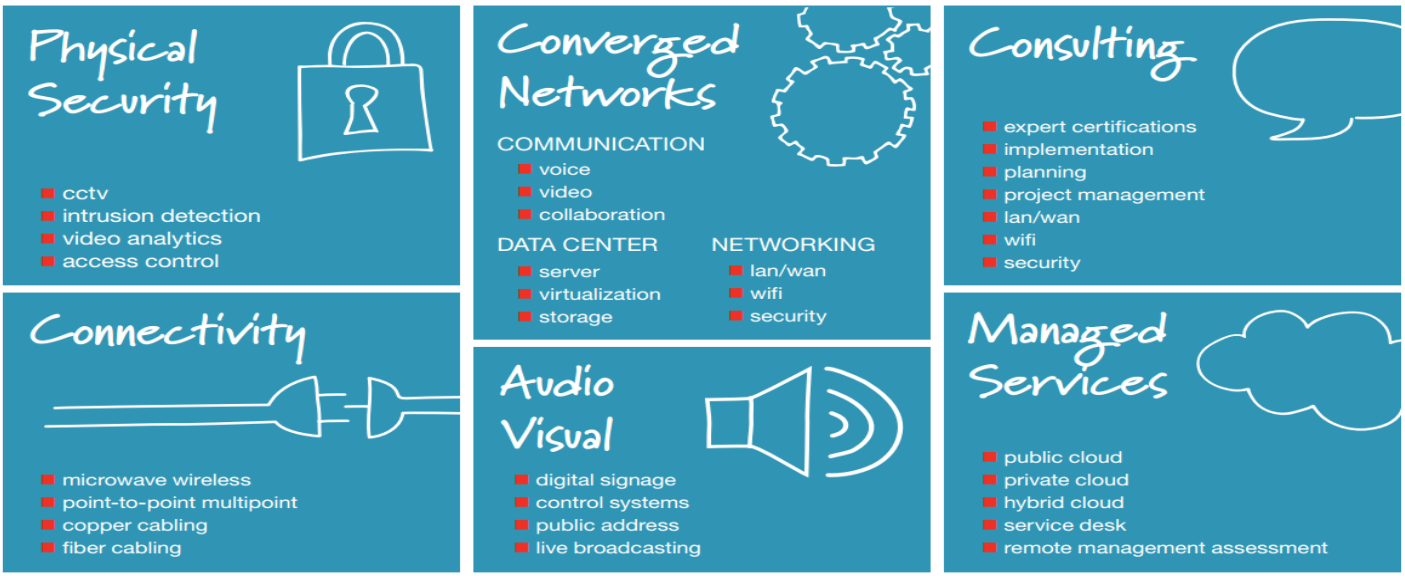
As a customer-focused and technology driven network integrator, Logicalis specializes in LAN/WAN integration, security, audio/video, cabling, voice, and IP networking.

Logicalis has been providing network equipment, structured cabling, wireless connectivity, audio-visual systems and physical security to State, Local Government and Education (SLED) customers in Arizona since 1998 as well as numerous other states. Logicalis has provided these services via State Contracts, Mohave Contracts, 1GPA Contracts and WSCA Contracts as well RFP/bids since we started servicing this vertical in 1998. The SLED vertical has been the primary focus of our Arizona office accounting for over 80% of our business. Logicalis is currently the prime integrator at many integration projects in Arizona. These include school districts, hotels and resorts, and a number of large commercial accounts. We are very familiar with information delivery systems specifications, standards, and installation requirements, especially in today's merging technology systems. We believe that because we have this experience and expertise, we can provide our customers with the best solution that will be on time and on budget.

Our Solutions & Services

As Logicalis is a turnkey network integration company, very large infrastructure projects are led by our experienced and certified project management team. As Logicalis performs all work in-house including all infrastructure cabling (voice / video / data), network, phone system and video systems, we ensure all systems function cohesively.

We select manufacturer's products based on the specific requirements of each customer's application. Our key goal is finding the best technology solutions to enhance our customer's business. Our solutions are based on meeting the highest standards of engineering certifications, value-added services, and customer satisfaction. Logicalis' team of professionals combine a wide range of experience in information technology. Our hands-on experience gives us a definite edge in providing technical solutions that really work. Logicalis provides these solutions by practicing an internal policy of education. Our engineers are constantly trained and certified in the latest technology solutions and enhancements. Our installers are certified in structured cabling systems and quality delivery of workmanship. Our designers are BICSI registered and RCDD certified. Our marketing and project management staff is experienced in delivering total customer satisfaction by providing immediate customer responses on time and on budget.



FORM 3A: QUALIFICATIONS/EXPERIENCE (TAB 3)

Our Locations

Logicalis currently has offices in the following locations:

- Tempe, AZ
- Corona, CA
- Shelton, CT
- Downers Grove, IL
- Indianapolis, IN
- Lexington, KY
- Bloomfield Hills, MI
- Lansing, MI
- Minneapolis, MN
- New York, NY
- Cleveland, OH
- Maumee, OH
- Miamisburg, OH
- West Chester, OH
- Portland, OR
- Pittsburgh, PA
- Houston, TX
- Bellevue, WA
- De Pere, WI

Please see the attached Certifications and Contracts in Tab 3A.

Copies of Certifications and Licenses Held by the Firm (i.e. Business License, etc.):

☒ **Included in Tab 3** ☐ **Not applicable**

Certifications and Contracts

CISCO SYSTEMS
- CCIE (Internetworking Expert)
- CCNA (Network, Wireless, Security Associate)
- CCNP (Routing, Switching, Collaboration Professional)
- CCDA (Design Associate)
- CCDP (Design Professional)
- CCVP (Voice Professional)
- CSE (Sales Expert)

VEEAM
- Veeam Certified Engineer (VMCE)
- Veeam Certified Professional (VMCP)

HP/ARUBA
- HP Master Accredited Solutions Expert (MASE)

SECURITY
- Panasonic iPro Certification
- Milestone Certified Design Engineer
- Milestone Certified Integration Technician
- Pivot3 Certified Presales Tech Professional
- Genetec Security Center Synergis Technical Certification
- Security Center Omnicast Technical Certification

AUDIO VISUAL
- Bogen Mass Notification and Emergency Communications Systems Training
- Bogen Quantum Multicom IP Technical Training
- Bogen Multicom 2000 Technical Training
- Dante certification level 2 This one is new
- Extron Certified Control Associate
- Extron Certified Control Professional
- Extron Configurable Control Systems Training
- Extron XTP Systems Training
- Extron AV Associate
- Extron School of Emerging Technologies
- Extron AV Systems Designer
- Chief Certified Partner
- Configuration of Crestron Systems Training
- AMX ACE Certified Installer
- AMX ACE Certified Designer
- InfoComm Certified Technology Specialist
- Teradon Video & OVC Certification

WIRELESS
- Ceragon FibeAir Technical Training Certification
- Redline Certified Support Professional
- Certified in ComTrain’s Advanced Tower Climbing Safety and Rescue

CABLING
- Commscope Installer Certification
- Bicsi RCDD Certification

STATE CONTRACTS
- ADSPO17-184586 (AV, Intercom Cameras, Cabling)

MOHAVE CONTRACTS
- 17L-LOGIC-1115 (Networking Services, Fire Alarm Systems, Intercom Systems, Master Clocks)
- 19B-ELOG1-0307 (E-RATE Internal Connections)
- 16B-LOGIC2-0723 (Telephone Systems)

1GPA CONTRACTS
- 1GPA-16-04P-09 (Security)
- 1GPA-19-07PV-03 (Internal Connections)
- 1GPA-16-11PV-12 (Technology and Audio-Visual Solutions)

NASPO CONTRACT
- NASPO ValuePoint #CTR045677 (HPE)

SPIN NUMBER
- 143004779

LICENSES
- CR67 ROC278234 (Low Voltage Communication Systems)
- 07-595843-B (Arizona State Tax License)

FORM 3A: QUALIFICATIONS/EXPERIENCE (TAB 3)

KEY PERSONNEL: Provide information (bios) regarding the key personnel including, but not limited to, education, experience, certifications and years of service in the industry.

Please see the attached Resumes and the Certifications and Contracts in Tab 3A.

Certifications and licenses held by key personnel (i.e. NICT, backflow prevention certification, inspection and testing certifications, CSA Group, etc.):

☒ **Included in Tab 3** ☐ **Not applicable**

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Brent J. Graves

Senior Account Executive

As a Senior Account Executive, Brent Graves has overall responsibility for customer service in the public sector. He possesses a vast amount of experience in consulting and helping organizations in selecting the best technology investments that conform to their individual procurement needs.

Strong background in managing relationships and ensuring customer satisfaction through a consult, design and manage approach to projects. Brent Graves is dedicated to pulling together budgets for grant and federal funding and always looks for new ways to help support school districts and public agencies.

Professional Experience

Key Accomplishments:

- Madison School District:
  - 1.2 Gig Wireless WAN
  - IP Video Distribution
  - 10gig Network & WLAN, New School Design/Build
- Paradise Valley Unified School District:
  - Largest School District Point-to-Point Wireless WAN
  - 1st Telepresence in the World over Wireless
  - Data Center Visualization, 68 Servers down to (4) Blades
- Phoenix Union High School District:
  - State-of-the-art network implementation enabling schools like the new BioScience campus dedicated to preparing high school students to biological science research

Certifications

Specialist in:

- Data Center Storage & Networking
- Advanced Unified Communications; Security/Sales; Switching/Routing; Wireless
- Collaboration Sales for Architecture
- Telepresence Video Sales
- Unified Communications
- Content Security Sales
- Borderless Network Sales
- APC Design & Sales
- Keyscan Sales
- Ceragon Networks Wireless
- NetApp Accredited Sales Professional
- EMC Sales Professional
- Cisco Sales Expert
- Wide Area Application Services
- Digital Media Systems
- Redline Communications
- Nortel Networks
- 3COM
- APC
- Lucent/Avaya
- AMP
- Motorola
- Enterasys

Education

- **Bachelor of Science** from Arizona State University
- **MBA Coursework** in Management Marketing Sales
- **Associate of Arts & Associate of General Studies** from Mesa Community College

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Robert Lundblade

Account Executive

More than 10+ years' experience in providing complex technology solutions of SLED and public sector entities with and emphasis on customer satisfaction.

Detail-oriented and well versed in Arizona and E-rate procurement procedures. Always focused on delivering the highest quality technical solution to meet the customer's business objectives while respecting budgetary obligations.

Professional Experience

Key Accomplishments:

- Laveen Elementary School District:
  - District Wide Wireless LAN Deployment
  - Cisco Data Switch Distribution
  - New School Design/Build Implementation
  - Infrastructure Data Cabling
- Glendale Elementary School District:
  - Extreme 802.11ac Wireless LAN Deployment
  - Extreme Network Infrastructure Upgrade
  - Infrastructure Cabling and Fiber Distribution
- Whiteriver Unified High School District:
  - Extreme Network Infrastructure Upgrade
  - District-wide 802.11ac Wireless Deployment
  - Unified Communications Virtual Voice Solution
  - Video Surveillance and Access Control

Certifications

Specialist in:

- Data Center Storage
- Data Center Networking
- Unified Communications
- Access Control
- Advanced Switching/Routing
- Ruckus Wireless
- Content Security Sales
- Borderless Network Sales
- Ceragon Networks Wireless
- APC Sales
- Cisco Sales Professional
- Video Surveillance Professional
- Wide Area Application Services
- Digital Media Systems
- Redline Communications
- APC
- Mitel Sales

Education

- **Bachelor of Science** from University of Phoenix
- **Associate of Arts Electronic Technology** from University of Alaska Anchorage

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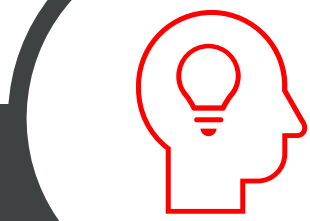
Cory Frost

Project Manager

Strong background in ensuring customer satisfaction, maintaining project budgets, and completing jobs on schedule.



Professional Experience

- Oversees projects from initiation to completion
- Successfully completed low to high rigor projects in both the SW and National regions
- Assisted in more than 5 Wireless RF microwave system implementations as an RF Engineer for over 6 years
  - Completed special systems design, build, and install for new construction sites
  - Structured cabling-fiber, CAT5E, CAT6, and special systems
  - Wireless microwave & towers: WWAN, LWAN
  - IP CCTV security solutions
  - AV-intercom, sound reinforcement, video conferencing, and Extron installations

Certifications

- Certified Associate in Project Management (CAPM)
- Six Sigma Green Belt Certified
- Certificate of Completion for Ceragon FibeAir Technical Training
- Comtrain Certified
- Redline Certified
- AMP Certified for Installing, Certifying, and Troubleshooting Premise Cabling
- Panasonic iPro Technical Specialist
- MSHA Certified
- Universal Technical Institute

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Tim Aldrich

Senior Project Manager

More than 25+ years' experience in the technology industry. Tim is responsible for ensuring customer satisfaction, maintaining project budgets, and completing jobs on schedule. He balances branch resources to bring the project to completion seamlessly to the customer.

Strong background in project management, showcasing the supervision and organization of a vast number of various level estimators, technicians, warehouse, and office staff in a fast-paced environment.

Professional Experience

- Highly successful, long-term history of project management, overcoming the challenge of working with short time frames and economic limitations
- Extensive knowledge of all low-voltage cabling topologies including data, voice, video, audio, and security
- Project management infrastructure projects including Cisco, VoIP, IT, A/V, Security, Wireless, and Cabling infrastructure

Certifications

- Project Management Professional (PMP)
- CTS Certified
- Active member of PMI Chapter

Education

- **Associate** of Electronic Technology from St. Paul Technical College

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Alfredo Gonzalez

Professional Service Delivery Consultant

6 years of experience in network operations support and service delivery. Providing support for enterprise level networks and data centers. Handling trouble resolution and service delivery for wired, wireless, VoIP and Digital and Analog voice networks.

Strong background in developing client relationships and providing support for their data and voice networks. Very experienced in Cisco route and switch technologies across several platforms. I am also experienced with Cisco and Fortigate firewalls.

Professional Experience

During my career I have served as an operation support and implementation engineer. In these roles I have done the following

- Field Engineer at Arizona State University providing support and implementation for the Enterprise access wired, wireless and voice network
- NOC Engineer at Arizona State University providing support and implementation for Enterprise core, data center and WAN networks
- Operations Engineer at TB Consulting supporting a multi-client data center environment supporting service offering such as disaster recovery, storage, network monitoring, DaaS and UCaaS

Key Accomplishments:

- Awarded Star Performer at TB Consulting for improvement of an Industrial Ethernet Network in South Bend, ID
- Led network implementation at Barret and O'Connor Center for ASU in Washington D.C.
- Led network implementation at Beus Center for Law and Society for ASU in Phoenix, Az.

Specialization Areas

- Wireless Networking
- Enterprise Networking
- Network Security
- Data Center
- Industrial Ethernet

Certifications

- CCNA

Education

- **Bachelor of Science** in Computer Information Systems University of Phoenix

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Cory Urbatsch

Connectivity Manager

Provides management direction for Logicalis' Connectivity Services Department including: Microwave Wireless, Structured Cabling, Physical Security, and Audio Visual.

Strong background in designing and estimating opportunities within the department. Cory establishes operations service objectives, policies, procedures, and performance standards for connectivity projects and maintains customer relations.

Professional Experience

- 17 years of professional work experience as a LAN/WAN Specialist in telecommunication systems, network topologies, network management, voice equipment (PBX) and cabling
  - Paradise Valley School District - Designed and implemented WWAN consisting of 54 microwave links and 2,100 ft monopole towers
  - Deer Valley School District - Designed and implemented a WWAN consisting of 13 microwave links and 1 tower of 145ft
- US ARMY (10 years)
  - Ft. Belvoir, VA: Intelligence and Security Command with TS/SCI Security Clearance
  - Okinawa: Major DoD Technical Control Facility. Troubleshot high-speed data circuits and acted as liaison between US and foreign military branches

Specialization Areas

- Redline RCSP AN50, AN80I and WiMAX
- Bridgewave
- Comtrain
- FASTLANE
- TACLANE
- Varcom Matrix Switch
- Panasonic iPro Technical Specialist

Certifications

- Ceragon FibeAir Technical Training
- Anritsu Site Master
- Basic Installer Course

Education

- **Networking** coursework: Strayer University (2003-2005)
- **Western Wyoming Community College** (1996)
- **Primary Leadership Development** course (2001)

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Craig Hlebak

Structured Cabling Lead Technician

More than 14+ years' experience in structured cable systems cabling and peripherals to install networks in existing buildings and new construction sites. Craig is responsible to lead entry-level installers and ensure the job is completed in the most professional manner and according to BICSI and Logicalis standards.

Strong background in installation supervision, modification repair, maintenance of voice, video, and data cabling systems, and surveys installation areas to determine work methods, tools, materials, etc.

Professional Experience

- Lead Technician
- Site Supervisor: Glendale Arena (now known as Jobing.Com); supervised multiple contractors
- Structured cabling field supervisor (supervised 15 – 20 field technicians)
    - Glendale Arena: installed all the broadcast cabling; put in more than 1 million ft of cable
    - Cocopah Casino: installed all the data cabling and cabled for more than 700 cameras
    - Ft. McDowell Resort & Casino: installed all data cabling for the hotel and RV park
    - Paradise Valley Schools: installed more than 1,000 wireless access points
    - Balsz Schools: installed about 4,000 data drops and more than 6,000 ft of fiber for five schools
    - Madison Schools: installed wireless access points, pulled in all new fiber to each IDF; installed all new telecom cabinets
- Worked all over the state of Arizona including Page, Holbrook, Payson, Show Low, Sedona, Eloy, San Carlos, Wilcox, Yuma, Sommerton, Tucson, and Douglas

Certifications

- OSHA Confined Space & Asbestos Training
- AMP Act 1 & Act 2 Training
- BICSI Certified Technician
- Hilti Powered Actuator Gun Certified
- Wirescope 360
- Life Training & Firestopping Training
- Berktek-Ortronics Certified
- Lead-Based Paint Renovator
- CPR Certified
- OSHA Class IV Training and EPA Asbestos Awareness
- Legrand-Ortronics Certified

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Geoffery Bennett

Audio-Visual Technician

As the Audio/Visual Technician, Mr. Bennett works with our customers and Project Managers to install audio and video solutions that meets the customer's needs.

Certifications

- Factory trained Bogen technician for multiple Bogen proprietary intercom systems

Professional Experience

- 5 years of experience in the audio/visual industry.
- Experienced in structured cabling, installation, programming and maintenance of special low voltage systems covered under the L-67 license including voice, alarm, video, signaling, and data systems for commercial and institutional applications.

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Joe Tavera

Professional Services Associate

More than 14+ years' experience as a network technician/engineer with emphasis in consulting, designing, implementing, testing, and troubleshooting networks for a variety of corporate and public sector clients.

Strong background in network technology solutions.

Professional Experience

- Led an average of 20 major network upgrades and installations per year in some of Arizona's largest school districts from concept to implementation
- 4 years of experience in aircraft maintenance and 2 years' experience as a department head for the United States Marine Corps
- Lead technician in installations of several new Indian Tribal Gaming networks which included Cocopah, Fort McDowell, and Desert Diamond Casinos
- Specialist in network simplification and clean-up, improving network performance and reliability while greatly reducing customer overhead costs, improving maintainability, and reducing risk of unscheduled downtime
- Significant experience and knowledge working with several major network vendors including Cisco, 3Com, Nortel, Enterasys, APC, HP, Dell, and Microsoft

Certifications

- Cisco CCNA (Routing and Switching)
- Cisco CCNA (Wireless)
- CH-46D/E Helicopter – Hydro Pneumatic Technician Certification

Education

- **Associate of Applied Science** in Business from Scottsdale Community College
- **Advanced Leadership Training** from USMC

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Jonathan Calhoun

Physical Security Technician II

Experience in implementing infrastructure protection for commercial, mining, and K-12 industries. Jonathan's military experience as a Blackhawk Maintainer and Crew Chief brings his work ethic, attention to detail, and integrity to the Logicalis Physical Security Team.

Strong background in implementing systems such as Cisco's Physical Access Manager and Video Surveillance Manager, Milestone Xprotect Suites, Razberi with Milestone Arcus, and Panasonic's ASM200.

Professional Experience

- Implemented Cisco Physical Access Manager multi-site installations for customers such as Freeport-McMoran Copper and Gold, Holbrook Unified School District, and Concentrix Corporation
- Implemented Video Surveillance solutions
  - Milestone
  - ASM200
  - VSOM

Specialization Areas

- Cisco Physical Access Manager & Video Surveillance Manager
- Panasonic Camera
- Milestone
- ASM200

Education

- **Avionic Mechanic, Electronic Technology, UH-60 Helicopter Repair** from the Army

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Josh Kehl

RF Engineer

More than 10+ years' experience in Microwave/Networking/Wireless communication, mostly for Homeland Security. Josh consults for public safety in selecting the best technology investments that conform to the individual client's procurement needs.

Strong background in Consult, Design, and Manage approach to projects to manage client relationships and ensure customer satisfaction.

Professional Experience

- DoD top secret level clearance for the last four years
- Extensive experience in Tower modifications, Radio programming, Network design, and Signal conversion
- RF design and testing specialist to ensure customer satisfaction
- Experience in:
  - Wireless communication
  - Radar implementation
  - High level security systems: Long-range cameras/Thermal devises, and sensor systems
- Projects:
  - PCWIN – Pima County Wireless Infrastructure Network
  - FAA – Air traffic control communication system upgrade (nationwide)
  - SBI net – Secure Border Initiative Network
  - EGWISN – Equatorial Guinea Wireless Security Infrastructure Network (Africa)

Certifications

- Anritsu Site Master Network Analyzer
- Non-Ionizing Radiation
- OSHA (for Supervisors)
- Comtrain Tower Safety and High Angle Rescue
- Andrew Transmission Line Connector and Accessories
- RFS Transmission Line Connector and Accessories
- 29 CFR 1910.147 LO/TO
- Intrepid Micro Point Sensor System
- MSHA
- DoT license
- Path Align – R Microwave Alignment System

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Justin McBee

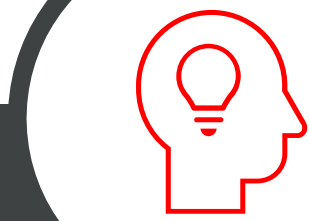
Audio-Visual Sales Engineer

More than 20+ years' experience in the audio/visual industry. Justin works with our customers and Account Executives to design audio and video solutions that meet the customer's needs.

Strong background in designing systems and working with installation teams to ensure accurate implementation.

Professional Experience

- 16+ years of audio/visual design experience
- Experienced with live sound engineering and the design/installation of:
  - Sound reinforcement
  - Video projectors
  - Video displays
  - Video display walls
  - IP video distribution
  - Lecture capture and control systems in classrooms, boardrooms, gymnasiums, outdoor venues, and control rooms
- Managed direction of the AV department



Certifications

- AMX Certified ACE Designer
- Bogen Quantum Multicom IP Technical Training
- Bogen Mass Notification and Emergency Communications Training
- Bogen Multicom 2000 Technical Training
- Configuration of Crestron Systems Technical Training
- Extron School of Audio-Visual Technologies for System Designers
- Extron School of Configurable Control Systems Technical Training
- Extron Certified Control Associate
- Extron Certified AV Associate
- Extron School of Emerging Technologies Technical Training
- Chief Certified Partner Technical Training
- VBrick Network Certified Partner Training

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Kevin Drury

Audio-Visual Technician

As the Audio/Visual Technician, Mr. Drury works with our customers and Project Managers to install audio and video solutions that meets the customer's needs.

Professional Experience

- 12 years of experience in the audio/visual industry, five of that with Logicalis.
- Experienced with live sound engineering and installation of sound reinforcement, video projectors, video displays, video display walls, IP video distribution, lecture capture and control systems in classrooms, boardrooms, gymnasiums, outdoor venues`, and control rooms.

Certifications

- Graduated with Honors from Lincoln Technical Institute Electrical Systems Technician
- NCCER Low Voltage Certified
- Extron Control Professional Certified
- Bogen Nyquist Certified

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Kristopher Sandersfeld

Network Engineer

More than 11+ years' experience providing customer service with top marks in satisfaction surveys. Kris' experience is composed of implementing network design, troubleshooting virtual and data inefficiencies in network topologies.

Strong background in network and data engineering.

Professional Experience

- Determined to quickly learn the current technologies in the IT field while adapting to technology integration
- Working alongside senior level IT engineers to optimize network performance in addition to maintaining system resources
- Understands customer's needs while providing valuable options to help achieve their goals
- Dedicated to troubleshooting customer issues and following through to resolution

Certifications

- Cisco CCNA
- Cisco CCNP – Route Switch
- Cisco CCNA – Wireless
- NPP3: Nutanix Platform Professional
- NTSP: NetApp Accredited Technical Sales Professional

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Michael S. Papp

Physical Security Sales Engineer

More than 10+ years' experience in physical security engineering for Logicalis. Michael has wide experience in designing and implementing infrastructure protection for commercial, government, mining and K-12 industries.

Strong background in implementing cost-effective and capable IP-based security and surveillance systems. In 2014, Michael implemented and designed solutions for forty percent of all schools that were awarded the Arizona State Security Hardware Grant. He has helped Logicalis achieve and maintain premier partnership levels with the surveillance industry's leading manufacturers.

Professional Experience

- 10+ years' experience including 100+ system installations
- Senior Security Design Engineer, Network Infrastructure Corporation
  - Engineered all intrusion, access control, and surveillance solutions for NIC
  - Designed Customer Interlock solutions for Justice Center and Casino customers
- Security Lead Field Technician for the installation, programming, testing and documentation for Access Control, CCTV and Security Systems for Law Enforcement, Gaming, Education, and Medical customers

Certifications

- Panasonic iPro Technical Specialist
- Cisco Connected Physical Security Solutions Specialist
- Milestone Advanced Certifications
- Assa Abloy IP-Based Products Certification

Education

- **Bachelor of Science** in Information Technology from University of Phoenix
- **Computer & Switching Systems Specialist** from USAF

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Rachel Umpleby

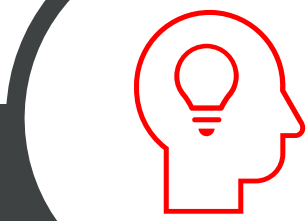
Professional Services Associate

More than 3+ years' experience in consulting, designing, implementing, testing, and troubleshooting networks for a variety of corporate and public sectors.

Strong background in end-to-end delivery of network design and implementation projects.

Professional Experience

- Phoenix Union High School District network refresh project: 1404k Cisco 2802 APs, 313 Cisco Catalyst 2960X switches, and 200 UPS battery backups across 15 high school campuses
- Pueblo Mechanical Lead Engineer: Meraki/Cisco solution implementation across 5 locations thus far, with the continuing growth of the company
- Alhambra Elementary School District network refresh project: Lead Engineer – 125 Cisco APs, 253 Cisco Catalyst 2960X switches, 32 UPS battery backups across 16 school campuses



Certifications

- CCNA
  - Route Switch
  - Cyber Ops
  - Security

Education

- **Associate of Science** in Information Technology – Network and Cyber Security (estimated graduation date: 2021)

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Renato Gomes

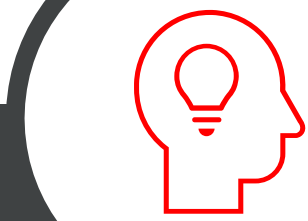
Professional Services Consultant

More than 8+ years' experience in the IT industry as a Cisco Unified Communications and Collaboration Engineer. Experiences include all aspects of the Cisco Ecosystem as a consultant with a Cisco Partner and as a Cisco Customer.

Strong background in end-to-end delivery of UC solutions from architecture through design, implementation, and support. Renato is accustomed to working in the high-paced and demanding financial industry. In addition to financial verticals, he's had exposure to pharmaceutical, car retail businesses, not-for-profit and government institutions.

Professional Experience

- Project 1: Itau Personnalite
  - Lead engineer in Phase 2 production deployment IP telephony
  - Worked with management and end-users to establish standard station configurations
  - Designed and deployed a 2150 user IP telephony solution which included various technical aspects such as: distrusted call manager implementation, redundant gateways, SRST, Unity Server installation, and disaster recovery procedures for Unity
- Project 2: Mexican Embassy
  - Designed and implemented a high-availability UC Communication utilizing Cisco BE6K in a new data center
  - Increased operational effectiveness through deployment of Wireless IP phones
  - SIP Trunking to Service Providers
  - Design and implementation of ASR CUBE
  - Implementation of new Fax Over IP (FoIP) solution over NGN SIP



Specialization Areas

- Unified Communications
- R&S
- Trader Voice Integration
- Cisco Wireless

Certifications

- CCNP Voice
- CCNA Wireless

Education

- **Bachelor of Science** in Information Technology from Faculdades Associadas De Sao Paulo

Professional Experience (continued)

- Project 3: Itau BBA
  - Worked closely with Bank's telecommunications team and Cisco's account team in the implementation of an IP Communications solution in various branch offices
  - Assessed and developed call flow strategy to improve corporate communication, including a new dial plan 77XXX for each remote site
  - Developed auto-attendant scripts to manage call flow for inbound calls to enhance customer service
- Project 4: Hertz Rent-A-Car
  - Project was initiated to replace the existing NEC PBX with the implementation of the Unified Communications Manager
  - As Lead Engineer, designed and deployed a 250 user IP telephony solution
  - The project included distrusted call manager implementation, redundant gateways, SRST, Cisco IM&P, and UCCX

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Tim Bennett

Audio-Visual Technician

More than 20+ years' experience in professional installation service, integration of audio, video, and control solutions. Tim leads installation teams in the field and communicates with clients, other contractors, and vendors to ensure projects are successfully completed.

Strong background in planning, design, coordination, implementation, and documentation of solution needs. Provides user training and follow-on services.

Professional Experience

- Experience working to the component level with a broad range of audio and video communication systems
- Installation, service, and integration of special, low-voltage systems, specializing in the K-12 Education environment
- Experienced Project Development Specialist ensuring each system installation/upgrade project is completed to the customer's satisfaction
- Defense Contract Technician with Loral Aerospace
- US Air Force Veteran trained to Sr Technician level in Ground Radio Communications Repair
    - Technical Representative for the USAF Contracting Office
    - Awarded the Air Force Commendation and Good Conduct Medals

Certifications

- Military Technical Training
- ClearOne Converge Pro Conferencing Systems
- Dukane StarCall Factory Certification
- Bogen Multicomm 2000 and Quantum Intercom Factory Certifications
- Valcom Loudspeaker Paging Systems
- Blonder Tongue Video Distribution Systems Training Analog and Digital
- Extron Certified AV Associate
- Extron Emerging Technologies Training
- Extron Configurable Control Systems Training
- Bose CSR
- NEC CSR
- Loral Aerospace Technical Certification for:
    - Maintenance and operation of air-to-ground and FM communications
    - Voice logging systems
    - Video surveillance recording and distribution

Education

- **Associate of Applied Science** in Radio Communication Technology from Community College of the Air Force
- **Graduate,** Non-Commissioned Officers Academy

Certifications and Contracts

CISCO SYSTEMS
- CCIE (Internetworking Expert)
- CCNA (Network, Wireless, Security Associate)
- CCNP (Routing, Switching, Collaboration Professional)
- CCDA (Design Associate)
- CCDP (Design Professional)
- CCVP (Voice Professional)
- CSE (Sales Expert)

VEEAM
- Veeam Certified Engineer (VMCE)
- Veeam Certified Professional (VMCP)

HP/ARUBA
- HP Master Accredited Solutions Expert (MASE)

SECURITY
- Panasonic iPro Certification
- Milestone Certified Design Engineer
- Milestone Certified Integration Technician
- Pivot3 Certified Presales Tech Professional
- Genetec Security Center Synergis Technical Certification
- Security Center Omnicast Technical Certification

AUDIO VISUAL
- Bogen Mass Notification and Emergency Communications Systems Training
- Bogen Quantum Multicom IP Technical Training
- Bogen Multicom 2000 Technical Training
- Dante certification level 2 This one is new
- Extron Certified Control Associate
- Extron Certified Control Professional
- Extron Configurable Control Systems Training
- Extron XTP Systems Training
- Extron AV Associate
- Extron School of Emerging Technologies
- Extron AV Systems Designer
- Chief Certified Partner
- Configuration of Crestron Systems Training
- AMX ACE Certified Installer
- AMX ACE Certified Designer
- InfoComm Certified Technology Specialist
- Teradon Video & OVC Certification

WIRELESS
- Ceragon FibeAir Technical Training Certification
- Redline Certified Support Professional
- Certified in ComTrain’s Advanced Tower Climbing Safety and Rescue

CABLING
- Commscope Installer Certification
- Bicsi RCDD Certification

STATE CONTRACTS
- ADSPO17-184586 (AV, Intercom Cameras, Cabling)

MOHAVE CONTRACTS
- 17L-LOGIC-1115 (Networking Services, Fire Alarm Systems, Intercom Systems, Master Clocks)
- 19B-ELOG1-0307 (E-RATE Internal Connections)
- 16B-LOGIC2-0723 (Telephone Systems)

1GPA CONTRACTS
- 1GPA-16-04P-09 (Security)
- 1GPA-19-07PV-03 (Internal Connections)
- 1GPA-16-11PV-12 (Technology and Audio-Visual Solutions)

NASPO CONTRACT
- NASPO ValuePoint #CTR045677 (HPE)

SPIN NUMBER
- 143004779

LICENSES
- CR67 ROC278234 (Low Voltage Communication Systems)
- 07-595843-B (Arizona State Tax License)

FORM 3B: PAST PERFORMANCE (TAB 3)

PAST PERFORMANCE: *Additional sheets may be utilized.*

Provide a description of any past, relevant work with school districts or public sector clients. Include a brief summary of the work completed. Offerors are responsible to provide information to show records of positive Past Performance history.

Logicalis has provided details regarding our experience with school districts in the Reference and the Performance Evaluation Survey forms. The following are just a few examples of Logicalis' recent past performance.

A Community School in Coolidge, AZ

The Challenge

- The customer was expanding by building a new campus and needed all new infrastructure. In addition, their existing sites needed data center updates, voice upgrades, and storage expansion.

The Solution

- Supplier: Cisco, Microsoft, VMware, Veeam, & Logicalis Professional Services
- Solution: Replacement of existing cisco servers, update & expand voice system, deploy hyperflex and other core/edge components, and support licensing.

The Benefits

- The customer initially thought that adding infrastructure to support new growth was within budget although they knew they needed a refresh of their existing network. Logicalis and Cisco were able to work together to make the expansion and refresh work within budget. The customer now has infrastructure to support their recent growth, and also their existing network now stable, secure, and supported.

A Community College in Cleveland, OH

The Solution

- Supplier: Cisco + APC + Champion ONE
- Solution: Cisco Next-Generation Campus Network (9K Series Hardware/Software), Cisco Smart Net, APC Network Equipment

Customer Challenges

- The college needed to update its network to ensure availability for modern applications and data.

Why Logicalis?

- The client had a longstanding relationship with CDWg and had a loyalty program in place. Logicalis has been developing relationships with their team since 2011 and positioned our pre-sales engineers and a Logicalis loyalty program that matched or beat what CDWg had in place.
- Logicalis provided significant value in the staging and deployment of the APC equipment due to a previous project of similar scope.
- Logicalis' pre-sales engineers validated BOMs and provided hands-off support and guidance to the CCC team over the last 18 months leading to these wins.
- Our 20+ years of experience and expertise in this sector through our dedicated GovEd practice enabled us to retain this customer.
- Logicalis' award-winning, long-standing partnership with Cisco and our shared commitment to customer success enabled us to deliver true value to their organization.

Mission Accomplished

- The next-generation network accomplished the client's key objectives.

Additional Resulting Opportunities

- Varonis security licensing, Cisco collaboration endpoints

FORM 3B: PAST PERFORMANCE (TAB 3)

A Government Entity in Carlsbad, CA

The Solution

- Supplier: Cisco + Logicalis
- Solution: Cisco Optical Network Switching, ISE, Stealthwatch, DNA Licensing, Cat9K Switches, Wireless and 5-year Enterprise Agreement (EA) + Logicalis Professional Services

Customer Challenges

- In addition to streamlining their IT processes and creating a more secure network through micro-segmentation, the client needed a robust network infrastructure to support their future IoT initiatives.

Why Logicalis?

- Because of our five-year trusted advisor relationship with the client, we were able to avoid a lengthy RFP process by utilizing a state contracting vehicle.
- Our 20+ years of experience and expertise in this sector through our dedicated GovEd practice enabled us to retain this customer.
- Logicalis' award-winning, long-standing partnership with Cisco and our shared commitment to customer success enabled us to deliver true value to their organization.

Mission Accomplished

- The client is currently completing their Dark Fiber Ring using Cisco's optical network equipment. They've also isolated IoT, security and networking workloads through micro-segmentation using a DNA solution.

Additional Resulting Opportunities

- Cisco VoIP, IoT and smart city initiatives

FORM 3C: REFERENCES (TAB 3)

Offeror shall list below a minimum of five (5) client references for performance history that are similar in scope of work to this solicitation. Each reference should complete the Performance Evaluation Survey on page 52 of this RFP and a copy should be included under Tab 3. Alternatively, references may email completed surveys to rseifert@1gpa.org.

1. Client Reference: Fowler Elementary School District #45
Street Address: 1617 S 67th Ave
City: Phoenix State: AZ Zip: 85043
Contact Name: Lane Blake Phone: 623-707-4530
Date of Contract Initiation: 2014
Description of Services Provided: Implementation, support, and service of numerous special systems, including Intercom, Video Surveillance, Structured Cabling, Servers, Storage, Firewalls, Network and Wireless Communications Systems

2. Client Reference: Murphy Elementary District
Street Address: 2615 W Buckeye Rd
City: Phoenix State: AZ Zip: 85009
Contact Name: Issac Farm Phone: 602-353-5075
Date of Contract Initiation: 2012
Description of Services Provided: Implementation, support, and service of numerous special systems, including Intercom, Video Surveillance, Structured Cabling, Firewall, Network and Wireless Communications Systems

3. Client Reference: Payson Unified School District
Street Address: 409 W Longhorn Rd
City: Payson State: AZ Zip: 85541
Contact Name: Victoria Andrews Phone: 928-472-5799
Date of Contract Initiation: 2017
Description of Services Provided: Implementation, support, and service of numerous special systems, Structured Cabling, Servers, Storage, Network and Wireless Communications Systems

4. Client Reference: Saddle Mountain USD #90
Street Address: 38201 W Indian School Rd
City: Tonopah State: AZ Zip: 85354
Contact Name: Eric Brunning Phone: 623-474-5206
Date of Contract Initiation: 2010
Description of Services Provided: Implementation, support, and service of numerous special systems, including Video Surveillance, Structured Cabling, Servers, Storage, Firewall, UPS systems, Network and Wireless Communications Systems

FORM 3C: REFERENCES (TAB 3)

5. Client Reference: Crane Elementary School District No. 13

Street Address: 4250 W 16th St

City: Yuma State: AZ Zip: 85364

Contact Name: Dale Ponder Phone: 928-373-3405

Date of Contract Initiation: 2016

Description of Services Provided: Implementation, support, and service of numerous special systems, including Intercom, Structured Cabling, Servers, Network and Wireless Communications Systems

FORM 3D: PERFORMANCE EVALUATION SURVEY (TAB 3)

Logicalis has provided the completed Form 3D: Performance Evaluation Survey forms following this page.

FORM 3D: PERFORMANCE EVALUATION SURVEY (TAB 3)

Subject: Request For Proposals 21-07P Fire, Security and Communication System Solutions

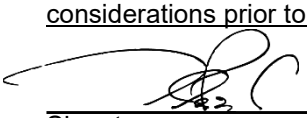
Company Being Surveyed: Logicalis

To Whom It May Concern:
1GPA is currently undergoing Performance Evaluations for the vendor listed above regarding their response to a current solicitation. The information will be used to determine the Past Performance and Qualifications of the above firm. 1GPA would greatly appreciate you taking a few minutes out of your busy day to complete the questionnaire below.
Please evaluate the performance of the vendor (**10 means-you are Always satisfied, 5 means- you are Sometimes satisfied, and 1 means- you are very Dissatisfied because of very poor performance**). If you do not have sufficient knowledge of in a particular area, leave it blank.

NO.	Criteria	Unit	Score
1	Ability to maintain schedule and provide results in a timely manner	(1-10)	10
2	Quality of Products and/or Service	(1-10)	10
3	Ability to understand the needs of the your agency	(1-10)	10
4	Vendor's participation and assistance when "issues" arise	(1-10)	10
5	Close out process (invoicing, no unexpected/hidden fees)	(1-10)	10
6	Billing statements provided are easy to understand	(1-10)	10
7	Ability to follow your agency's rules, regulations, and requirements	(1-10)	10
8	Communication with your agency regarding schedules and timelines	(1-10)	10
9	Vendor provides value added services with satisfaction of your agency	(1-10)	10
10	Overall customer satisfaction based on performance (comfort level in using vendor again)	(1-10)	10

Total Points 100

Any additional comments regarding vendor/services provided: Logicalis is a great partner, and we have successfully and continuously engaged their services on a number of projects over the last 10 years. They are a valuable stakeholder in project development and work very hard to exceed the expectations of the district. The expertise they have in system analysis and engineering make them a perfect solution to many of our needs. They are transparent and forward with any concerns or considerations prior to engaging in a project to ensure that we are aware of any potential challenges.



Signature

February 9, 2021
Date

Dale Ponder
Printed Name

Chief, Finance & Operations
Title

Crane Elementary School District No. 13
Organization

928-373-3405
Phone Number

Thank you for your time and effort in assisting the vendor in this important endeavor. Please email this survey back to the firm requesting it as soon as possible so they can include in their response.

If preferred, you may email this form directly to Rebecca Seifert at rseifert@1gpa.org. PLEASE RETURN THIS FORM TO 1GPA NO LATER THAN February 18, 2021 @ 11:00 AM, AZ TIME.

FORM 3D: PERFORMANCE EVALUATION SURVEY (TAB 3)

Subject: Request For Proposals 21-07P Fire, Security and Communication System Solutions

Company Being Surveyed: Logicalis

To Whom It May Concern:
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Please evaluate the performance of the vendor (**10 means-you are Always satisfied, 5 means- you are Sometimes satisfied, and 1 means- you are very Dissatisfied because of very poor performance**). If you do not have sufficient knowledge of in a particular area, leave it blank.

NO.	Criteria	Unit	Score
1	Ability to maintain schedule and provide results in a timely manner	(1-10)	10
2	Quality of Products and/or Service	(1-10)	10
3	Ability to understand the needs of the your agency	(1-10)	10
4	Vendor's participation and assistance when "issues" arise	(1-10)	10
5	Close out process (invoicing, no unexpected/hidden fees)	(1-10)	10
6	Billing statements provided are easy to understand	(1-10)	10
7	Ability to follow your agency's rules, regulations, and requirements	(1-10)	10
8	Communication with your agency regarding schedules and timelines	(1-10)	10
9	Vendor provides value added services with satisfaction of your agency	(1-10)	10
10	Overall customer satisfaction based on performance (comfort level in using vendor again)	(1-10)	10

They really do exceed our expectations in all areas, every time.

Total Points 100

Any additional comments regarding vendor/services provided: _____

Signature: [signature] Date: 1/22/21

Printed Name: Lane Blake Title: IT Director

Organization: Fowler Elem S.D. #45 Phone Number: 623-707-4530

Thank you for your time and effort in assisting the vendor in this important endeavor. Please email this survey back to the firm requesting it as soon as possible so they can include in their response.

If preferred, you may email this form directly to Rebecca Seifert at rseifert@1gpa.org. PLEASE RETURN THIS FORM TO 1GPA NO LATER THAN February 18, 2021 @ 11:00 AM, AZ TIME.

FORM 3D: PERFORMANCE EVALUATION SURVEY (TAB 3)

Subject: Request For Proposals 21-07P Fire, Security and Communication System Solutions

Company Being Surveyed: Logicalis

To Whom It May Concern:
1GPA is currently undergoing Performance Evaluations for the vendor listed above regarding their response to a current solicitation. The information will be used to determine the Past Performance and Qualifications of the above firm. 1GPA would greatly appreciate you taking a few minutes out of your busy day to complete the questionnaire below.
Please evaluate the performance of the vendor (**10 means-you are Always satisfied, 5 means- you are Sometimes satisfied, and 1 means- you are very Dissatisfied because of very poor performance**). If you do not have sufficient knowledge of in a particular area, leave it blank.

NO.	Criteria	Unit	Score
1	Ability to maintain schedule and provide results in a timely manner	(1-10)	10
2	Quality of Products and/or Service	(1-10)	10
3	Ability to understand the needs of the your agency	(1-10)	9
4	Vendor's participation and assistance when "issues" arise	(1-10)	10
5	Close out process (invoicing, no unexpected/hidden fees)	(1-10)	10
6	Billing statements provided are easy to understand	(1-10)	9
7	Ability to follow your agency's rules, regulations, and requirements	(1-10)	10
8	Communication with your agency regarding schedules and timelines	(1-10)	10
9	Vendor provides value added services with satisfaction of your agency	(1-10)	10
10	Overall customer satisfaction based on performance (comfort level in using vendor again)	(1-10)	10

Total Points 98

Any additional comments regarding vendor/services provided: _____

Signature Isaac F

Date 1/26/2021

Printed Name Isaac Farm

Title IT Director

Organization Murphy Elementary Dist

Phone Number 602-353-5075

FORM 3D: PERFORMANCE EVALUATION SURVEY (TAB 3)

Subject: Request For Proposals 21-07P Fire, Security and Communication System Solutions

Company Being Surveyed: Payson Unified School District

To Whom It May Concern:
1GPA is currently undergoing Performance Evaluations for the vendor listed above regarding their response to a current solicitation. The information will be used to determine the Past Performance and Qualifications of the above firm. 1GPA would greatly appreciate you taking a few minutes out of your busy day to complete the questionnaire below.
Please evaluate the performance of the vendor (**10 means-you are Always satisfied, 5 means- you are Sometimes satisfied, and 1 means- you are very Dissatisfied because of very poor performance**). If you do not have sufficient knowledge of in a particular area, leave it blank.

NO.	Criteria	Unit	Score
1	Ability to maintain schedule and provide results in a timely manner	(1-10)	10
2	Quality of Products and/or Service	(1-10)	10
3	Ability to understand the needs of the your agency	(1-10)	10
4	Vendor's participation and assistance when "issues" arise	(1-10)	10
5	Close out process (invoicing, no unexpected/hidden fees)	(1-10)	10
6	Billing statements provided are easy to understand	(1-10)	10
7	Ability to follow your agency's rules, regulations, and requirements	(1-10)	10
8	Communication with your agency regarding schedules and timelines	(1-10)	10
9	Vendor provides value added services with satisfaction of your agency	(1-10)	10
10	Overall customer satisfaction based on performance (comfort level in using vendor again)	(1-10)	10

Total Points 100

Any additional comments regarding vendor/services provided: Logicalis is always a pleasure to work with.

Signature

1/22/21
Date

Victoria Andrews
Printed Name

Director of Technology & Innovation
Title

Payson Unified School District
Organization

928-472-5799
Phone Number

Thank you for your time and effort in assisting the vendor in this important endeavor. Please email this survey back to the firm requesting it as soon as possible so they can include in their response.

If preferred, you may email this form directly to Rebecca Seifert at rseifert@1gpa.org. PLEASE RETURN THIS FORM TO 1GPA NO LATER THAN February 18, 2021 @ 11:00 AM, AZ TIME.

FORM 3D: PERFORMANCE EVALUATION SURVEY (TAB 3)

Subject: Request For Proposals 21-07P Fire, Security and Communication System Solutions

Company Being Surveyed: _____

To Whom It May Concern:
1GPA is currently undergoing Performance Evaluations for the vendor listed above regarding their response to a current solicitation. The information will be used to determine the Past Performance and Qualifications of the above firm. 1GPA would greatly appreciate you taking a few minutes out of your busy day to complete the questionnaire below.
Please evaluate the performance of the vendor (**10 means-you are Always satisfied, 5 means- you are Sometimes satisfied, and 1 means- you are very Dissatisfied because of very poor performance**). If you do not have sufficient knowledge of in a particular area, leave it blank.

NO.	Criteria	Unit	Score
1	Ability to maintain schedule and provide results in a timely manner	(1-10)	10
2	Quality of Products and/or Service	(1-10)	9
3	Ability to understand the needs of the your agency	(1-10)	9
4	Vendor's participation and assistance when "issues" arise	(1-10)	10
5	Close out process (invoicing, no unexpected/hidden fees)	(1-10)	8
6	Billing statements provided are easy to understand	(1-10)	7
7	Ability to follow your agency's rules, regulations, and requirements	(1-10)	9
8	Communication with your agency regarding schedules and timelines	(1-10)	9
9	Vendor provides value added services with satisfaction of your agency	(1-10)	9
10	Overall customer satisfaction based on performance (comfort level in using vendor again)	(1-10)	9

Total Points 89

Any additional comments regarding vendor/services provided: Loyal & Committed Vendor for years

Signature Eric Brunning Date 1/22/21

Printed Name ERIC BRUNNING Title Director of Information Technology

Organization Saddle Mountain USD #90 Phone Number 623-474-5206

FORM 3E: FINANCIAL DISCLOSURE QUESTIONNAIRE (TAB 3)

Offeror shall complete each item using attachments if necessary. Attachments shall indicate the item number and heading being referenced as it appears below. Please respond "Not Applicable", "N/A", or "none" as needed instead of leaving items blank. Failure to complete may result in the rejection of proposal as unresponsive:

1. Have any licenses / certifications ever been denied, revoked or suspended or provisionally issued within the past five years? If yes, please provide explanation.

No.

2. List all judgments, arbitration awards and settlements against your firm within the last three (3) years arising from a lawsuit or claim of any nature.

Logicalis is involved in routine litigation in the ordinary course of its business, such as collection matters, etc. The result of any litigation will not have a material impact on the financial performance or the operations of Logicalis.

3. Describe all unresolved claims, arbitration claims, lawsuits or bond claims brought by or against your firm. Include the name of all parties and a brief description of the nature of the dispute.

Logicalis is involved in routine litigation in the ordinary course of its business, such as collection matters, etc. The result of any litigation will not have a material impact on the financial performance or the operations of Logicalis.

4. Has your firm made any filing under the United States Bankruptcy Code, assignment for the benefit of creditors or other measures taken for the protection against creditors during the last three (3) years?

No.

5. If the Offeror's firm is a division or subsidiary of another firm, indicate below the name and address of the parent firm. Also include a description of the working relationship between the Offeror's firm and the parent firm. Specify what impact, if any, this relationship would have on the Offeror's firm's ability to meet the requirements for services described in this solicitation.

Logicalis, Inc. is a corporation, wholly owned by Logicalis US Holdings, Inc., (a wholly owned subsidiary of Logicalis Group Ltd., a wholly owned subsidiary of Datatec Ltd.)

Logicalis US Holdings, Inc.'s address is 2600 Telegraph Road, Suite 200, Bloomfield Hills, MI 48302.
Logicalis Group Ltd.'s address is 110 Buckingham Avenue, Slough, Berkshire, SL1 4PF, United Kingdom.
Datatec Ltd.'s address is Sandown Chambers, Sandown Village, 16 Maude Street, Sandown, Sandton, 2031, South Africa.

Logicalis, Inc.'s relationship with its parent companies would have no impact on its ability to meet the requirements for services described in this proposal.

6. Has your company ever had a name change in the past? __X__Yes _____No
If yes, provide all prior name(s) your company has used and year(s) of operation.

Logical Networks, Inc. from 1998 to 2003, as which time it was changed to Logicalis, Inc.

10. What are the annual sales for the past 3 years for your firm?

2019: $410M 2018: $389M 2017: $452M

Note: 1GPA reserves the right to request a copy of audited financial statements for the immediate past two fiscal year

Tab 4 Additional Value/Services Offered

The following pages include the completed:

- Form 4A: Value Added Services
- Form 4B: Marketing Plan
- Form 4C: Geographical Locations and Regions

FORM 4A: VALUE ADDED SERVICES (TAB 4)

VALUE ADDED SERVICES: *Additional sheets may be utilized.*

Identify any other related value-added services your firm offers at little or no cost that support your firm's primary business such as vendor managed inventory, consignment programs, lunch and learns, etc. Any associated fees shall be included in the Excel Cost Form Tab 3 (filed in Tab 1 of your response).

Logicalis has been involved in the Public Sector area since its inception and has specialized in K-12 Education. Logicalis has been involved with district throughout Arizona on helping plan and implement their Fire and Safety products and services.

Logicalis is a turnkey network integration company, our projects are led by our experienced and certified project management team. As Logicalis performs all work in house, we ensure all systems function together and there are not required components that were not bid resulting in change orders which cost both time and money as well as delay projects from vendor "finger pointing".

As a self-performing turnkey contractor highly experienced in educational integrated systems, we are offering our maximum pricing discounts on all of the products and services. Our dedication to the educational market is a long term business commitment and one we take great pride in. Logicalis is a member of AZTEA (Arizona Technology in Education Alliance) and participates in numerous education events as well as hosts seminars and training, we are committed to the education community in Arizona.

Logicalis is committed to provide all the services, expertise, time and patience required to implement projects resulting from this RFP. Logicalis is able to offer even greater and expanded service offerings as well as additional discount to 1GPA members due to our National and International presence.

Logicalis is a customer focused and technology driven network integrator locally serving Arizona since 1998. Logicalis specializes in Telephony (VoIP), LAN/WAN integration, security, audio/video, cabling and Wireless Microwave. We select manufacturer's products based on the specific requirements of each customer's application. Our key goal is to find the best communication solutions to enhance our customer's business. Our solutions are based on Logicalis meeting the highest standards of engineering certifications, value-added services, and customer satisfaction. Logicalis' team of professionals combines a wide range of experience in information technology. Our hands on experience give us a definite edge in providing technical solutions that really work. Logicalis provides these solutions by practicing an internal policy of education. Our engineers are constantly trained and certified in the latest technology solutions and enhancements. Our installers are certified in structured cabling systems and quality delivery of workmanship. Our designers are BICSI registered and RCDD certified. Our project management staff is experienced in providing immediate customer response, on time and within budget projects, and total customer satisfaction. Our Sales, Project Management, and Engineering team holds the highest certification available in the industry including but not limited to CCIE, PMP, and RCDD's.

Logicalis distinguishes itself from the competition as a Prime Integrator by focusing on total end-to-end solutions. We feel that in order to understand the complexities and growth of your communications systems we must fully understand and appreciate the environment in which those systems reside. The success of a communication system cannot be measured by the complexity and sophistication of its design, but by its ability to perform and facilitate your communications requirements.

Logicalis is currently the prime integrator in Arizona. These integration projects would include school districts, cities, government agencies, and a large number of commercial accounts. We are very familiar with information delivery system specifications, standards, and installation requirements, especially in today's emerging technology systems. We believe that because we have this experience and expertise, we can provide you with the best solution that will be competitive, on time and most cost effective.

FORM 4B: MARKETING PLAN (TAB 4)

MARKETING PLAN: *Additional sheets may be utilized*

1. Describe your firm's strategy to successfully market, promote and communicate the benefits of this contract to current and potential 1GPA Members nationwide.

With SLED customers, it is often difficult to find opportunities to build relationships and network (as with commercial customers). With restrictive procurement policies and gift-giving rules, Logicalis uses the concept of Educate/Influence to provide value to our customers/prospects through "pushing" information that they may find relevant. We use a variety of mechanisms to educate and influence:

- **Lunch & Learns**. This policy-friendly type of engagement is a perfect venue for both demand generation and continuing customer engagement. We provide educational-based content for these lunch & learn events with low-pressure and a friendly environment.
- **Social Media**. We take social media seriously. Our marketing team has full-time resources dedicated to getting the word out. For SLED, much of our social media outreach lands on our dedicated GovEd Micro-Site (www.us.logicalis.com/goved). This allows us to track visitors, market for educational access, and provide feedback to the sales teams. We provide training to our sales teams on the effective use of LinkedIn and other social media tools to educate our customers and push meaningful content regarding their specific SLED vertical.
- **Events & Associations**. Some of our largest marketing investments are at vertical-associated tradeshows and events. We participate in AZTEA (Arizona Technology in Education Alliance), CETPA, CISDA, CISOA, MISAC, and Educause to name a few. We typically blend a demand-generation event mixer with booth sponsorship.
- **Regional & National Campaigns**. Logicalis' GovEd Practice sponsors national demand-generation campaigns targeted specifically for SLED customers.

2. Describe how your firm will train your employees to properly use the contract.

As a long-time 1GPA contract holder, Logicalis currently has this process set up and in place based on the numerous contracts we hold for public sector across the nation.

FORM 4B: MARKETING PLAN (TAB 4)

3. List any organizations and trade shows your firm actively participates in. Describe how the 1GPA contract will be displayed and promoted.

Please see the details above regarding a few of the organizations/tradeshows we're involved with. Logicalis has a 1GPA Data Sheet that is made available to the sales staff to display/promote the contract.

FORM 4C: GEOGRAPHICAL REQUIREMENTS & PROPOSAL FORMAT (TAB 4)

Place "P" for Products, "S" for Services or "PS" for Products and Services in the box(es) next to the geographical locations served by your firm. Mark the appropriate "All" boxes if your firm provides products and/or services to all states listed in a Division (no need to mark each state individually).

REGION 1: Northeast		***P, S or PS***
Division 1: New England	All	PS
	Connecticut	
	Maine	
	Massachusetts	
	New Hampshire	
	Rhode Island	
	Vermont	
Division 2: Mid Atlantic	All	
	New Jersey	
	New York	
	Pennsylvania	

REGION 2: Midwest		***P, S or PS***
Division 3: East North Central	All	PS
	Illinois	
	Indiana	
	Michigan	
	Ohio	
	Wisconsin	
Division 4: West North Central	All	PS
	Iowa	
	Kansas	
	Minnesota	
	Missouri	
	Nebraska	
	North Dakota	
	South Dakota	

REGION 3: South		***P, S or PS***
Division 5: South Atlantic	All	PS
	Delaware	
	Florida	
	Georgia	
	Maryland	
	North Carolina	
	South Carolina	
	Virginia	
	District of Columbia	
	West Virginia	
Division 6: East South Central	All	PS
	Alabama	
	Kentucky	
	Mississippi	
	Tennessee	
Division 7: West South Central	All	PS
	Arkansas	
	Louisiana	
	Oklahoma	
	Texas	

FORM 4C: GEOGRAPHICAL REQUIREMENTS & PROPOSAL FORMAT (TAB 4)

REGION 4: West		***P, S or PS***
Division 8: Mountain	All	PS
	Arizona	
	Colorado	
	Idaho	
	Montana	
	Nevada	
	New Mexico	
	Utah	
	Wyoming	
Division 9: Pacific	All	PS
	Alaska	
	California	
	Hawaii	
	Oregon	
	Washington	

Tab 5 Responsiveness

The following pages include the completed:

- Form 5A: Responsiveness/Compliance

FORM 5A: RESPONSIVENESS/COMPLIANCE

RESPONSIVENESS: Offerors shall confirm that all documentation requested herein has been completed, signed and submitted. If not, state the reason for the omission.

Requested Copies	
DESCRIPTION:	**Check**
1. Original Hardcopy	☒
2. Two Additional Hardcopies	☒
3. Electronic Copy (submitted via ProcureNow portal or thumb drive)	☒

Required Forms	
DESCRIPTION:	**Check**
1. Proposal and Contract Acceptance Form (Page 5)	☒
2. Confidential/Proprietary Submittals Form (Page 60)	☒
3. Deviations/Exceptions Form (Page 61)	☒
4. Non-Collusion Affidavit (Page 62)	☒
5. EDGAR Certifications (Page 63-67)	☒
6. Debarment Certification (Page 68)	☒
7. Anti-Trust Certification (Page 69)	☒
8. Minority/Women Business Enterprise (MWBE) and Historically Underutilized Business (HUB) Form (Page 70)	☒
9. Certificate of Insurance (Page 71)	☒
10. W-9 Form (Page 72)	☒
11. Addendum acknowledgement (if applicable). The offeror is responsible for checking the Public Purchase or AZ Purchasing websites for any amendments issued.	☒

Required Forms

The following pages include the completed:

- Proposal and Contract Acceptance Form
- Confidential/Proprietary Submittals Form
- Deviations/Exceptions Form
- Non-Collusion Affidavit
- EDGAR Certifications
- Debarment Certification
- Anti-Trust Certification
- Minority/Women Business Enterprise (MWBE) and Historically Underutilized Business (HUB) Form
- Certificate of Insurance
- W-9 Form
- Addendum acknowledgement

OFFEROR'S PROPOSAL AND CONTRACT ACCEPTANCE

The Undersigned hereby certifies understanding and compliance with the requirements in the General Terms and Conditions. Offeror further agrees to furnish the material and/or service in compliance with all terms, conditions, specifications, and amendments in the solicitation and any written exceptions in the Proposal.

13-4000122 Federal Employer Identification Number	8945 S. Harl Avenue, Suite 102 Address
Logicalis, Inc. Company Name	Tempe AZ 85284 City, State Zip
Pete Edwards Printed Name	480-850-5050 Company Telephone Number
Area Sales Director Title	Jamie Kazee Accounting / AP Contact Name
LogicalisGovEdContracts@us.logicalis.com Primary Email (for Contract Inquiries)	Jamie.Kazee@us.logicalis.com Accounting / AP Email

Authorized Signature

The vendor shall not commence any billable work or provide any material or service under this contract until Vendor receives a purchase order/contract from a 1GPA member. The vendor agrees to comply with the requirements of submitting Usage Reports and Purchase Orders and/or Contracts to 1GPA. The vendor shall provide monthly or quarterly (arrangements to be made with 1GPA) reconciliation reports based on all contract activity to 1GPA. Vendor will be invoiced from these reports. Invoices are due upon receipt.

1GPA'S PROPOSAL AND CONTRACT ACCEPTANCE

The Proposal is hereby accepted:

The Vendor is now bound to sell the materials and/or services offered to and accepted by 1GPA in accordance with the solicitation, including all terms, conditions, specifications, amendments, etc.

This contract shall henceforth be referred to as 21-07P-_____ Fire, Security and Communication System Solutions

Awarded this _____ day of _____ 2021

This contract shall be effective this _____day of _____ 2021

1GPA

Signature: _____ Date: _____

Printed Name: _____ Title: _____

Approved By: Mary C. O'Brien Accommodation School/Pinal County ESA

Signature: _____ Date: _____

Printed Name: _____ Title: _____

CONFIDENTIAL/PROPRIETARY SUBMITTALS

Confidential/Proprietary Submittal (mark one):

☒ **No confidential/proprietary materials included.**

☐ **Confidential/Proprietary materials included.** Offerors should identify below any portion of their Proposal deemed confidential or proprietary. Identification in this section does not guarantee that disclosure will be prevented but that the item will be subject to review by the Offeror and 1GPA prior to any public disclosure. Contract terms and conditions, pricing, and information generally available to the public are not considered confidential information. 1GPA will be the final judge if materials will be accepted as confidential or not. **Request to deem the entire Proposal or price as confidential will not be a consideration.**

Complete description of the material to be considered confidential, including the page number, paragraph and other identifiable information must be outlined below.

The undersigned hereby acknowledges that any items deemed to be confidential or proprietary are clearly listed on this Form.

Logicalis, Inc.
Offeror Name

Authorized Signature

2/16/21
Date

Pete Edwards, Area Sales Director
Printed Name and Title

DEVIATIONS/EXCEPTIONS

Offerors shall indicate any and all deviations/exceptions taken to the provisions or specifications in this solicitation document. Clearly identify the specific paragraph(s) of the Solicitation where the exceptions occur and describe in detail. The Offeror's preprinted or standard terms will not be considered as a part of any resulting Contract. All exceptions that are contained in the Proposal may negatively affect the solicitation evaluation based on the evaluation criteria as stated in the Solicitation or result in rejection of the Proposal. No exceptions included in the Proposal shall become part of the resulting Contract unless agreed and accepted to by 1GPA.

Deviations / Exceptions (mark one):

☒ **No Deviations / Exceptions**

☐ **Deviations / Exceptions Taken (explain in detail – attach additional pages if needed):**

The Undersigned hereby acknowledges that any deviation/exceptions to this Solicitation are clearly listed on this Form.

Logicalis, Inc.
Offeror Name

Authorized Signature

2/16/21
Date

Pete Edwards, Area Sales Director
Printed Name and Title

NON-COLLUSION AFFIDAVIT

State of Arizona County of Maricopa

Pete Edwards Area Sales Director

Name Title

Logicalis, Inc.

Company Name

As an authorized representative of the persons, corporation, or company who makes the accompanying Proposal, and having first been duly sworn, I hereby depose and state as follows:

The accompanying Proposal is genuine, and such Offer is neither a sham nor collusive, nor is such Offer made in the interest or on behalf of any person or corporation not named herein.

The Offeror has not directly or indirectly induced or solicited any other Offeror to put in a sham or collusive bid, or induced or solicited any other Offeror to refrain from submitting an Offer.

The Offeror has not in any manner sought by collusion or anti-competitive means or practices to secure for itself advantage over any other Bidder.

The Offeror has taken steps and exercised due diligence to ensure that no violation of A.R.S § 15-213(O) has occurred.

Signed: _____

Title: Area Sales Director

Subscribed and sworn to before me

This 16th day of FEBRUARY, 2021

_____

Signature of Notary Public in and for the

State of ARIZONA

County of MARICOPA

My Commission Expires on 11/08/2022

DANIELLE MARTINEZ
Notary Public - Arizona
Maricopa County
Commission # 555692
My Comm. Expires Nov 8, 2022

THIS PAGE MUST BE SIGNED, NOTARIZED AND RETURNED WITH YOUR RESPONSE

EDGAR CERTIFICATIONS

The following certifications and provisions are required and apply when a 1GPA Member expends federal funds for any contract resulting from this procurement process. Accordingly, the parties agree that the following terms and conditions apply to the Contract between 1GPA, Member and awarded Vendor ("Vendor") in all situations where Vendor has been paid or will be paid with federal funds:

(A) Contractor Violation or Breach of Contract Terms

Contracts for more than the simplified acquisition threshold currently set at $150,000, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.

Pursuant to Federal Rule (A) above, when 1GPA Member expends federal funds, 1GPA reserves all rights and privileges under the applicable laws and regulations with respect to this procurement in the event of breach of contract by either party.

Does Vendor agree? YES PE Initials of Authorized Representative of Vendor

(B). Termination for Cause or Convenience

Termination for cause and for convenience by the grantee or subgrantee including the manner by which it will be effected and the basis for settlement. (All contracts in excess of $10,000)

Pursuant to Federal Rule (B) above, when 1GPA Member expends federal funds, 1GPA or its Member reserves the right to immediately terminate any agreement in excess of $10,000 resulting from this procurement process in the event of a breach or default of the agreement by Vendor in the event Vendor fails to: (1) meet schedules, deadlines, and/or delivery dates within the time specified in the procurement solicitation, contract, and/or a purchase order; (2) make any payments owed; or (3) otherwise perform in accordance with the contract and/or the procurement solicitation. 1GPA also reserves the right to terminate the contract immediately, with written notice to vendor, for convenience, if 1GPA believes, in its sole discretion that it is in the best interest of 1GPA to do so. Vendor will be compensated for work performed and accepted and goods accepted by 1GPA as of the termination date if the contract is terminated for convenience of 1GPA. Any award under this procurement process is not exclusive and 1GPA reserves the right to purchase goods and services from other vendors when it is in 1GPA's best interest.

Does Vendor agree? YES PE Initials of Authorized Representative of Vendor

(C). Equal Employment Opportunity

Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

Pursuant to Federal Rule (C) above, when 1GPA Member expends federal funds on any federally assisted construction contract, the equal opportunity clause is incorporated by reference herein.

Does Vendor agree to abide by the above? YES PE Initials of Authorized Representative of Vendor

(D). Davis-Bacon Act

When required by Federal program legislation, contractor agrees that, for all prime construction contracts in excess of $2,000, contractor shall comply with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. Current prevailing wage determination issued by the Department of Labor are available at www.wdol.gov. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. Contractor further agrees that it shall also comply with the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the

EDGAR CERTIFICATIONS

construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The 1GPA Member must report all suspected or reported violations to the Federal awarding agency.

Pursuant to Federal Rule (D) above, when 1GPA Member expends federal funds during the term of an award for all contracts and subgrants for construction or repair, Vendor will be in compliance with all applicable Davis-Bacon Act provisions.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

(E). Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708)

Where applicable, all contracts awarded in excess of $100,000 that involve the employment of mechanics or laborers, Contractor agrees to comply with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor is required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

Pursuant to Federal Rule (E) above, when 1GPA Members expends federal funds, Vendor certifies that Vendor will be in compliance with all applicable provisions of the Contract Work Hours and Safety Standards Act during the term of an award for all contracts by 1GPA resulting from this procurement process.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

(F). Rights to Inventions Made Under a Contract or Agreement

If the Federal award meets the definition of "funding agreement" under 37 CFR §401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

Pursuant to Federal Rule (F) above, when federal funds are expended by 1GPA Member, Vendor certifies that during the term of an award for all contracts by 1GPA resulting from this procurement process, Vendor agrees to comply with all applicable requirements as referenced in Federal Rule (6) above.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

(G) Clean Air Act and Federal Water Pollution Act

Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended—Contracts and subgrants of amounts in excess of $150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251- 1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

Pursuant to Federal Rule (G) above, when federal funds are expended by 1GPA Member, Vendor certifies that during the term of an award for all contracts by 1GPA resulting from this procurement process, Vendor agrees to comply with all applicable requirements as referenced in Federal Rule (G) above.

Does Vendor agree? YES _____ Initials of Authorized Representative of Vendor

(H) Debarment and Suspension

Debarment and Suspension (Executive Orders 12549 and 12689)—A contract award (see 2 CFR 180.220) must not be made to parties listed on the government wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the

EDGAR CERTIFICATIONS

names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

Pursuant to Federal Rule (H) above, when federal funds are expended by 1GPA Member, Vendor certifies that during the term of an award for all contracts by 1GPA resulting from this procurement process, Vendor certifies that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation by any federal department or agency.

Does Vendor agree? YES BE Initials of Authorized Representative of Vendor

(I) Byrd Anti-Lobbying Amendment

Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)—Contractors that apply or bid for an award exceeding $100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

Pursuant to Federal Rule (I) above, when federal funds are expended by 1GPA Member, Vendor certifies that during the term and after the awarded term of an award for all contracts by 1GPA resulting from this procurement process, the vendor certifies that it is in compliance with all applicable provisions of the Byrd Anti-Lobbying Amendment (31 U.S.C. 1352). The undersigned further certifies that:

(1) No Federal appropriated funds have been paid or will be paid for on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of congress, or an employee of a Member of Congress in connection with the awarding of a Federal contract, the making of a Federal grant, the making of a Federal loan, the entering into a cooperative agreement, and the extension, continuation, renewal, amendment, or modification of a Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of congress, or an employee of a Member of Congress in connection with this Federal grant or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all covered sub-awards exceeding $100,000 in Federal funds at all appropriate tiers and that all subrecipients shall certify and disclose accordingly.

Does Vendor agree? YES BE Initials of Authorized Representative of Vendor

(J) Procurement of Recovered Materials

When federal funds are expended, Member and its contractors must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include: (1) procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000; (2) procuring solid waste management services in a manner that maximizes energy and resource recovery; and (3) establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

Pursuant to Federal Rule (J) above, when federal funds are expended by the Member, as required by the Resource Conservation and Recovery Act of 1976 (42 U.S.C. § 6962(c)(3)(A)(i)), the vendor certifies, by signing this document, that the percentage of recovered materials content for EPA-designated items to be delivered or used in the performance of the contract will be at least the amount required by the applicable contract specifications or other contractual requirements.

Does Vendor agree? YES BE Initials of Authorized Representative of Vendor

EDGAR CERTIFICATIONS

RECORD RETENTION REQUIREMENTS FOR CONTRACTS INVOLVING FEDERAL FUNDS

When federal funds are expended by 1GPA Member for any contract resulting from this procurement process, Vendor certifies that it will comply with the record retention requirements detailed in 2 CFR § 200.333. Vendor further certifies that it will retain all records as required by 2 CFR § 200.333 for a period of three years after grantees or subgrantees submit final expenditure reports or quarterly or annual financial reports, as applicable, and all other pending matters are closed.

Does Vendor agree? YES BE Initials of Authorized Representative of Vendor

CERTIFICATION OF COMPLIANCE WITH THE ENERGY POLICY AND CONSERVATION ACT

When 1GPA Member expends federal funds for any contract resulting from this procurement process, Vendor certifies that it will comply with the mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. 6321 et seq.; 49 C.F.R. Part 18).

Does Vendor agree? YES BE Initials of Authorized Representative of Vendor

CERTIFICATION OF EQUAL EMPLOYMENT STATEMENT

It is the policy of 1GPA not to discriminate on the basis of race, color, national origin, gender, limited English proficiency or handicapping conditions in its programs. Vendor agrees not to discriminate against any employee or applicant for employment to be employed in the performance of this Contract, with respect to hire, tenure, terms, conditions and privileges of employment, or a matter directly or indirectly related to employment, because of age (except where based on a bona fide occupational qualification), sex (except where based on a bona fide occupational qualification) or race, color, religion, national origin, or ancestry. Vendor further agrees that every subcontract entered into for the performance of this Contract shall contain a provision requiring non-discrimination in employment herein specified, binding upon each subcontractor. Breach of this covenant may be regarded as a material breach of the Contract.

Does Vendor agree? YES BE Initials of Authorized Representative of Vendor

CERTIFICATION OF COMPLIANCE WITH BUY AMERICA PROVISIONS

1GPA has a preference for domestic end products for supplies acquired for use in the United States when spending federal funds (purchases that are made with non-federal funds or grants are excluded from the Buy America Act). Vendor certifies that it is in compliance with all applicable provisions of the Buy America Act.

Does Vendor agree? YES BE Initials of Authorized Representative of Vendor

CERTIFICATION OF ACCESS TO RECORDS – 2 C.F.R. § 200.336

Vendor agrees that the District's Inspector General or any of their duly authorized representatives shall have access to any books, documents, papers and records of Vendor that are directly pertinent to Vendor's discharge of its obligations under the Contract for the purpose of making audits, examinations, excerpts, and transcriptions. The right also includes timely and reasonable access to Vendor's personnel for the purpose of interview and discussion relating to such documents.

Does Vendor agree? YES BE Initials of Authorized Representative of Vendor

EDGAR CERTIFICATIONS

CERTIFICATION OF APPLICABILITY TO SUBCONTRACTRS

Vendor agrees that all contracts it awards pursuant to the Contract shall be bound by the foregoing terms and conditions.

Does Vendor agree? YES PE Initials of Authorized Representative of Vendor

VENDOR AGREES TO COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, RULES, REGULATIONS, AND ORDINANCES. IT IS FURTHER ACKNOWLEDGED THAT VENDOR CERTIFIES COMPLIANCE WITH ALL PROVISIONS, LAWS, ACTS, REGULATIONS, ETC. AS SPECIFICALLY NOTED ABOVE.

Vendor's Name: Logicalis, Inc.

Address, City, State, and Zip Code: 8945 S. Harl Avenue, Suite 102, Tempe, AZ 85284

Phone Number: 480-850-5050 Fax Number: 248-232-5506

Printed Name and Title of Authorized Representative: Pete Edwards, Area Sales Director

Email Address: pete.edwards@us.logicalis.com

Signature of Authorized Representative:

Date: 2-16-21

DEBARMENT CERTIFICATION

Neither my company nor an owner or principal of my company has been debarred, suspended or otherwise made ineligible for participation in Federal Assistance programs under Executive Order 12549, "Debarment and Suspension," as described in the Federal Register and Rules and Regulations.

By signature below, I certify that the above is true, complete and accurate and that I am authorized by my company to make this certification.

Logicalis, Inc.
Company Name

Signature of Authorized Company Official

Pete Edwards, Area Sales Director
Printed Name

2-16-21
Date

ANTITRUST CERTIFICATION STATEMENT

Texas Government Code
§2155.005

I affirm under penalty of perjury of the laws of the State of Texas that:

1. I am duly authorized to execute this contract on my own behalf or on behalf of the company, corporation, firm, partnership or individual (Company) listed below.
2. In connection with this bid, neither I nor any representative of the Company has violated any provision of the Texas Free Enterprise and Antitrust Act, Tex. Bus. & Comm. Code Chapter 15.
3. In connection with this bid, neither I nor any representative of the Company has violated any federal antitrust law; and
4. Neither I nor any representative of the company has directly or indirectly communicated any of the contents of this bid to a competitor of the company or any other company, corporation, firm, partnership, or individual engaged in the same line of business as the company listed.

Vendor Name Logicalis, Inc.
(Please Type or Print)

Address 8945 S. Harl Avenue, Suite 102

Tempe, AZ 85284

Phone 480-850-5050 Fax 248-232-5506

Email pete.edwards@us.logicalis.com Website www.us.logicalis.com

Name of Person Submitting Bid Pete Edwards

Signature _____ Date 2-16-21

Position with Company Area Sales Director

MINORITY/WOMEN BUSINESS ENTERPRISE (MWBE) AND HISTORICALLY UNDERUTILIZED BUSINESSES (HUB)

Bidding companies that have been certified as Historically Underutilized Business (HUB) or Minority/Women Business Enterprise (MWBE) entities are encouraged to indicate their HUB and MWBE status when responding to this Bid Invitation.

Vendor certifies that this firm is a MWBE (Required by some participating agencies)	☐ Yes	☒ No
Vendor certifies that this firm is a HUB (Required by some participating agencies)	☐ Yes	☒ No

Please scan a copy of MWBE and/or HUB certification letter and the percentage of your business with MWBE and/or HUB suppliers, if applicable, in your bid response in the Response Attachments section.

I, the authorized representative for the company named below, certify that the information concerning residency certification, and MWBE and HUB certifications have been reviewed by me and the information furnished is true to the best of my knowledge.

Vendor's Name/Company Name: Logicalis, Inc.

Address, City, State, and Zip Code: 8945 S. Harl Avenue, Suite 102, Tempe, AZ 85284

Phone Number: 480-850-5050 Fax Number: 248-232-5506

Printed Name and Title of Authorized Representative: Pete Edwards, Area Sales Director

Email Address: pete.edwards@us.logicalis.com

Signature of Authorized Representative: Date: 2-16-21

CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY)
07/31/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Aon Risk Services Central, Inc.
Southfield MI Office
3000 Town Center
Suite 3000
Southfield MI 48075 USA

CONTACT NAME:
PHONE (A/C. No. Ext): (866) 283-7122 **FAX (A/C. No.):** (800) 363-0105
E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE		NAIC #
INSURER A:	Federal Insurance Company	20281
INSURER B:	Great Northern Insurance Co.	20303
INSURER C:	Pacific Indemnity Co	20346
INSURER D:		
INSURER E:		
INSURER F:		

INSURED
Logicalis, Inc.
2600 S. Telegraph Road
Suite 200
Bloomfield Hills MI 48302 USA

COVERAGES **CERTIFICATE NUMBER:** 570083400714 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

Limits shown are as requested

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X **COMMERCIAL GENERAL LIABILITY** CLAIMS-MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT X LOC OTHER:			35933780	08/01/2020	08/01/2021	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$1,000,000 $1,000,000 $10,000 $1,000,000 $2,000,000 $2,000,000
B	**AUTOMOBILE LIABILITY** X ANY AUTO OWNED AUTOS ONLY HIRED AUTOS ONLY SCHEDULED AUTOS NON-OWNED AUTOS ONLY X Coll Ded: $250 X Comp Ded: $250			7358-48-78	08/01/2020	08/01/2021	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$1,000,000
A	**UMBRELLA LIAB** X OCCUR X **EXCESS LIAB** CLAIMS-MADE DED RETENTION			79899639	08/01/2020	08/01/2021	EACH OCCURRENCE AGGREGATE	$4,000,000 $4,000,000
C	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N: N **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		2171736517	08/01/2020	08/01/2021	X PER STATUTE OTH-ER E.L. EACH ACCIDENT E.L. DISEASE-EA EMPLOYEE E.L. DISEASE-POLICY LIMIT	 $1,000,000 $1,000,000 $1,000,000
B	E&O-PL-Primary			99508164 Claims Made	08/01/2020	08/01/2021	Aggregate Deductible	$2,000,000 $100,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
Evidence of Coverage

CERTIFICATE HOLDER

Logicalis, Inc.
2600 S. Telegraph Road
Suite 200
Bloomfield Hills MI 48302 USA

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Aon Risk Services Central, Inc.

Holder Identifier :

Certificate No : 570083400714

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Form **W-9**
(Rev. November 2017)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ **Go to *www.irs.gov/FormW9* for instructions and the latest information.**

Give Form to the requester. Do not send to the IRS.

Print or type. See Specific Instructions on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.
Logicalis, Inc.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.
2600 S. Telegraph Rd. Ste 200

Requester's name and address (optional)

6 City, state, and ZIP code
Bloomfield Hills, MI 48302-0969

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN,* later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number
☐☐☐ – ☐☐ – ☐☐☐☐

or

Employer identification number
1 3 – 4 0 0 0 1 2 2

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here Signature of U.S. person ▶ Nancy Saltzman Date ▶ January 8, 2021

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9.*

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*

1Government Procurement Alliance

AMENDMENT #1
RFP 20-07P
Fire, Security and Communication System Solutions
Proposal Due Date and Time: February 18, 2021 at 11:00 AM Arizona Time

The above reference solicitation is hereby amended as follows:

1. Page 7, Item 2. (B.) Signature(s) on Proposals, replace with: The Proposal and Contract Acceptance document should be submitted with an original ink or electronic signature by the person authorized to sign the Proposal. Failure to sign the Proposal and Contract Acceptance document may result in rejection of the Proposal.

2. Page 22, Item 21. Price Adjustment for Fixed Pricing, replace with:

   Fixed price offers may include prices for any and all items proposed under the contract. Fixed prices shall be firm until the first anniversary date of contract. Contractors may submit price adjustments for fixed pricing one time per year for each manufacturer for each year thereafter, unless there is an occurrence of one or more allowable economic price adjustment contingencies outlined in proposal. If allowable price adjustment contingencies occur, contract vendor may submit a fully documented request for price adjustment to 1GPA. The document must substantiate that any requested price increase was clearly unpredictable at the time of proposal submittal and results from an increased cost to contract vendor that was out of contract vendor's control.

3. Page 22, Item 24. Travel Expense Reimbursement, replace with:

   Vendor shall be responsible for travel arrangements and expenses. Travel expenses may be billed for certain in-state and out-of-state travel expenses on a case-by-case basis. Vendor shall seek Member approval before billing for any in-state or out-of-state travel expenses. If approved by the Member, in-state and out-of-state travel expenses shall be reimbursed in accordance with the Member's state travel policy. The travel policy may be accessed via the internet at the US General Services Administration's website: https://www.gsa.gov/travel/plan-book/per-diem-rates.

4. Page 22, Item 27. Shipping Terms, replace with:

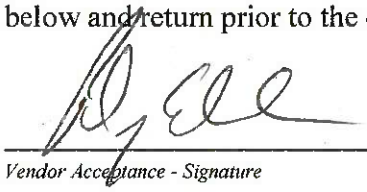
   Prices shall be F.O.B. Destination or F.O.B. Destination Freight Allowed as indicated under Tab 1 – Discount Schedule, Section C of the Cost Form to Member's location. Vendor shall retain title and control of all goods until they are delivered and the contract of coverage has been completed. All risk of transportation and all related

charges shall be the responsibility of the Vendor. All claims for visible or concealed damage shall be filed by the Vendor. 1GPA Members will notify the vendor promptly of any damaged goods and shall assist the vendor in arranging for inspection.

5. Page 62, Non-Collusion Affidavit – Remote online notarization is permitted in Arizona under A.R.S. §41-371 through 41-380 and should contain the statement "This remote online notarization involved the use of communication technology." Resources regarding online notaries for Arizona can be found at https://azsos.gov/business/notary/enotary .

6. Cost Form, Tab 1 Discount Schedule: If your firm offers fixed pricing for product purchases rather than a discount structure, include the fixed price schedule as Tab 6 of the Cost Form.

All other provisions of the solicitation shall remain in their entirety. Firms should sign and date below and return prior to the due date and time as directed in the solicitation.



Vendor Acceptance - Signature

2-16-21

Date

Pete Edwards, Area Sales Director

Printed Name and Title

Logicalis, Inc.

Company Name

Appendices

Appendix A. General Information

Appendix A. General Information

Contacts

Local Contact	Pete Edwards, Area Sales Director 8945 S. Harl Avenue, Suite 102 Tempe, AZ 85284 Tel: 480-612-8942 Pete.Edwards@us.logicalis.com
Legal Notices	Logicalis, Inc. ATTN: Legal Services 2600 Telegraph Road, Suite 200 Bloomfield Hills, MI 48302

Document Information

File Name	Proposal_1GPA4113526B
Creation Date	January 19, 2021
Print Date	February 15, 2021

Document Status

This document is issued as draft and subject to final agreement of terms and conditions intended to be ratified during the process of contract negotiation. Until such time as this process is complete, the sole purpose of this document is to provide information, protected by copyright and confidentiality. This document neither in whole or part forms any binding contract for the services described. The contents of a final Statement of Work and final contractual terms are subject to due diligence and successful contract negotiation.

Copyright Information

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Freedom of Information

Many of Logicalis' customers are in the public sector and Logicalis is well aware of the obligations imposed on its public sector customers by the United States Freedom of Information Act ('FOIA'). Logicalis' policy is to co-operate with its public sector customers to assist them in meeting their obligations under the FOIA.

Logicalis considers that the following sections of this Response are confidential or commercially sensitive and that disclosure of all or part of the information contained in these sections may harm Logicalis' commercial interests:

Solution Design: The solution has been derived from the intellectual effort, knowhow and expertise of Logicalis staff and consultants and may contain proposals that are original or innovative. The disclosure of this information to Logicalis' competitors may give them an unfair advantage in competing with Logicalis in future similar projects.

Costs Section: Disclosure of Logicalis' costs to competitors is likely to give those competitors an unfair advantage in competing against Logicalis in future bids and may reduce the competitiveness of future tenders.

Customer References: Information relating to customers is frequently protected by confidentiality obligations where disclosure is permitted only for specified purposes, such as providing details to potential new customers. Disclosure of this information to others may be in breach of these confidentiality obligations and disclosure of this information to competitors may harm Logicalis' commercial interests by assisting competitors to compete for business from those customers.

LINKING AGREEMENT
FOR COOPERATIVE PURCHASE

LOGICALIS, INC.
FIRE, SECURITY AND COMMUNICATION SYSTEM SOLUTIONS

EXHIBIT B
SCOPE OF WORK AND PRICING

See the following pages.

Verkada Video Surveillance Cameras and Intercom 1 Year Option
Quotation # 2024-181777v13

Prepared By Logicalis for:
Town of Paradise Valley

To the attention of :
James Bailey
Town of Paradise Valley
6401 E Lincoln Dr
Paradise Valley, AZ 85253-4328
Tel: 480-348-3671
Email: jbailey@paradisevalleyaz.gov

September 1, 2025

Pricing Summary

The following is a price summary of Logicalis' proposed solution.

Price Summary	Amount
Hardware	$146,680.53
Professional Services	$48,660.60
Additional Charges	$13,937.66
Grand Total	**$209,278.79**

Logicalis offers a range of services, from helping you define and design a cloud strategy to assisting with server and storage selection for your current environment. We provide a variety of assessments and health checks, perfect for those who need help determining what the next steps are. Find out more at www.us.logicalis.com

Verkada Video Surveillance Cameras and Intercom 1 Year Option
Quotation # 2024-181777v13

Customer Name & Address	Logicalis Account Executive
James Bailey Town of Paradise Valley 6401 E Lincoln Dr Paradise Valley, AZ 85253-4328 480-348-3671 jbailey@paradisevalleyaz.gov	Robert Lundblade 8945 S. Harl Ave. Tempe, AZ 85284 +1 4808503480 robert.lundblade@us.logicalis.com
Bill To Address	**Ship to Address**
Town of Paradise Valley 6401 E Lincoln Dr Paradise Valley, AZ 85253-4328 ATTN: Accounts Payable	Town of Paradise Valley 6401 E Lincoln Dr Paradise Valley, AZ 85253-4328 ATTN: James Bailey 480-348-3671 jbailey@paradisevalleyaz.gov

This Quotation adheres to the pricing requirements of the 1GPA Contract #21-07P-13 contract.

Item	Qty	Manufacturer	Part Number	Description	Unit Price	Extended Price
Products						
1	14	VERKADA	ACC-MNT-ARM-1	Arm Mount	$74.25	$1,039.50
2	4	VERKADA	ACC-MNT-ANGLE-1	Angle Mount 30 deg	$111.75	$447.00
3	12	VERKADA	ACC-MNT-CORNER-1	Corner Mount	$149.25	$1,791.00
4	7	VERKADA	ACC-MNT-PEND-1	Pendant Cap Mount	$51.75	$362.25
5	5	VERKADA	ACC-MNT-SJBOX-1	Square Junction Box Mount	$66.75	$333.75
6	2	VERKADA	ACC-MNT-POLE-1	Pole Mount	$156.75	$313.50
7	2	VERKADA	ACC-MNT-LBRAC-1	L-Bracket Mount	$96.75	$193.50
8	7	VERKADA	TD53-HW	TD53 Video Intercom Reader Video Intercom	$1,349.25	$9,444.75
9	25	VERKADA	CD43-512-HW	CD43 Indoor Dome Camera 512GB 60 Days Max	$1,049.25	$26,231.25
10	1	VERKADA	CD43-512E-HW	CD43-E Outdoor Dome Camera 512GB 60 Days Max	$1,199.25	$1,199.25
11	4	VERKADA	CD53-512-HW	CD53 Indoor Dome Camera 512GB 60 Days Max	$1,199.25	$4,797.00
12	7	VERKADA	CD53-512E-HW	CD53-E Outdoor Dome Camera 512GB 60 Days Max	$1,349.25	$9,444.75
13	2	VERKADA	CD63-1TB-HW	CD63 Indoor Dome Camera 1TB 60 Days Max	$1,724.25	$3,448.50

Item	Qty	Manufacturer	Part Number	Description	Unit Price	Extended Price
14	6	VERKADA	CM42-512-HW	CM42 Indoor Mini Dome Camera 512GB 60 Days Max	$824.25	$4,945.50
15	9	VERKADA	CF83-1TBE-HW	CF83-E Outdoor Fisheye Camera 1TB 60 Days Max	$1,949.25	$17,543.25
16	8	VERKADA	CB52-512E-HW	CB52-E Outdoor Bullet Camera 512GB 60 Days Max	$1,349.25	$10,794.00
17	9	VERKADA	CH52-2TBE-HW	CH52-E Outdoor Multisensor Camera 2TB 60 Days Max	$3,674.25	$33,068.25
18	9	VERKADA	ACC-POE-60WHS-NA	PoE++ (802.3bt-2018) Injector GigE High Surge Protect NA	$134.25	$1,208.25
19	7	VERKADA	LIC-TD-1Y-CAP	1-Year Intercom License Capacity Increase	$261.75	$1,832.25
20	62	VERKADA	LIC-CAM-1Y-CAP	1-Year Camera License Capacity Increase	$149.25	$9,253.50
21	9	VERKADA	LIC-CAM-MLT4-1Y-CAP	1-Year Four-Camera Multisensor License Capacity Increase	$449.25	$4,043.25
22	6	COMMSCOPE	UN874049914/10	Media 6 6504+ Category 6 U/UTP cable plenum BLUE 1k' (CS34P)	$445.17	$2,671.02
23	3	COMMSCOPE	760237040	24 Port Modular Patch Panel	$68.13	$204.39
24	72	COMMSCOPE	760237627	Category 6 Black Jack	$10.16	$731.52
25	15	COMMSCOPE	760237628	Category 6 Jack Blue	$10.16	$152.40
26	15	COMMSCOPE	1-1116697-3	Sm 1 Port- Surface Mount Box	$2.43	$36.45
27	15	Allen Tel	AT1603-BU-SLIM	CAT 6 SLIM PATCH CORD 3FT BLUE	$4.41	$66.15
28	15	Allen Tel	AT1607-BU-SLIM	CAT 6 SLIM PATCH CORD 7FT BLUE	$6.29	$94.35
29	10	HD	MISCHDWE	Misc. Hardware Kit (ty-raps mounting hardware)	$99.00	$990.00
					Products Subtotal	$146,680.53
30	2	Allen Tel	Lift	Scissor Lift Rental (1 Day)	$438.00	$876.00
Logicalis Professional Services - Fixed Fee						
31	1	Labor	PS	Project Completion	$48,660.60	$48,660.60
					Logicalis Professional Services Fixed Fee Subtotal	$48,660.60

Grand Total	
Products and Services Subtotal:	$195,341.13
Freight Charges:	$1,501.00
Sales Tax:	$11,560.66
Additional Fees:	$876.00
Grand Total:	**$209,278.79**

Professional Services Statement of Work

Communication & Network Services - Cabling

Tasks and Activities

1 Implement
- 1.1 Installation
  - 1.1.1 Logicalis will test the existing sixty-one (61) cables that will be reused
- 1.2 Courthouse
  - 1.2.1 Logicalis will install one (1) 24-port patch panel
  - 1.2.2 Logicalis will install four (4) CAT6 cable runs
- 1.3 Police Department
  - 1.3.1 Logicalis will install one (1) 24-port patch panel
  - 1.3.2 Logicalis will install six (6) CAT6 cable runs
- 1.4 Public Works
  - 1.4.1 Logicalis will install one (1) 24-port patch panel
  - 1.4.2 Logicalis will install five (5) CAT6 cable runs
- 1.5 Documentation
  - 1.5.1 Logicalis will provide cable test results
  - 1.5.2 Provide field of views

Communication & Network Services - Physical Security

Tasks and Activities

1 Implement
- 1.1 Installation
  - 1.1.1 Logicalis will perform a walkthrough for camera replacements
- 1.2 Town Hall
  - 1.2.1 Logicalis will install two (2) CB52-E Verkada outdoor cameras
  - 1.2.2 Logicalis will install one (1) Verkada CD63 indoor camera
  - 1.2.3 Logicalis will install two (2) Verkada CD53-E outdoor cameras
  - 1.2.4 Logicalis will install one (1) CD53 Verkada indoor camera
  - 1.2.5 Logicalis will install one (1) CD43 Verkada outdoor camera
- 1.3 Courthouse
  - 1.3.1 Logicalis will remove five (5) existing cameras that will not be replaced
  - 1.3.2 Logicalis will install eight (8) CF83-E Verkada cameras
  - 1.3.3 Logicalis will install three (3) CD53 Verkada indoor cameras
  - 1.3.4 Logicalis will install nine (9) CD43 Verkada indoor cameras
  - 1.3.5 Logicalis will install one (1) CD63 Verkada indoor camera
  - 1.3.6 Logicalis will install three (3) CB52-E Verkada cameras
  - 1.3.7 Logicalis will install one (1) CM42 Verkada indoor camera
  - 1.3.8 Logicalis will install seven (7) TD52 Verkada video door intercoms
- 1.4 Police Department
  - 1.4.1 Logicalis will install three (3) CB52-E Verkada outdoor cameras
  - 1.4.2 Logicalis will install five (5) CD53-E Verkada indoor cameras
  - 1.4.3 Logicalis will install fifteen (15) CD43 Verkada indoor cameras
  - 1.4.4 Logicalis will install five (5) CM42 Verkada indoor cameras
  - 1.4.5 Logicalis will install four (4) CH52-E Verkada cameras
  - 1.4.6 Logicalis will install one (1) CF83-E Verkada camera
  - 1.4.7 Logicalis will install one (1) CD43-E Verkada outdoor camera
- 1.5 Public Works
  - 1.5.1 Logicalis will install five (5) CH52-E Verkada cameras

Deliverables

• Cable test results
• Field of views

Project Management

The assigned Logicalis Project Manager will be responsible for providing the following Project Management Services:

Project Management (L2)

Planning

- Project kick-off call
- Introduce project team and define roles & responsibilities.
- Resource scheduling
- Creation of Work Breakdown Structure (WBS) and Schedule
- Project Communication Plan

Execution

- Tracking of Products relating to this SOW ordered through Logicalis, if applicable
- Project tasks and schedule management
- Project status meetings up to 5 hours*
- Project status reports, consisting of:
    1. Overall project health & status indicators
    2. Percentage complete
    3. Project Phase
    4. High level accomplishments
    5. Review status of project activities
    6. Project issues & Risk Management Registers
- Resource schedule management
- Point of contact for project escalations, coordination, and communications

Monitoring & Controlling

- Project Deliverables management
- Scope of Services and Project Schedule management
- Document Project Change Requests (PCRs), if applicable
- Labor hours consumption and expenses for T&M engagements
- Project WBS & milestone management
- Ensure customer satisfaction

Closing

- Project closure and Acceptance processing

*If the Project is priced as a Fixed Price, the Price includes up to two (2) cumulative resource hours dedicated for status meetings. Any additional time spent on status meetings in excess of these two (2) hours are considered out of scope. Such additional meetings require a mutually agreed upon PCR. If the Project is priced on a Time and Materialbasis, then Customer will be billed according to the rates set forth herein.

Professional Services Assumptions / Customer Responsibilities

- The Customer will be responsible for all electrical work required to supply the appropriate input power to the new equipment.
- Any and all services related to architectural, electrical, and/or mechanical work is the Customer's responsibility; and specifically excluded from this Scope of Work.
- The Customer will provide a current asbestos report prior to resource arrival on-site.
- All cable pathways are free and clear.
- Should there be any challenges on these pathways, Logicalis will advise the Customer at the earliest possible time.
- This quote excludes any repairs for pathways/conduits.
- Logicalis assumes some existing patch panels will be utilized.
- Logicalis assumes there is existing space for the new patch panels to be installed.
- Logicalis assumes the Customer has sufficient switch ports available for all cameras in all IDF locations.
- Logicalis assumes all copper cable runs are less than 300ft to the nearest MDF/IDF location.
- The Customer is responsible for all network switch programming.
- Logicalis assumes existing cabling that will be utilized is in proper working condition, if new cable is needed, a project change order will be generated.
- Logicalis assumes the Customer will supply a bucket truck for the external camera installations.
- Logicalis will give all cameras removed to the Customer.
- Logicalis has informed the Customer the camera placement on the north exterior wall of the Police Department may not happen due to the cable pathway.

Contiguous Delivery

Logicalis has selected, designed, and quoted the Services to be performed and (as applicable) Deliverables to be provided under this SOW with an understanding that they will be delivered on a contiguous schedule in accordance with the timeline set forth herein. Adherence to this contiguous timeline enables Logicalis to deliver maximal value to Customer in the most timely and efficient manner. Customer acknowledges and agrees that a Project Change Request, setting forth any applicable adjustments to the project timeline and pricing, including but not limited to hourly, recurring, and flat fee pricing (depending on the impact on Logicalis' efficiencies and resource allocations), will need to be made and executed in any of the three (3) following events:

1. Customer requests a change of the SOW timeline or scheduling of Services for convenience; or
2. Customer is the precipitating reason, either by its own action or inaction or that of its contractors, agents, employees, or (as applicable) users of Services performed under this SOW, cause a delay in the performance of Services by Logicalis; or
3. Customer requests a project hold (i.e., a pause in Logicalis' performance of Services).

Terms and Conditions

Terms Applicable to All Sales

1. In the event Customer chooses to lease the Products and/or Services from a third party leasing company, Customer remains liable for payment to Logicalis for all Products and/or Services purchased until Logicalis receives payment from such leasing company.
2. All items not specifically included in this document are out of scope.
3. Prices are valid for 30 days from date of the document unless otherwise stated.
4. The information in this document is considered proprietary and confidential to Logicalis. By acceptance of this Quotation, Customer agrees to maintain this confidentiality and use such information for internal purposes only.

Terms Applicable for Product Sales

1. To the extent applicable, the terms of the 1GPA Contract #21-07P-13 are incorporated herein by reference. For all other terms not addressed in the previously stated contract, Logicalis Terms of Sale, found on our website at www.us.logicalis.com/tcsales apply and are incorporated herein by reference.
2. Any variation in quantity or requested delivery may result in price changes.
3. Prices are subject to change without notice in the event the Product's manufacturer/distributor changes the price to Logicalis.
4. Shipping and taxes are added at time of invoice. Shipping charges are subject to handling fees for specifying carriers and same day shipments.
5. Logicalis collaborates with the OEM/distributor to schedule delivery to Customer's loading dock; inside delivery is available upon request and may increase the cost of delivery.
6. For Cisco Products being resold by Logicalis pursuant to this Quotation, Customer hereby agrees to be bound by the applicable Cisco General Terms (including applicable Offer Descriptions), Buying Programs, Supplemental Terms, and other terms and conditions terms governing the access and use of such Products, which are located at the following link(s) as applicable ("Cisco Terms"): (a) www.cisco.com/c/en/us/about/legal/cloud-and-software/cloud-terms.html for all Product offerings stated therein; and (b) for Products that are packaged Cisco services, https://www.cisco.com/c/dam/en_us/about/doing_business/legal/service_descriptions/docs/Services-Guide.pdf. The Cisco Terms are incorporated herein by reference. For any Cisco Products purchased on a subscription basis, the subscription shall automatically renew for subsequent terms equal in duration to the initial term at Logicalis' then-current prevailing rates in effect at the time of renewal unless Customer, no less than forty-five (45) days prior to the end of the then-current subscription term, either: (a) issues a new purchase order to Logicalis; (b) accepts a Logicalis Quotation for renewal of such Products; or (c) provides written notice of non-renewal to Logicalis.

Terms Applicable for Professional Services Sales

1. To the extent applicable, the terms of the 1GPA Contract #21-07P-13 are incorporated herein by reference. For all other terms not addressed in the previously stated contract, Logicalis Terms of Sale, found on our website at www.us.logicalis.com/tcsales apply and are incorporated herein by reference.
2. General customer responsibilities, project assumptions, change management processes, and other terms applicable to the delivery and receipt of services (as applicable to this Quotation), found at us.logicalis.com/gcr, are incorporated herein by reference.
3. Unless otherwise mutually agreed upon, reasonable travel expenses will be tracked separately and billed directly to Customer. Travel expenses will include cost incurred from travel (airfare, rental car, mileage, tolls and lodging). Meals, if any, will be billed at the per diem rate of $65.

Quotation Acceptance

By signing below, the undersigned accepts this offer and confirms that he/she is authorized to purchase these items on behalf of Customer. This offer may be accepted by purchase order or other acknowledgement of acceptance, including, without limitation, by signing this document. Any reference to a Customer's Purchase Order or P.O. number does not indicate Logicalis' acceptance of terms and conditions referenced on/attached to any such P.O.

Accepted By: **Town of Paradise Valley**	Accepted By: **Logicalis, Inc.**
Signature	Signature
Printed Name	Printed Name
Title	Title
Date	Date

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LINKING AGREEMENT
FOR COOPERATIVE PURCHASE

LOGICALIS, INC.
FIRE, SECURITY AND COMMUNICATION SYSTEM SOLUTIONS

EXHIBIT C
SPECIFIC REQUIREMENTS/OPTIONS OF TOWN

Notices: All notices required under the Linking Agreement shall be sent to:

James Bailey, Chief Information Officer
Town of Paradise Valley
6401 E. Lincoln Drive
Paradise Valley, Arizona 85253

With mandatory copy to:

Town Attorney
Town of Paradise Valley
6401 E. Lincoln Drive
Paradise Valley, Arizona 85253

Action Report

File #: 25-230

AGENDA TITLE:
Consideration of Requests for Future Agenda Items

RECOMMENDATION:
Review the current list of pending agenda topics.

TOWN COUNCIL AGENDA SCHEDULE 2025

MEETING DATE	10/23	11/13	12/11
Executive Session			
	Town Manager Six Month Check In	Town Attorney Six Month Check In	
Study Session	Sewer Rehab Contract and Manhole Maintenance Update	Committee Volunteer Reappointment Process	Zoning Code Update Check In
	Self Funded Healthcare Feasibility Study	Mockingbird Lane Update	Investment Update
	Discussion of Legislative Agenda	Zoning Code Amendments (HB2447)	Community Services Funding Program
		Discussion of Youth Forum	
Presentations	Committee Updates: PVMPT & Historical	Historic Property Recognition - 6122 E Quartz Mountain	
		Street Sweeper Naming	
Consent Agenda		Adopt Legislative Agenda	
Public Hearings			Adopt Zoning Code Amendments (HB2447)
Action Items	Appointment / Reappointment of Municipal Court Judges		Accepting the FY2024/25 ACFR
	Adopt Stormwater Management Plan		Las Brisas and Cheney Rd Intersection Improvement Project Contract
			McDonald Drive Curb Construction Contract

This is a tentative calendar and subject to change

Items to be scheduled - Numbering does not reflect priority or order in which items will be scheduled

1 Expenditure Limitation Adjustment and Bond Financing Follow Up
2 Long-Term Capital Project Funding Strategy
3 Short term rental ordinance look back
4 Mockingbird Ln Construction Contract (1/22/2026)
5 Doubletree Ranch Rd Entryway Construction Contract (2/12/2026)
6 Personnel Appeals Board Rules of Procedure
7 Voluntary Water Conservation Outreach and Education