Oakcreek, Copperfield Court, and Coulee's Crossing Area Flood Risk Management Project

Landowner Information Meeting

February 15, 2012





AGENDA

- Status at Last Meeting
- Landowner Involvement and Comments
- Recommended Plan
- Other Alternatives Considered / Summary
- Path Forward
- Questions









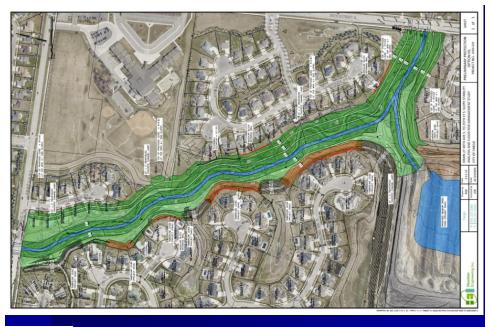
Status at Last Meeting

- Option 1 Channel Relocation with Buyouts
 Approximately \$12.75M± (including Land)
- 2. Option 2 Channel Relocation, Buried Culverts, Floodwalls and Minimized Buyouts.
 - Approximately \$15.1M± (including Land)

Goal – Minimized Home Acquisitions



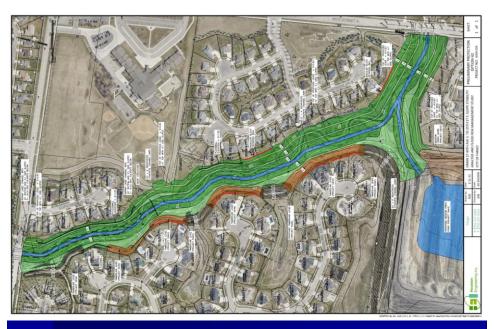






Option 1 (H1)







Option 2 (H2)



2. Do you support the proposed plan to extend permanent protection along the Coulee's Crossing neighborhood (Coulee's Crossing Extension)?



3. Do you support the proposed options to extend permanent protection along the Copperfield Court and Oakcreek neighborhoods?



4. Do you have a preference between the proposed Option 1 (buyouts in Copperfield Court) or Option 2 (protection of Copperfield Court).



Landowner Involvement and Comments

- 1. July 2011 Field Staking and Landowner Meetings
- 2. Follow-up Comments Forms







Do you support the presented plan (Option 2) to complete permanent protection along the Oakcreek, Copperfield Court, and Coulee's Crossing neighborhoods?



Recommended Plan

- 1. Review of Public/Landowner Input
- 2. Development of 13 Options and Cost Estimates

 + \$6-22M / Partial to Complete / Trees
- 3. Consideration of Environmental Impacts, Permitting, Future Operation and Maintenance, and Neighborhood Impacts

Recommended Plan From Technical Committee

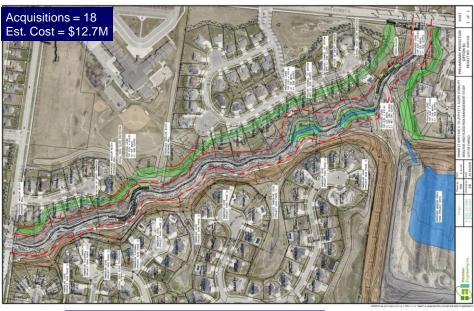
OPTION B1





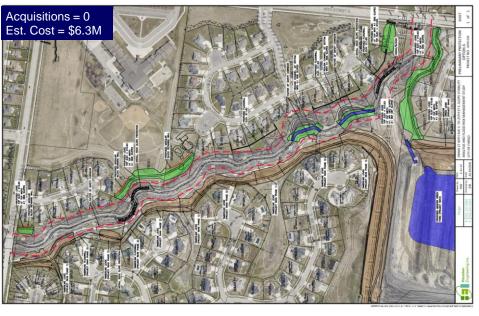
Recommended Plan – Option B1

- Mid Level Buyout - Minor Channel Stability Repairs Only

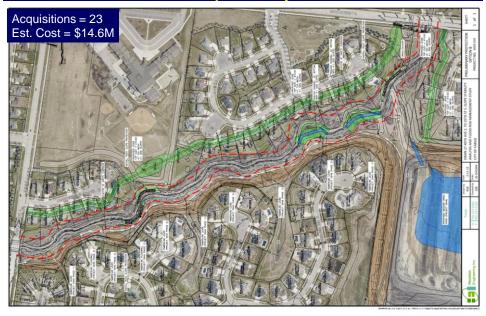


Other Alternatives Considered 70.1237.5005 HoustonEngineering Inc. MOI 21st Avenue North Farge NO 58002

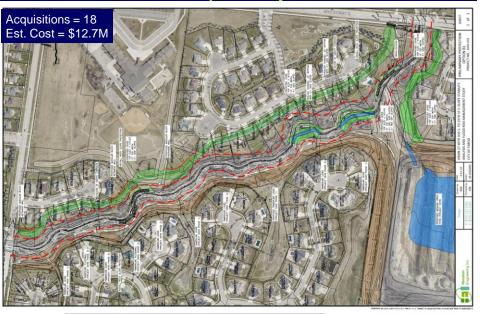
Option A - Partial Protection - Minor Channel Stability Repairs Only



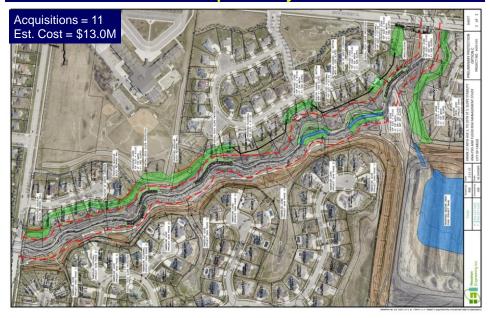
Option B - Full Buyout - Minor Channel Stability Repairs Only



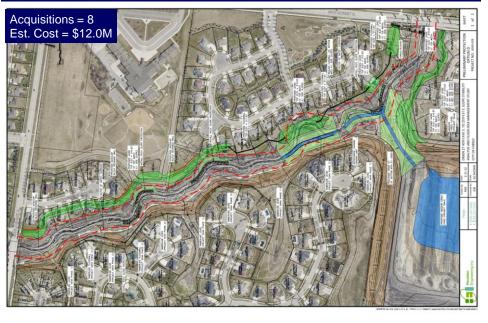
Option B1 - Mid Level Buyout - Minor Channel Stability Repairs Only



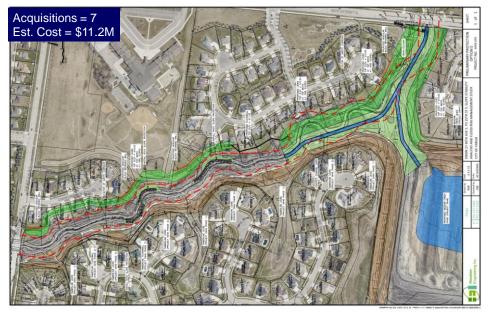
Option C - Minimized Buyout - Minor Channel Stability Repairs Only



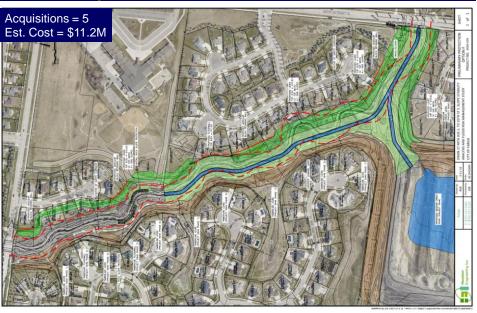
Option D- Same as C - Except Channel Improvements Oakcreek Center Area



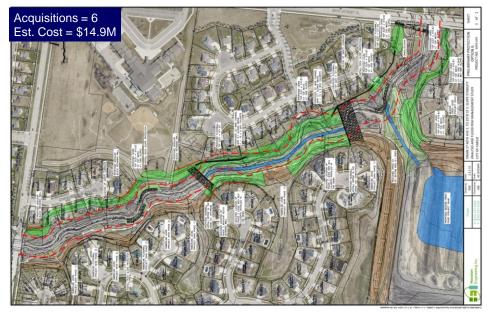
Option E - Same as D - Except Increased Channel Improvements in Southern Area



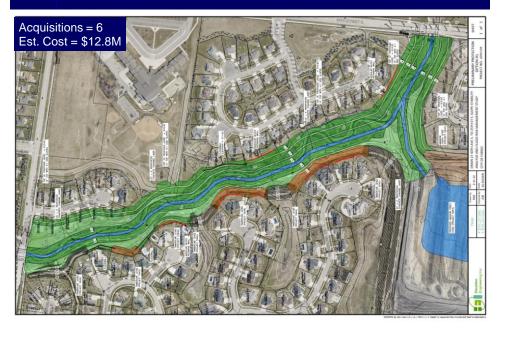
Option F - Same as E - Except Increased Channel Improvements in Northern Oakcreek Area



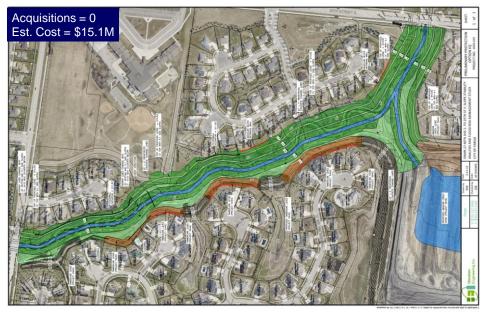
Option G - Box Culvert Option - North Oakcreek - Narrowed Corridor - Reduced Coulees Crossing Impacts



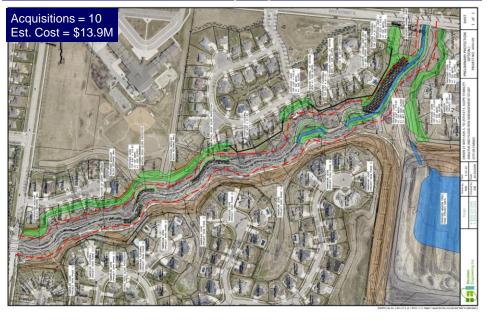
Option H1 - Full Liner Option - Reconstructed Channel



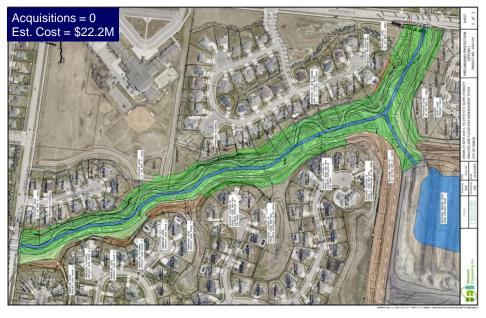
Option H2 - Complete Protection - Complete Channel Modification - Box Culverts in Copperfield Only



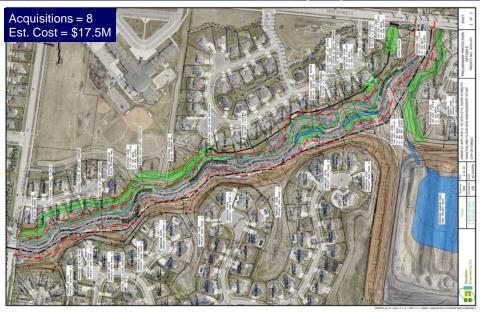
Option - Complete Protection - Minimized Channel Stability Repairs



Option J - Complete Protection - Complete Channel Modification - Box Culverts throughout - Hydraulic Impacts



Option K - Complete Protection - Low Flow Pipe - Minimized Channel Stability Repairs



Option		Total	Levee	Floodwall		Permitting	Future	
			Protection	Protection		Concerns	Operation and	
	Option Description	Acquistions	(LF)	(LF)	Tree Loss (ac)	(0 = Low - 10 = High)	Maintenance	Total Est Cost
	Partial Protection - Minor Channel Stability Repairs							
Α	Only	0	1,938	1,075				\$6,283,000
В	Full Buyout - Minor Channel Stability Repairs Only	23	3,897	0				\$14,621,000
B1	Mid Level Buyout - Minor Channel Stability Repairs Only	18	4.107	0				\$12.761.000
	Minimized Buyout - Minor Channel Stability Repairs		.,	_				+/·/
С	Only	11	3,263	1,221				\$12,958,000
	Same as C - Except Channel Improvements in Oakcreek							
D	Center Area	8	3,359	1,143				\$11,970,000
	Same as D - Except Increased Channel Improvements in							
E	Southern Area	7	3,868	448				\$11,216,000
	Same as E - Except Increased Channel Improvements in							
F	Northern Oakcreek	5	3,945	322				\$11,241,000
	Box Culvert Option - North Oakcreek - Narrowed							
G	Corridor - Reduced Coulees Crossing Impacts	6	3,748	968				\$14,852,000
		_						
H1	Full Liner Option - Reconstructed Channel	6	4,100	320				\$12,758,000
	Complete Protection - Complete Channel Modification -		0.400					
H2	Box Culverts in Copperfield Only Complete Protection - Minimized Channel Stability	0	3,479	1,093				\$15,093,000
								*** ***
	Repairs Complete Protection - Complete Channel Modification -	10	3,101	1,345				\$13,858,000
			3.500	4.440				ć22 460 000
J	Box Culverts throughout - Hydraulic Impacts Complete Protection - Low Flow Pipe - Minimized	0	3,508	1,119				\$22,169,000
к	Channel Stability Repairs	8	2,834	1,529				\$17,523,000





Other Alternatives Considered

Tree Loss Issues

- Aesthetic Impacts to Surrounding Property
- Required Replacement/Mitigation Costs
- Acceptance of Adjacent Owners





Option		Total	Levee Protection	Floodwall Protection		Permitting	Future	
		Acquistions				Concerns	Operation and	
	Option Description Partial Protection - Minor Channel Stability Repairs	Acquistions	(LF)	(LF)	Tree Loss (ac)	(0 = Low - 10 = High)	Maintenance	Total Est Cost
		_						
A	Only	0	1,938	1,075	1.8			\$6,283,000
В	Full Buyout - Minor Channel Stability Repairs Only	23	3,897	0	2.2			\$14,621,000
	Mid Level Buyout - Minor Channel Stability Repairs							
B1	Only	18	4,107	0	2.6			\$12,761,000
	Minimized Buyout - Minor Channel Stability Repairs							
С	Only	11	3,263	1,221	3.1			\$12,958,000
	Same as C - Except Channel Improvements in Oakcreek							
D	Center Area	8	3,359	1,143	4.6			\$11,970,000
	Same as D - Except Increased Channel Improvements in							
E	Southern Area	7	3,868	448	6.5			\$11,216,000
	Same as E - Except Increased Channel Improvements in							
F	Northern Oakcreek	5	3,945	322	8.4			\$11,241,000
	Box Culvert Option - North Oakcreek - Narrowed							
G	Corridor - Reduced Coulees Crossing Impacts	6	3,748	968	6.3			\$14,852,000
H1	Full Liner Option - Reconstructed Channel	6	4,100	320	10.9			\$12,758,000
	Complete Protection - Complete Channel Modification -							
H2	Box Culverts in Copperfield Only	0	3,479	1,093	10.9			\$15,093,000
	Complete Protection - Minimized Channel Stability							
- 1	Repairs	10	3,101	1,345	3.8			\$13,858,000
	Complete Protection - Complete Channel Modification -							
J	Box Culverts throughout - Hydraulic Impacts	0	3,508	1,119	10.9			\$22,169,000
	Complete Protection - Low Flow Pipe - Minimized							
K	Channel Stability Repairs	8	2,834	1,529	4.5			\$17,523,000





Other Alternatives Considered

Permitting Concerns

- USACE Permit Required
 - Channel Impacts
 - Wetland Impacts
 - Secondary Impacts (Trees,...)
- Low Concern (0-3)
 - Limited Mitigation Required
- Medium Concern (4-7)
 - Significant Impact (channel reconstruction, trees,...)
 - Significant Mitigation Required
- · High Concern (8-10)
 - Complete Channel Reconstruction
 - · Ability to Obtain Permit Questionable
 - Substantial Mitigation Required





Option		Total	Levee Protection	Floodwall Protection		Permitting Concerns	Future Operation and	
	Option Description	Acquistions	(LF)	(LF)	Tree Loss (ac)	(0 = Low - 10 = High)	Maintenance	Total Est Cost
	Partial Protection - Minor Channel Stability Repairs							
Α	Only	0	1,938	1,075	1.8	0		\$6,283,000
В	Full Buyout - Minor Channel Stability Repairs Only	23	3,897	0	2.2	1		\$14,621,000
B1	Mid Level Buyout - Minor Channel Stability Repairs Only	18	4.107	0	2.6	2		\$12.761.000
- 51	Minimized Buyout - Minor Channel Stability Repairs	10	4,107	0	2.0			\$12,701,000
С	Only	11	3,263	1,221	3.1	2		\$12,958,000
	Same as C - Except Channel Improvements in Oakcreek							
D	Center Area	8	3,359	1,143	4.6	4		\$11,970,000
	Same as D - Except Increased Channel Improvements in							
E	Southern Area	7	3,868	448	6.5	5		\$11,216,000
	Same as E - Except Increased Channel Improvements in							
F	Northern Oakcreek	5	3,945	322	8.4	8		\$11,241,000
	Box Culvert Option - North Oakcreek - Narrowed							
G	Corridor - Reduced Coulees Crossing Impacts	6	3,748	968	6.3	6		\$14,852,000
H1	Full Liner Option - Reconstructed Channel	6	4,100	320	10.9	9		\$12,758,000
	Complete Protection - Complete Channel Modification -							
H2	Box Culverts in Copperfield Only	0	3,479	1,093	10.9	9		\$15,093,000
	Complete Protection - Minimized Channel Stability							
	Repairs	10	3,101	1,345	3.8	3		\$13,858,000
	Complete Protection - Complete Channel Modification -							
J	Box Culverts throughout - Hydraulic Impacts	0	3,508	1,119	10.9	10		\$22,169,000
К	Complete Protection - Low Flow Pipe - Minimized Channel Stability Repairs	8	2,834	1,529	4.5	3		\$17,523,000





Other Alternatives Considered

Future Operation and Maintenance

- Low
 - Levees Only Mowing/Spraying
 - Limited Inspection (5-10yr top survey, trees,..)
- Medium
 - Addition of Floodwalls
 - More Frequent Wall Inspections (joints, drains, concrete...)
 - · Annual Minor Wall Repairs Maintenance
- High
 - Levees, Floodwalls, Channel Liner/Box Culverts
 - Culvert Plugging Potential
 - Frequent Inspections of Wall and Channel





Option		Total	Levee Protection	Floodwall Protection		Permitting Concerns	Future Operation and	
	Option Description	Acquistions	(LF)	(LF)	Tree Loss (ac)	(0 = Low - 10 = High)	Maintenance	Total Est Cost
	Partial Protection - Minor Channel Stability Repairs		,					
Α	Only	0	1,938	1,075	1.8	0	Medium	\$6,283,000
В	Full Buyout - Minor Channel Stability Repairs Only	23	3.897		2.2			\$14.621.000
В	Mid Level Buyout - Minor Channel Stability Repairs Only	23	3,897	0	2.2	1	Low	\$14,621,000
B1	Only	18	4,107	0	2.6	2	Low	\$12,761,000
	Minimized Buyout - Minor Channel Stability Repairs							
C	Only	11	3,263	1,221	3.1	2	Medium	\$12,958,000
	Same as C - Except Channel Improvements in Oakcreek							
D	Center Area	8	3,359	1,143	4.6	4	Medium	\$11,970,000
	Same as D - Except Increased Channel Improvements in							
E	Southern Area	7	3,868	448	6.5	5	Medium	\$11,216,000
	Same as E - Except Increased Channel Improvements in							
F	Northern Oakcreek	5	3,945	322	8.4	8	Medium	\$11,241,000
	Box Culvert Option - North Oakcreek - Narrowed							
G	Corridor - Reduced Coulees Crossing Impacts	6	3,748	968	6.3	6	High	\$14,852,000
H1	Full Liner Option - Reconstructed Channel	6	4.100	320	10.9	9	Medium	\$12,758,000
1112	Complete Protection - Complete Channel Modification -	- 0	4,100	320	10.5	9	Wediam	\$12,738,000
H2	Box Culverts in Copperfield Only	0	3,479	1.093	10.9	9	High	\$15.093.000
	Complete Protection - Minimized Channel Stability		-,	,			Ŭ	, .,,
- 1	Repairs	10	3,101	1,345	3.8	3	Medium	\$13,858,000
	Complete Protection - Complete Channel Modification -							
J	Box Culverts throughout - Hydraulic Impacts	0	3,508	1,119	10.9	10	High	\$22,169,000
	Complete Protection - Low Flow Pipe - Minimized							
K	Channel Stability Repairs	8	2,834	1,529	4.5	3	High	\$17,523,000





Path Forward?

- Public Meeting (Tonight)
- Recommendation to Commission
 - February/March
- Develop Financing Plan
 - TBD?
- Commission Approval
 - TBD?
- Permitting
 - TBD?
- Construction/Implementation
 - TBD?





February 15 and 16	Court, and Coulee's Crossing Neighborhoods Landowner and Public Informational Meetings	
General Project Response:		
	ommended plan from the Technical Committee to provide or the area (Option B1)?	
Additional Comments :		
		Comment
		Comment
		to the second
		Form
Please return to:		
Jerry D. Bents	Name:	
Jerry D. Bents Houston Engineering, Inc.	1.5040/2001	
Jerry D. Bents	Name:	
Jerry D. Bents Houston Engineering, Inc. 1401 21st Avenue North	1.5040/2001	
Jerry D. Bents Houston Engineering, Inc. 1401 21st Avenue North Fargo, ND 58102	1.5040/2001	
Jerry D. Bents Houston Engineering, Inc. 1401 21st Avenue North Fargo, ND 58102 Phone: (701) 237-5065	Address:	701.23

