



***Schultz/Pipeline Fire
Post-Wildfire Flooding Disaster***

***Joint District/City Meeting
October 17, 2022***

***Lucinda Andreani
Flood Control District Administrator
Deputy County Manager***



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Brief History of Post-Wildfire Flood Mitigation

History of Post-Wildfire Flooding

- **Schultz Fire/Flood – 2010**
 - Govt. Tank Small Area Burned; 7 Other Watersheds Burned Severely; Schultz Creek not burned; Over 50 flood events in the first two years
 - 5 Watersheds Mitigated – no flooding since construction
 - Given limited, short-term impacts, no mitigation pursued in Govt. Tank; 2 Watersheds Declined Mitigation
- **Slide Fire/Flood -2014 (Oak Creek Canyon)**
- **North Schultz Flood – 2018 – 1,000 Year Rainfall Event**
- **Museum Fire/Flood – District has spent on \$6 million to date**
- **Pipeline Fire/Flood – 2022 – approaching \$7 million to date**
- **Total Cost for Prior Post-Wildfire Response & Mitigation +/- \$85 Million**

History of Post-Wildfire Flooding

- **Integrated Strategies...**
- **Game Changer is On-Forest Watershed Restoration; Same True for Museum Flood Area**
- **However, the flows are 7 – 22 times greater since the Pipeline Fire so in most areas overwhelming Schultz mitigation**





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***Schultz-Pipeline
Severe & Repetitive Flooding***

Lucinda Andreani

6:01 PM
Jul 15, 2022





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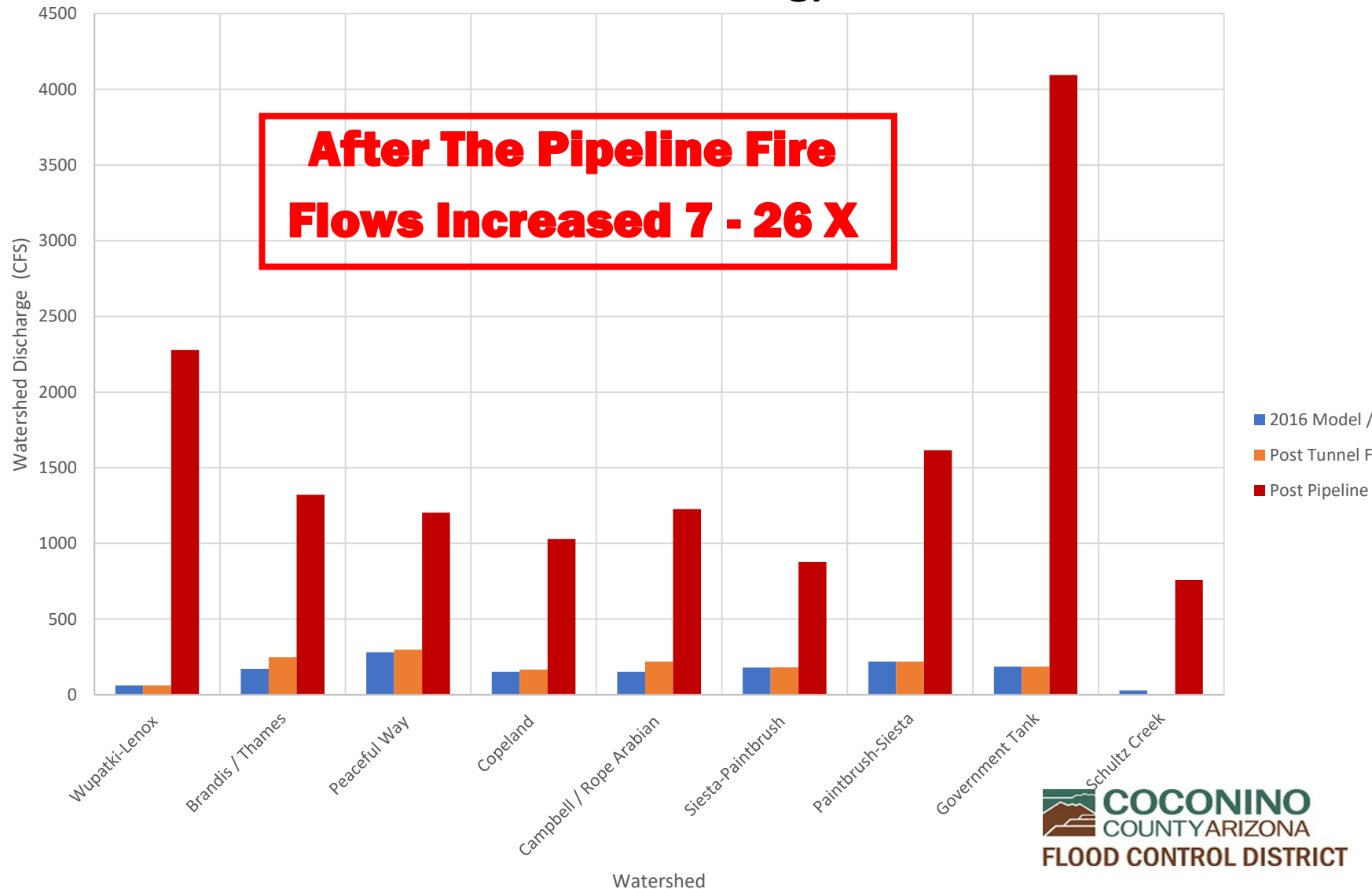
2022 Post-Wildfire Flooding

Severe & Repetitive

- Pipeline Fire – 27,000 acres = nine watersheds; reburn from 2010 Schultz Fire
- Severely burned steep slopes of several watersheds not previously burned
- 45 major flood events
- 155 NWS Flash Flood Warnings
- 45 County RAVE Emergency Notifications
- 1,500+ homes at risk for flooding
 - Property Valuation - \$1.3 Billion
- Multiple closures of State highways



Model Results for 2" Rainfall Event in 45 Minutes (25-year event, which is approximately a 4% chance of occurring)



Measured Recurrence Intervals

Pipeline Fire Scar

Date	Area	Max 15-Min Depth Measured (Inches)	Max @	Max Recurrence Interval (Years)
25-Jun	East Pipeline Fire	0.51	Thames - Brandis	1
26-Jun	East Pipeline Fire	0.71	Thames / Peaceful Way	2-5
29-Jun	East Pipeline Fire	0.51	Museum Fire South	1
14-Jul	East and West Pipeline Fire	0.71	Government Tank	2-5
15-Jul	East Pipeline Fire	0.87	Lenox-Wupatki Trails	5
23-Jul	East Pipeline Fire	0.98	Government Tank	5-10
24-Jul	East and West Pipeline Fire	0.12	Schultz Creek near Highway 180	1
26-Jul	East Pipeline Fire	0.47	Thames - Brandis	1
27-Jul	West Pipeline Fire	<0.50	Upper Schultz Creek	1
28-Jul	East Pipeline Fire	<0.40	Lenox-Wupatki Trails	1
29-Jul	West Pipeline Fire	0.71	Upper Schultz Creek	2-5
30-Jul	East Pipeline Fire	0.63	Schultz Basin 7 Upper Campbell	2
31-Jul	East Pipeline Fire	0.75	Thames / Peaceful Way	2-5
7-Aug	East & West Pipeline Fire	0.39	Schultz Creek Headwaters	1
11-Aug	East Pipeline Fire	0.39	Lenox-Wupatki Trails	1
13-Aug	East Pipeline Fire	0.79	Thames-Brandis	5
14-Aug	East Pipeline Fire	0.73	Government Tank	2-5
17-Aug	East Pipeline Fire	0.8	Thames-Brandis	5
24-Aug	East Pipeline Fire	0.4	Thames-Brandis	1
10-Sep	East Pipeline Fire	0.67	Thames-Brandis	2

Major Emergency Mitigation & Response Efforts

- Produced over 1,000,000 sandbags
- Placed about 4 miles of concrete barriers
- Mitigation exhibits for about 1,000 properties
- Repaired on-and off-forest measures damaged by wildfires
- Continuous removal of debris from mitigation measures & roads
- Response costs about \$8 million for monsoon season
- District secured \$2M in NRCS EWPP Exigency funding for barriers and sandbags – Expended \$3.5 million
- Greater than normal rainfall, but events not as intense – never experienced the modeled storm



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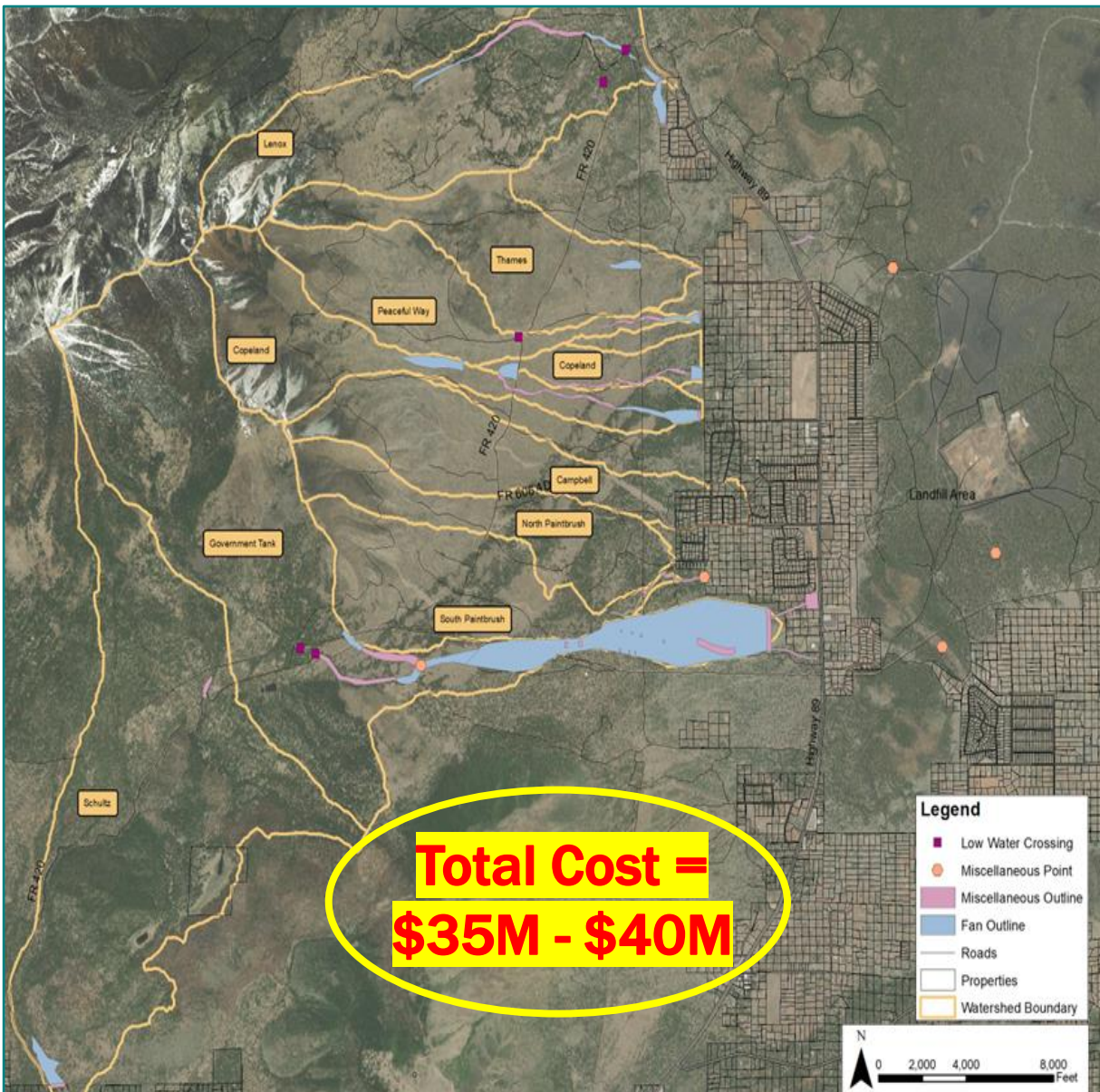
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Schultz/Pipeline Flood Area Long-Term Flood Mitigation Plan

Three Integrated Strategies:

- ***On-Forest Watershed Restoration***
- ***Flood Mitigation in Neighborhoods***
- ***Highway Drainage Improvements***

On Forest Proposed Work Areas



- 4 New Major Watershed Projects, including Schultz Creek
~ 300 acres of alluvial fan and ~1,000 new grade control features
- Expansion and repair on 5 existing alluvial fans

On-Forest Proposed Work Areas

▪ Schultz Creek	\$3.6 Million
▪ Government Tank	\$12.0 Million
▪ Lenox	\$4.5 Million
▪ Copeland	\$8.0 Million
▪ Peaceful Way	\$5.2 Million
▪ Campbell	\$0.45 Million
▪ Thames	\$1.22 Million
▪ N. Paintbrush	\$0.425 Million
▪ S. Paintbrush	\$1.43 Million
▪ Girls Ranch	\$0.70 Million
▪ East of SR 89	\$1.9 Million

Estimated Total ~\$40 Million

Flood Mitigation in East Side Neighborhoods

- Concrete channels and box culvert improvements to reduce flooding of neighborhoods
- New flood mitigation in three flood corridors: Peaceful Way, Copeland (2 channels), Government Tank
- Govt Tank – the most complex & 1/2 of total cost+
- Major expansion in one flood corridor: Wupatki Trails
- Some expansion & stabilization in four flood corridors: Brandis, Campbell, North & South Paintbrushes
- Two applications submitted to NRCS

**Estimated Total Cost for Neighborhood Flood Mitigation
\$50M - \$55 million**



2022 Post Pipeline Design

Highway Drainage Improvements

■ Wupatki Trails – Lenox Road	\$5 Million
■ Girls Ranch Road - Hwy 89 Channel	\$6 Million
■ Brandis - Hwy 89 Channel	\$2.5 Million
■ Copeland Sedimentation Basins	\$4 Million
■ Copeland Detention Basins	\$8.5 Million
■ Government Tank – South Campbell	\$12 Million

**Estimated Cost of Highway Drainage Improvements:
~ \$40 Million**

Summary of Mitigation Costs

- On-Forest Watershed Restoration
\$40 - \$45 Million
- Flood Mitigation in the Neighborhoods
\$50 - \$55 Million
- Highway Drainage Improvements
\$40 - \$45 Million

GRAND TOTAL: \$130 - \$145 Million**

***Costs are estimates at conceptual level of engineering and evaluation of potential adverse impacts and other factors will impacts total costs*



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Schultz Creek
On-Forest Watershed Restoration



The goal of on forest watershed restoration is reduction of sediment source and transport through restoration of channels and alluvial fans



Stabilization & Grade Control



Reseeding & Mulching

Process Steps Moving Forward

Still Many Steps Needed

- **Secure Funding – Placed on waiting list, need Congressional Action to Fund EWPP & On-Forest Measures**
- **Preliminary Engineering & Conduct No-Adverse Impact Analysis**
- **Secure Rights of Entry, Drainage Easements & Mortgage Releases**
- **Finalize Engineering**
- **Secure All Required Approvals**
 - US Forest Service for On-Forest Measures (if no prior NEPA)
 - NRCS for All Final Designs & Costs (where no prior work)
 - Flood Control District Board for EWPP Match and Ineligible Costs
- **Engage in Contracting Process**
- **Construction Seasons are Limited**

Forest Restoration Initiative Upper Rio de Flag Watershed

- District Board increased the FCD tax to increase investments in forest restoration
- About \$30 million to be invested on the Upper Rio de Flag Watershed Steep Slopes
- Post-wildfire flooding from this watershed's steep slopes is the greatest threat to Flagstaff
- District wants partnership with the City of Flagstaff & USFS to move this critical work forward





Questions