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CALL TO ORDER

[Time: 00:00:05]

Mayor Lane: Good afternoon, everyone. Welcome to our Regular Meeting, Council meeting.

ROLL CALL

[Time: 00:00:18]

Mayor Lane: It's approximately 5:20, July 6th, 2017, and I would like to start with a roll call, please.

City Clerk Carolyn Jagger: Mayor Jim Lane.

Mayor Lane: Present.

Carolyn Jagger: Vice Mayor Suzanne Klapp.

Vice Mayor Klapp: Here.

Carolyn Jagger: Councilmembers Virginia Korte.

Councilmember Korte: Here.

Carolyn Jagger: Kathy Littlefield.

Councilwoman Littlefield: Here.

Carolyn Jagger: Linda Milhaven.

Councilwoman Milhaven: Here.

Carolyn Jagger: Guy Phillips.

Councilman Phillips: Here.

Carolyn Jagger: David Smith.

Councilman Smith: Present.

Carolyn Jagger: City Manager Jim Thompson.

Jim Thompson: Here.

Carolyn Jagger: City Attorney Bruce Washburn.

Bruce Washburn: Here.

Carolyn Jagger: City Treasurer Jeff Nichols.

Jeff Nichols: Here.

Carolyn Jagger: City Auditor Sharron Walker.

Sharron Walker: Here.

Carolyn Jagger: And the Clerk is present.

[Time: 00:00:40]

Mayor Lane: Thank you. Some items of business we have and if you would like to speak for Public Comment or for any of the agenda items we have a white card to be filled out, that the city clerk is holding over her head to my right. And if would you like to give some written comments, those are the yellow cards she has over her head. You can give those to us and we will fill those out and get to us and we will read them during the course of the proceedings. We have Scottsdale police officers Eric Bolles and Anthony Wells here to assist. They are directly here in front of me. And if you have

a need for their assistance. The behind the Council dais is reserved for Council and staff. We do have facilities under that exit sign. If you are having any difficulty hearing the proceedings, we have headset assists, and they are made available to you here at the city clerk's desk here to my right in front of us.

PLEDGE OF ALLEGIANCE

[Time: 00:01:46]

Mayor Lane: And this, we will have the Pledge of Allegiance. Someone who just celebrated her birthday a couple of days ago and went unnoticed and then in honor of that, Councilwoman Milhaven, she'll lead us in the pledge, please.

Councilwoman Milhaven: I pledge allegiance to the flag of the United States of America, and to the republic for which it stands: One nation under God, indivisible, with liberty and justice for all.

Mayor Lane: Thank you. Now, for an invocation this evening, we have Pastor Josh Reardon. Is the pastor here? I thought that might be case. I'm sorry that he missed it. But in the absence of, that I would ask that maybe we take a moment of silence to consider the police officer in New York City that was essentially assassinated just a day or so ago. It's a very tragic event and one that we hear too often occurring, but, nevertheless, if we could just take a moment to consider it and our thoughts and prayers.

Thank you. Just anyone who happens to be here for the second item on our Work Study, which we'll have later, on in this session, the Work Study Session is the unallocated reserve fund transfer will be pulled from the agenda tonight and will come back for discussion at a future meeting. That was on the basis of staff's request. There's no, we do not require any vote on that. It's just it has been continued to another evening, yet undated. So that, if you are here for that, we just welcome you to stay for the meeting, but certainly that will not be on the agenda. We have no further presentations. We do have, no. We have no Public Comment.

CONSENT AGENDA

[Time: 00:04:16]

Mayor Lane: So we'll pass over that and move on to our consent items 1 through 14. I have no cards or requests on that, unless I have any questions from Council or a motion. I will start with Councilmember Korte.

Councilmember Korte: Thank you, Mayor. I move to approve consent agenda items 1 through 14.

Councilman Phillips: Second.

Mayor Lane: The motion has been made by Councilwoman Korte and seconded by Councilman

Phillips. Seeing that there's no further questions, all those in favor, please register your vote and those opposed with a nay. Aye. It's unanimous. 7-0. All the consent items are approved, as has been stated in our Council report. And if you are here for those -- any of those consent items, you are certainly welcome to take leave or stay about us for the rest of the meeting. And that's coming up on us fast, since we don't have any Mayor or Council items.

ADJOURNMENT

[Time: 00:05:18]

Mayor Lane: So I would ask for an adjournment.

Vice Mayor Klapp: Move to adjourn.

Councilmember Korte: Second.

Mayor Lane: Move to adjourn Vice Mayor Klapp and the second I believe was Councilwoman Littlefield. The motion has been made and seconded for adjournment. Please indicate by an aye and those opposed with a nay. We are adjourned on our Regular Meeting.

WORK STUDY

CALL TO ORDER

[Time: 00:05:56]

Mayor Lane: A very efficient move forward, we will move right into what is our Work Study Session.

We generally position ourselves a little bit different, because, to an extent.

ROLL CALL

[Time: 00:06:02]

Mayor Lane: So I would like to call to order the Thursday, July 6th, 2017, Work Study Session and start with a roll call for it, please.

City Clerk Carolyn Jagger: Mayor Jim Lane.

Mayor Lane: Present.

Carolyn Jagger: Vice Mayor Suzanne Klapp.

Vice Mayor Klapp: Here.

Carolyn Jagger: Councilmembers Virginia Korte.

Councilmember Korte: Here.

Carolyn Jagger: Kathy Littlefield.

Councilwoman Littlefield: Here.

Carolyn Jagger: Linda Milhaven.

Councilwoman Milhaven: Here.

Carolyn Jagger: Guy Phillips.

Councilman Phillips: Here.

Carolyn Jagger: David Smith.

Councilman Smith: Present.

Carolyn Jagger: City Manager Jim Thompson.

Jim Thompson: Here.

Carolyn Jagger: City Attorney Bruce Washburn.

Bruce Washburn: Here.

Carolyn Jagger: City Treasurer Jeff Nichols.

Jeff Nichols: Here.

Carolyn Jagger: City Auditor Sharron Walker.

Sharron Walker: Here.

Carolyn Jagger: And the Clerk is present.

[Time: 00:06:25]

Mayor Lane: Thank you very much. We do generally configure ourselves and an on the floor conversational setting simply because the Work Study Sessions are a bit different than our Council meetings in the sense that they provide a less formal session for the Mayor and the Council to discuss

specific topics at length with each other and city staff. Work study sessions provide direction from the staff and the public to observe these discussions.

PUBLIC COMMENT

[Time: 06:56]

Mayor Lane: We allow for some Public Comment and we have a request on that. Total of 15 minutes for five individuals and there's no sharing of that or combining of those amounts, but they, we do have, of course, that Public Comment is specifically for the agenda items that we have in the Work Study. This is not a Public Comment in the broader sense. This is meant to be handled -- and we only have one item right now on the Work Study to be discussed and that's the Reata Wash flood control improvement study. So we'll be getting to that in a minute, but if you had, we just have one request to speak on that item, but we will move right to that. And that is, just as I said, the Reata Wash Flood Control Improvement Study. And the presenter is Mr. Dan Worth, our Public Works Director. And what we normally do with the Public Comment or I should say the comment on this Work Study item, is to go ahead and have the individual who would like to speak toward it go ahead and speak before you do, if that's all right. I'm sorry about that, Dan. I didn't mean to drag you out of your seat so comfortably. We have one request by Paul Gilbert to speak on the Work Study Session item one, which is the one we have at hand.

[Time: 00:08:39]

Paul Gilbert: Thank you. Excuse me. Thank you, Mayor. My name is Paul Gilbert, 701 North 44th Street. I'm here on behalf of four individuals that are located right next to the wash. They are indicated their homes are indicated with the green dots. It's important, I think as we reason together this evening to focus on the fact, two facts that really affect my clients. First of all, indicated in blue is the present location of the wash. The proposal, as we understand it will move the wash so it now runs under the proposed recommended solution, and I realize this is a study session, but the recommended solution puts this wash, indicated in the bottom graph there, moves it over and puts the wash right next to my clients. We are adamantly opposed to that. It doesn't stop there. The recommended solution, which is alternative b, which is indicated at the top illustration there, provides for a grouted rock channel. So to us, it's a double whammy.

First of all, you are taking the wash under this recommendation, moving, it putting it right next to us, and then giving us a grouted rock channel. These people bought their homes in reliance on open space and reliance on the desert. They did not ever envision having a grouted rock channel moved directly adjacent to them. So we are vigorously opposed to this recommended solution, and the grouted rock channel. I might add that the grouted rock channel not only has the grouted rock, but then there's also a safety railing or something also right along the edge.

So these people that bought homes, thinking they had a beautiful desert background are now going to, have if this is adopted, this grouted rock channel right next to them. We are not without a recommendation, however. Indicated at the top is what's known as Reach 2 in this plan that will be

presented to you. You can see my clients' homes there with the channel right up against them. We, if you are going to do something here, and that is a premise that is not all that certain, as I understand it, because of funding and perhaps other considerations. But if you are going to do something, we would suggest that you use the box culvert recommendation. We are not happy about that either, but we could live with that. That still puts the channel right next to us, but at least we don't have a grated rock culvert facing us, right out from our backyard. And then since the channel.....

Mayor Lane: I'm sorry, Mr. Gilbert, your time has expired. If could you wrap it up.

Paul Gilbert: All right. I will do so. So to, what we propose is that you use the box culvert, basically adjacent to us, if you want to do something there, and then you can pick up for grouted rock channel further south, it does not affect the homes as drastically and dramatically as ours. Thank you for your patience. I appreciate the opportunity, Mayor.

Mayor Lane: Thank you, Mr. Gilbert. That is the extent of the Public Comment on this item. And so Mr. Worth will return to the podium.

ITEM 1 - REATA WASH FLOOD CONTROL IMPROVEMENT STUDY

[Time: 00:12:59]

Public Works Director Dan Worth: Good evening, Mayor and Council. I'm here to present our results of our study of the Reata Wash and potential flood control solution for the Reata Wash. I will begin with some background. This is a map that shows the Reata Wash, the area that's shaded in a greenish area is what we generally refer to as the Reata Wash, it's about 5200 acres to orient you up here at the northern end of it is Pinnacle Peak Road. The wash actually collects water up stream. There's about 1,000 acres upstream from this area, that funnels through one point here under the Pinnacle Peak Road Bridge and then it enters this feature which we refer to as an alluvial fan. I will talk about that in a minute.

This whole shaded area is an A.O. flood zone, alluvial fan flood zone. Properties within that flood zone have an enhanced risk of flooding being damage due to flooding and in recognition of that, there's a mandatory requirement for flood control or for flood insurance for those property owners that have federal-backed mortgages within that area, it's a FEMA mandatory requirement. On the right-hand edge of the fan, you can see a set of different colors. The proposed project that we are going to talk about, without getting into any details right now, we get a huge volume of water potentially in 100 year storm, 13,000 cubic feet per second comes underneath the bridge of Pinnacle Peak Road. It can fan out across the fan.

The intent of project is to corral that water. Put it into a defined channel, build improvements to keep it in that channel and then the colored portions along the right-hand edge of the fan are that channel. The color coating is five different Reaches. Each get a separate treatment and the recommended solution I'm going to talk about them individually, but Reach One is the very upper most part. Reach Two is the area that Mr. Gilbert was just talking about. Reach Three and four

down through the DC Ranch area and Windgate. Reach Five, south of bell road, down tort end of the proposed flood improvement projects which is the BOR detention basins where WestWorld is located this is the BOR basin, the TPC golf course to the west, WestWorld to the east, and then a channel that we're proposing that runs along the east side of that to collect that flow and bring it down to the basement without damaging properties.

Before I get into details, I want to talk about alluvial fans and what that means. It's easy to kind of comprehend flooding in what we refer to as a riverine situation where you have a channel or a river, perhaps, in the case of Indian Bend Wash. It's not always carrying water, but it's a defined channel, and there's a floodplain. If the water gets up above a certain level, it goes over the bank and fills the floodplain and if you have built something in that floodplain, there is a risk of flood damage. Alluvial fans are different. They are areas where the soil, the material on the surface is unconsolidated. It's loose rock and gravel, sand and it can move around. What happens is you get a big enough flow, it can flow down. The water flow can flow down to find channels, often does, or it can create new channels. It can all go in one channel. It can separate into multiple channels. It can drop sediment into a channel and close it off and then it has to find a new way to go. They behave unpredictably and somewhat erratically.

[Time: 00:17:21]

Just to give you an idea of what can happen here in the Reata Wash, this graphic shows you, again, this is essentially Reach Two, that segment that Mr. Gilbert was referring to. Pinnacle Peak Road up here, here's the bridge where we get a huge amount of water during the 100 year storm and flows under that bridge, 1300 cubic feet per second. The channel where we propose to build improvements runs to the south. But if we have that 100 year storm, water could follow that channel. It's a defined channel. Water could follow a different channel in the same general area. There's a point up about here, we refer to as the Dobson Wash, and you can see just in the aerial, these light-colored lines are flow paths. Water has flowed. It has broken out of that main channel in the past and created other channels to the southwest, and that can happen. It can flow even further west. That's nature of an alluvial fan. You don't know where it will go.

We know it will come through the bridge here and that can go any one of those four directions or it can create another direction entirely. If it's 13,000 cubic feet per second, the big storm, the 100 year storm that we designed for, you could have 3,000 cubic feet per second go down each of these or you can have all 13,000 go down one path. That's the unpredictability that basically creates the risk for property in that area. That's where the greatest danger is. We just don't know where it will end up going, unless we create a flood control improvement project to tame that, to capture the flow and to keep it in a defined channel.

Why would we want to do flood control in this area? Because of the nature of the alluvial fan, what I just showed you, the level of development in that area, 4600 structures located now within that fan that I showed you on the first slide. The risk of flooding is real. And the risk of property damage, threat to life and property is significant. And if you have a situation like that, it's always good to at least contemplate flood control to change those conditions and mitigate it and protect the lives and

the property in that fan. The other thing that's happened, when we design flood control structures, we follow the FEMA guidelines. FEMA tells us what the 100 year storm event is that we have to design to. They have massive amounts of data that look at statistically history and they determine how much rain substitutes the 100 year event, an event that has the statistical probability of 1 in 100. There's a 1% chance every year that you have this storm. And in the past few years, they have changed due to updated science, up dated modeling, they have changed their understanding of what constitutes the 100 year event and the flows we have designed for have increased. Now it's closer to 13,000, as I mentioned earlier. So we have to account for that.

And then the other point that I want to make is that a lot of the structures have been built in the fan have been built with flood control protection. They complied with FEMA rules and they have flood walls. The reason that they do that is not to make them completely safe from flooding, not to protect them from the 100 year storm, from any eventuality. It's protect them enough that the federal government is willing to ensure them. But the federal government still mandates the insurance, they are still at risk of flooding. The way to protect them is to change the behavior of that fan to control the flow at the apex and keep it into a channel. So those are the reasons we would consider a flood control project.

This slide shows one other thing that I think is important. We are here a lot of comments as we talk to people in this area and in other areas. Well, I have been here x number of years and we have never seen that kind of flooding before that you talk about. This is a map of a storm that we had three years ago. I think you can see up there, September 2014. We designed for that 100 year storm, the storm that has the statistical chance of happening once every 100 years or a 1% chance every one year. If you look at the development in the Reata Wash alluvial fan, I mentioned 4600 structures.

[Time: 00:22:28]

We can go back to, I went back to 1990 aerials and that number was closer to 200 structures. 1990, 27 years ago. Most of the people that have houses and live in the Reata Wash alluvial fan weren't there 25 years ago. Most of that development has happened in the last 25 years. So somebody could have lived in the Reata Wash during that entire time frame and the chances are only 1 in 4 that they would have seen a 100 year storm enter. So the fact that that happened since all the development has taken place, doesn't tell that you it's not a real risk. It's a real risk.

This chart shows a storm event that we had in 2014. This illustrates the nature of monsoon storms here in Arizona. We are actually, Phoenix in the middle. The lighter colored areas here, this is where the rainfall was roughly the equivalent of a 500 year event. A rainfall that has a quarter of a percent chance of happening in any particular year. That's a big storm. 500 year event, parts of chant letter, Gilbert, Guadalupe, mummy mountain, Paradise Valley, 500 year event, if you go to the Reata Wash alluvial fan is. And it's not where the red star is. It's actually more about where the label "Scottsdale" is.

But if you go to the Reata Wash alluvial fan. The color coding shows you that it achieved rainfalls during that same storm, equivalent between an annual event and a 25-year event. So while they had

an event that happens once every 500 years on mummy mountain, 7 miles away, we had an event that happens every year, the rainfall was that much less in that short distance away. And that's very characteristic of storms here. You hear about 500 year storms. Another one that's happened in the recent past, 2007, we had a storm that generated a lot of flooding to the north of here, Stage Coach Pass, 2.7 inches of rain in a three-hour period. Same storm. There's a rain gauge at the Pinnacle Peak Bridge that registered 0.7 inches of rain. 2.7 eight miles away, .0.7. Very intense. That hasn't happened here in the last 25 years at least since this has been in place.

So we are doing the study. You authorize the study. We came here and talked about two and a half years ago and talked about the nature of the flood risk. You gave us funding and the approval to do this study, the purpose. Several things that we wanted to do. Look at developing a recommended flood control solution that would protect residents and their property and public infrastructure. We're looking at a project that would potentially reduce or remove that existing regulatory floodplain. The primary purpose is to reduce risk. If we reduce risk and we do it properly, we can reduce the need for people who own property in that area to pay for the federally mandated flood insurance. That's another thing we have been looking at.

In order to accomplish that objective, several tasks that the study has undertaken, evaluate existing infrastructure and there is existing flood control infrastructure I will be talking about as we look at the Reaches in detail. But evaluate existing flood control structure, determine if they comply with FEMA standards, evaluate other structures that would be needed to build a total solution, to do community outreach.

[Time: 00:26:30]

We have had two public meetings. We've gotten some feedback from the community. I will go over that. And then the desired outcome was a recommendation to you of a recommended project approach and a process to move the project forward. So in the two plus years since you authorized this study, we have done that. We have conducted the outreach. We have done the technical analysis. We have produced a 15% design, a design concept report which you have seen a small portion of already this evening. And we are here now to go over that, share with you some of the results and to seek the direction on if and how we move forward with the process.

The study looked at several criteria to evaluate different design alternatives, different alternatives for a potential flood control structure. Number one, we had to provide something that was FEMA compliant and we had to provide a FEMA compliant solution throughout the whole corridor if we are to remove that flood brain designation. Maximizing benefits. We wanted to provide protection for the maximum number of properties, including removing the maximum number of properties and removing the risk of flooding for the maximum number of properties. We wanted to minimize adverse impact.

You already heard tonight some discussion of some of the potential adverse impacts that we have when we build a flood control improvement project like this. There are environmental impacts, impacts on wildlife, impacts on existing washes. We have to comply with Corps of Engineers

permitting rules associated with the Clean Water Act to protect the existing washes. There are aesthetic considerations that we have to weigh. Whatever we build has to be, we intend it to be visually consistent with the desert environment, maximize use of natural materials, small footprints, low profiles. We want it to fit with what people expect the aesthetic to be in that part of our city. And it has to be a cost effective solution. And unfortunately, addressing the aesthetic concerns and the environmental concerns, generally costs opinion. The cost generally yields solutions that may be less aesthetically pleasing. The goal is to find a balance and that could be a challenge. So those are criteria.

We ended up with a recommended solution and there's actually two alternative solutions I am going to mention tonight: The recommends solution is, again, a channel that collects flows at the Pinnacle Peak Road, actually about 1,000 feet north of Pinnacle Peak Road, is where the beginning of project starts and it proposes several different types of construction, each appropriate to the particular Reach that it's in. The upper Reaches where we have narrow right-of-way, we propose a, what you saw earlier, a concrete grouted u channel with vertical walls and a railing at the top. When we get to the south, that's the red line. When we get further to the south, the blue lines and the green lines, those are locations where there's actually a lot of structure that's already built. There's a lot of flood walls hasn't in some cases levees in the southern end that were built by DC Ranch and Windgate as those developments went in to protect those properties. And they serve that goal.

[Time: 00:30:36]

Water that comes down the channel is constrained in the channel because of the floodwaters and the improvements that went in with those developments but if we are going to build a comprehensive solution for the whole wash, there's going to be greater flows that come down there. We have to ensure that they meet the requirements for the greater flows. We have to analyze those and in some cases we have to beef them up. We have to raise the height of some of the walls and actually add concrete below the bottom of some of these improvements that have already been built because the water will eventually scour out the soil to a deeper depth. Enhancing, evaluating and if needed enhancing some of the existing flood control infrastructure in those areas.

And then the southern-most area is on city area. It's a pronounced wide wash, but in order to carry the flows, carry a higher flow, part of a comprehensive solution, we have to build it to a bigger and more defined capacity. We've got the area to do that. And then at the very southern end of it, before the wash enters this basin at the east end of the WestWorld is a large concrete settlement basin. A big basin about 600 feet long, the sediment drops out and helps us maintain it, so we can remove the sediment, and keep from creating problems at the downstream end but that's a necessary feature at the southern end of this, the downstream end of this. That's the whole project.

We're going to be talking about conveyance. There's different ways of moving water from point a to point b. These are the different ways. You can have what Mr. Gilbert suggested for the area that he's concerned with, a concrete box, concrete box is just what it is. It's got a roof, a floor and two sides. As we consider that in different parts of this project, it's four boxes, side by side, basically, to carry the flow. Those are about, I believe, 11 feet deep and 12 feet across. We build it and cover it

with dirt and create a natural looking environment on top of it. Very expensive. And then as you go from that, down to the bottom, the different alternatives take up more space. They become more visually intrusive and they cost less. That's the tradeoff. But we looked at each of these alternatives and some of the options that I'm going to be talking about in that Reach 2 area, south of Pinnacle Peak Road, it consists of doing this instead of that. They consist of a box culvert instead a channel. These are the different options we considered as we move our way down through the wash. I'm going to talk about each Reach of the wash and I will do it backwards.

[Time: 00:33:51]

Unfortunately, I'm not sure why I started on Reach 5, but that's the way we put the presentation together. It's the downstream end, and I will go through each Reach and work my way upstream and to the north. This is the portion that runs through city-owned property. There's been no improvements built in this area, other than McDowell Mountain Road going across the wash at the southern end. This is the state land parcel here. This is land that we use for parking for WestWorld. You heard it referred to as the 52 acres we bought from state land several years ago. Notre Dame school to the east and the improvements consist of what you see in the picture, a wide, earthen channel. There will be buried bank projection. There's buried bank protection in several Reaches of this that we will be talking about.

That consists of a concrete slab that's built in the ground covered with dirt and built deep enough that it's going to protect from erosion when the big storm comes and does the maximum amount of removing dirt, removing sediment. There's a depth that we have to protect too, to keep it from undermining the improvements. That's the depth that we have to design the buried protection too and also extends to the top of what the 100 year flow will be. But that's essentially what we will be doing in the southern most Reach and also as I mentioned a moment ago, at the very southern end of that, a basin to slow the water down and get the sediment to drop out and remove the sediment.

The next Reach to the north, Reach Four extends from Bell Road, upstream to Thompson Peak Parkway. It's about 2.3 miles. This is the longest Reach, almost half the total project length. The total project length is about 5.4 miles. So 2.3 is about 40% of it. This is one of those areas where we have got significant flood control improvements that are already built, because the development both east and west of this, they built levees towards the southern end. They built buried bank protection, a lot of what we will be doing here is taking advantage of what is there already. We have to evaluate it, assess it, potentially make improvements to it and in most cases that consists of deepening the buried bank protection, but configuration that we have, largely, and we have to confirm this, that it will meet FEMA's requirements, but the geometric dimensions of the channel that are there right now, generally handle the flow. There's very little in addition to beefing up some the additional protection that we will have to do.

Reach 3 extends from Thompson Peak and Deer Valley alignment. And I will break it into two different sections. Reach 3 south is what we are looking at here. It goes to about 2300 feet, a little bit less than half a mile south of the Deer Valley alignment. So this segment is a little more than a half mile long and it's very similar to Reach 4. A lot of improvements have already been made and

bank protections are already in place, the channel is in place. And the proposed improvements skins largely of evaluating, assessing even evaluating as necessary. But we will take advantage of work that is done to a very large degree. This is the northern part of Reach 3.

From 2300 feet south of the deer valley alignment, up to the deer valley alignment, through this segment, the width of the wash narrows, the available right-of-way narrows. We can't get away with a wide open channel, like we do in the areas to the south. We're constrained to look at some of those other options. The recommendation is what you see at the top. We call it a trapezoidal channel. The, for the mathematicians, the geometry is a trapezoid, two angled sides, a flat top and bottom. Grouted rock. So the surface will be large pieces of rocks, cemented into place on the sides and the bottom of the channel. The dimension is roughly about 80 feet across the bottom with sloping sides.

We considered alternatives. And I have got a, this is difficult to follow, but I will sum it up at the end. Overall, the study came up with a recommended solution which I'm showing you for each of these Reaches and two different alternative solutions. Option B, Option C. The Option B solution that we settled on does not include what this slide shows. The Option B solution, we considered putting a u shaped channel which is appropriate for narrower right-of-way. And it gives you a smaller footprint but it's a little more visually obtrusive. We considered that for this Reach, but the improvement, and the function and the aesthetic values was minimal. The increase in cost was a lot. We ruled it out. I showed it here because we considered it, but when I talk about Option B, Option B doesn't really affect this Reach. This is just going to affect a small segment of Reach Two.

[Time: 00:39:47]

Option C does put a very long box culvert in, starting with this Reach, and working all the way up through all of Reach 2, to Pinnacle Peak Road and I will explain those again when I get to the end of this, I will summarize what the two different alternatives are when we talk about costs. Reach 2 south, Reach 2 on the whole goes from deer valley alignment up to Pinnacle Peak Road. We broke it up into two different segments again, with very different treatments. This one is very similar to what I just showed you on the northern part of Reach 3, the recommended solution is that grouted rock trapezoidal channel with a width about 80 feet across the bottom. The depth, varies with the terrain, but it's about 11 feet on the average from the top to the bottom, 11 feet straight down, it gives you an idea of the magnitude of this. It's big.

Option B, again, we considered a u channel the benefit just didn't make sense, compared to the costs. We ruled that out. That's not part of the option two solution that we are talking about. We did consider the box channel or the box culvert under Option C. Reach 2 north is the orange part here. It's the last 1400 feet up to Pinnacle Peak Road. Very high speeds of flow. Requires really only one of two options to be able to build it in the area that we have and to be able to meet the functional needs to carry the flow and the velocities that we anticipate in this area.

It's got to either be a u-shaped channel, concrete sides and wall, or a covered u-shaped channel, basically a box culvert. Those are the only two options for that area. The recommended options

and there's obvious drawbacks, visual, impacts on wildlife. But the recommendation was the u-shaped channel. The other was the box culvert. The biggest disadvantage is the cost, which I will give you details in a minute. The other thing that is notable about this area at the southern end of Reach 2 north, if you remember back when I showed you the slide about the alluvial fan and I talked about the Dobson Wash and how flows in the past have flowed across the Dobson Wash. This is where that happens, at the southern end of Reach 2 north. Either alternative for Reach 2 north, that Dobson Wash, the historical wash, it's been created. It's regulated.

It's a Corps of Engineers 404 wash. It has vegetation growing in, that's dependent on some flow of water coming down through there. In order to meet permitting requirements we will likely have to divert some flow but the trick is diverting enough flow to meet those requirements but not enough to have an outsized risk of flooding. And that's what this design anticipates doing. This design has a structure at the southern end, a Reach 2 north, that allows up to 2,000 cubic feet per second to break out of the main channel and go down the Dobson Wash.

The intent, and we are looking at this, we will continue to look at it more, is to have a small enough flow that it doesn't create that risk of alluvial fans where the channel changes and moves around. It stays in the defined wash, but enough flow that that defined wash continues to function as a wash and has the right vegetation and all the other characteristics that we value in the washes. So that is one area where we do design intentionally for water to leave the main channel and go out in a different direction.

[Time: 00:44:07]

And then the last segment is the area north, upstream of the Pinnacle Peak Road bridge, 1100 feet, and this consists also as with the last one, recommended solutions, open u-shaped channel, and in this case, about 12 feet deep, about 85 feet wide, the dimension you see, 100 feet is a right-of-way dimension. The actual width of the channel is a little bit less than that. There will also be a short flood wall on the west side of this, at the north end to capture all the flows and make sure that they don't break out at the north end, that they get put into the channel.

And then there's a structure that we have to build to guide the flow underneath the Pinnacle Peak Road Bridge. This is actually built and designed to handle this level of flow. So we won't do anything to the bridge. We just have to collect the flows and get into this channel and pass it through the bridge and then into the improvements in the south of the bridge. So that's the nutshell summary of all the different improvements.

The graphic on the left shows the existing wash and the A.O. flood plain and shows each of the Reaches I just described. Five, four, three, two, and one up at the top. Pictured to the right shows what we believe, if everything goes according to man, the floodplain will look like if the project is implemented. We still are going to be sending a lot of money, a lot of water to the BOR basins. That's what they are for. We still will have a riverine flood channel along the channel where the improvements are. And then these washes come into the channel from the east, where we're going to accept those flows. We are not doing anything to control flows upstream on these channels. A

couple of them are fairly sizable. This one adds about 2,000 cubic feet per second to the flow and those are not shown on the picture to the left but they are there. But that's what we anticipate the channel, the floodplains to look like after this project is implemented. It will require several steps in an interactive process with FEMA. One the next steps that I will be proposing with you. If all goes well and we get FEMA blessing on the improvements. That's what we anticipate the result will be.

I mentioned earlier we have done public outreach. We did have two public meetings. We had them up in the area where the floodplain, where the A.O. floodplain exists. I had a total of 196 people attend two open houses. We did some informal polling using some technology interfaces with cell phones. We asked questions and you could respond on a phone. I'm not giving you the results because it's not scientifically valid. We had a strong majority indicated support for identifying potential solutions. They, of course, didn't see the details that I'm presenting to you now because we are in the process of developing that, but we did talk to them about one potential alternative, somewhat some of those conveyances might look like. We didn't have cost numbers to share with them. We did talk in general terms about what the cost could be. But with the information we had, when we had those public meetings last spring, we got a fairing high level of support for identifying what a solution would look like.

We did hear some concerns. The potential impacts and the impacts were the impacts on the environment and the aesthetics in the area. We are very sensitive to those and use them as important criteria as we look at the recommended alternative. We heard the perception that flood control just is not needed. I showed you some the information that we feel kind of counters that argument, and there was a lot of interest in the cost versus benefits and I will talk to you in some detail about the cost benefits study that we did as a part of this study.

[Time: 00:48:39]

The first part of the cost benefit analysis would be the costs. The construction costs for the recommended solution, the recommended solution they showed on each of those slides and just, I told you, I would summarize to refresh your memory. The recommended solution is a u-shaped channel, north of Pinnacle Peak Road, Reach One, and it's a u-shaped channel, through all of Reach 2. And a, let me make sure I get this right. The u-shaped channels down to about 2200 feet south of the deer valley alignment in Reach Three and then when we get beyond that point, it becomes utilization of existing structures that were put in place by development, a wider open channel with varied bank protection through there down to bell road and then a wider earthen channel down to WestWorld.

That's the recommended solution. Two alternatives. Alternative B was preplacing the u-shaped channel with a covered box culvert for the 1400-foot segment from Pinnacle Peak Road to just downstream of that Dobson Wash breakout. I will refer that that Reach 2. That's Option B alternative.

Option C is similar. It would take the u-shaped channel and replace it with a concrete box culvert over longer distance from Pinnacle Peak Road bridge, all the way down through Reach 2, down into northern portion of Reach 3. And that is about one and a half miles out of that total 5.4-mile project

length there are Option C would be that covered box culvert. Open u channel to the north of Pinnacle Peak Road and then the wider channels with the varied bank protection to the south of that. So those are the three alternatives, the costs for the recommended alternative was \$45 million. The cost for Option B, which just replace that open channel with a box channel for 1400 feet, very small length that went from \$45 million to \$48.5 million.

And then the Option C where we replace it for a longer length, about a mile and a half of concrete box culvert, that's what gets you up to what you see open the slide, Option C is the \$68 million construction cost. So big aesthetic enhancement and big escalation in the cost. And, of course, the last bullet kind of goes without saying but I will say it anyway. If we are going to do a project, we have to identify the funding. This doesn't have funding identified now. I do want to talk a little bit about what those funding alternatives might be. We have discussed the project with Maricopa County Flood Control District. And the Flood Control District was a partner with us in the earlier phases of this study. They are very interested in coming back and joining us.

We wanted to ensure that we went through a very methodical development of the recommended alternative and a public outreach process. We really just felt that the county's standard process was a little too fast, given some of the complexities of this area. So we took that on without the District's assistance and they consented to that. At this point in the project, they would be happy to join back in with us. It's not funded in their five-year plan, but they have taken a look at the benefit that we are going to achieve, the cost benefit ratio and they feel very strongly and this is the administrative staff, the general manager, the Flood Control District that I talked to and obviously had to go before the board. The county board for approval as part of their five-year plan but the general manager of the District, feels very strongly that it will rank very highly and feel very strongly that it would get supported in a five-year plan. The normal expectation, it can vary but the normal expectation of partner with the Flood Control District is they pay 50% of the design and construction costs. We used that here.

[Time: 00:53:41]

If we do the \$45 million option, 50% of the cost would leave us with \$22.5 million. If, and, again, this is standard Flood Control District practice. If we do a more expensive option, and the reason that we do an option that costs more money than the option which is minimally required to meet the flood control need, if we do a more expensive option, in order to meet other objectives, in order to meet aesthetic objectives or anything else, they are going to still continue to fund us at this same level, 50% of the cheapest project alternative. Which means that if we go to the \$48.5 million alternative, or if we go to the \$68 million alternative, we bear the full cost of the increase.

So bottom line, \$22.5 million city share, if the county approves funding and partners with us at 50% for the recommended option, that becomes a \$26 million city share if we do Option B, it becomes a \$45.5 million option if we do Option C. I will just give you the rough numbers. Assuming and I don't want to pretend that I have made a decision. I haven't. There's a long way to go before we settle on an option, but assuming the \$45 million option, the recommended option, the \$22.5 million city share and these alternatives really hold for any of prices, any of the options, we have to come up with

our share of the money.

A couple of potential solutions, general obligation bonds, which requires citywide election, one of the issues that you have with general obligation bonds, the primary beneficiaries of this project are in this the specific geographical area. If you fund it with general obligation bonds, the projects throughout the entire city will be shouldering a portion of the cost to build the improvements. I will point out that benefits occur to people not in that area as well. The people own property in the Reata Wash are the primary beneficiaries but improvement also benefit who live near there because the 100 year storm that's not controlled can hamper our ability to provide emergency response in the area. It can damage utilities that we have in the area, damage utilities. Everybody in the city will get an opportunity to pay for that. It could cause utility outages.

And if the City suffers damage claims to private property, as a result of 100 year storm, that's going to be shouldered by the population in general. So everybody stands to gain some, and people who live in the area will tend to gain more. That's the general obligation bonds past practices. Decades ago when we were considering other major flood control projects in this area, we talked about improvement districts, as an option, a second bullet down there. But in the past, for funding for major flood control projects we have generally used general obligation bonds. The city funding that we have and the largest project underway right now, the Granite Reef Wash which is also about a \$40 million project, largely general obligation bonds. The people up north pay for that and the people down south could potentially help pay for this.

The second alternative, the improvement district, this has kind of the inverse effect. The people are the primary beneficiaries are the ones who pay. It would be an assessment to cover the cost of the improvements on the property that directly benefits the property that is in the existing wash that will not be in the wash when that project is completed. And, again, the past practice has not been to do this, so if we do an improvement district, you will end up a situation, at least this case where properties will be paying for the assessment on this project, and they will also be paying through secondary property tax for projects that we have done in other parts of the city.

[Time: 00:58:01]

Then the last item is something that we haven't done. Stormwater utility. We have discussed it. We have discussed it at Council. It's been a long time. This was an alternative that we raised about ten years ago. We did some preliminary work, assessments on it. And decided, the Council decision not to pursue in any further. This was in about the 2009, 2010 time frame, when we just decided it was not a good idea that would generate another assessment or cost on the population at large, but the way the stormwater utility works, it's been adopted in communities across the country. We treat stormwater as a utility, just the same way that we treat water and wastewater. Everybody in the city benefits from the water and the wastewater pays a fee and that fee supports the water and the wastewater enterprise to include the capital construction in stormwater. You can do the same thing.

And if we were to go that route, it would potentially provide funding to do this project and other projects. Again, it's a new cost, that would be levied on residents citywide. It has precedence, as I

think the number of communities that do it nationwide is in the thousands now. But it is a break from the past. It will be challenging to implement. This slide just looks at one of those alternatives in a little bit of detail. I wanted to show you a little bit of a comparison. And this was a question that we got from several people at the open houses at the public meetings we had. People wanted to know how much their assessment would be. They are assuming if we went to an improvement district, they wanted to know what their assessment would be and how does that compare to the flood control insurance. And we can't tell an individual property owner what the answer to that question is, but we can come one a pretty good estimate in the aggregate of what that answer is and that's what we tried to do here and the study actually did this. They took a look at the types of properties and the current insurance premium rates and came up with an estimated annual premium per structure, aggregated that and we think that all told, and there's some assumptions that go into this, I will admit, but we feel it's a fairly good estimate, but all told, about \$1.8 million a year being paid in flood insurance premiums by properties both residential and commercial within this area.

If we took the cost of the recommended option, \$45 million project, and assessed it against the properties that would be the primary beneficiaries, the properties in the current flood main, looked at the total property value in that fan and allocated that \$45 million cost over 20-years, the 20-year life of a bond and took a look at the annual debt service payment that comes out to about 1.8 merchandise here. So theoretically in the aggregate again, this might not work for anybody. But in the aggregate the flood control premiums of \$1.8 million goes away and an assessment, an improvement district assessment takes place. After 20 years that goes away.

[Time: 01:01:40]

That's a very macro look at what the pluses and minuses are of the improvement district versus insurance discussion. As I said, the study included a cost benefit analysis or more properly a benefit cost analysis. There are obviously some benefits of making the improvement. I talked about some. The biggest is the life and property, there's a lot of property that would be protected. Secondary would be what I just talked about, the benefits of many people would be not paying that flood control premium. Reduction in flood damages, and that's not just a private property. It's not just a commercial property. It's also a city property, and we have a lot of infrastructure that will be protected by flood control improvements.

We did a benefit cost analysis to try to quantify the cost of, or the value, actually of doing this project. The benefit cost analysis is important, in justifying the projects, it's important in gaining support from external agencies. It will be critical in getting support from the County Flood Control District. It's got to pencil out, and make sense for the District or anybody else to participate. There are rules for doing this type of analysis. FEMA published the guidelines, and how to estimate the costs, the value of the benefits. It's again, based on a lot of assumptions. You are trying to quantify the benefit of avoiding future damage due to the 100 year flood. So you have to make assumptions of how much damage the 100 year flood would cause to how many structures that could be affected.

We used FEMA guidelines and FEMA numbers to do that analysis. And you can see the results that we came up with. You take that total cost of damages attributed to a 100 year term and the

statistical chance of getting a 100 year storm in 100 years, and you average that over a year. And then the cost of improvements and annualize that and there's some permanent costs and the cost of the project. So if you boil those down to one-year annual costs, one-year annual benefits, about two-thirds of way down you see watt ratio is. Annual benefits a little bit more than two times the annual cost, 2.08. A benefit cost ratio of one or greater meets FEMA criteria for a beneficial project, one that merits consideration. We obviously do pretty well with the value of the benefits versus the costs. And I will point out that there are some things that we did not include and these are really all things we did not kill on the benefits side, if we had included them, that ratio would have been higher.

FEMA guidelines, we attributed damage at half a foot of flooding. If your house floods at less than half a foot, you are probably still going to have some damage. We didn't include cost figures for that avoided cost and the benefits. This is all based on analysis of a single 100 year storm. During that same 100 year period, the statistically analysis, could you have two pretty darn big storms and they will do damage. They won't do as much, but they will do damage. You can get damage from a 25-year storm, and you can get damage from an annual storm if the improvements are not but in mace and the fact that we are dealing with an unpredictable alluvial fan makes that even more important. Because a ten-year recurrent storm can look like a 100 year storm to the properties along that wash.

[Time: 01:06:07]

The other storms would also be avoided if we built this improve. We didn't factor in any benefit from avoiding damages attributed to those lesser probability storms. The \$1.8 million a year on the FEMA mandated insurance premiums, we didn't count that, although I think there are property owners in that area that would see the benefit. We didn't count that when we quantified the benefits. We quantified the damage to the structures and the contents of the structures due to the potential 100 year storm following FEMA guidelines.

So here's the summary. There's a serious risk. We have identified potential flood control, that would alleviate the risk and protect lives and property. And the benefits outweigh the costs of building the improvements.

And this is the last slide of the presentation. This is where I'm asking for some direction and I'm suggesting on this slide what that direction might entail. If we are to advance to the next level, what we are proposing we would do, would be fund continuation of the study. This would take the study which is a 15% design level and bring it to a 30% design level. We would have some more certainty over project costs. We would also be able to take, and this is, this would definitely be a part of the scope. We would be able to take this level of design and develop and submit what's called a conditional letter of nap revision. That's a process that we go through when we have a proposed improvement. We go to FEMA and we say FEMA, this is what we are thinking of building and we have a design that's developed enough that FEMA can analyze that, and come back to us and say, yes, if you do this, per the plans, we will look favorably upon removing that floodplain upon issuing a letter of map provision at the end of construction.

We still have to go through that process at the end of the construction, but this conditional letter of

map revision will give us a very good idea that we will actually achieve the benefits that we are anticipating to achieve if we go to the next step and fund the full design and eventual construction. So that's the key pieces that we would be looking for. It's about a 24-month process. And that is, that is not excessive. That puts us in line if we are going to get support from the County Flood Control District. That puts us in line with when we think they might be able to have that funding available. And it makes good use of that time, developing that design to a further level and give us more certainty and get that conditional level of map revision request into FEMA. The cost of doing that would be about \$650,000. I'm not set up to ask for that now.

But if the direction is to do something along these lines, that would be a subsequent Council action that I would bring it back to you with a resolution and details on the proposed funding, although I'm suggesting here that we do have a big piece of that funding available in our stormwater in lieu account, which has just been enriched substantially by a \$400,000 payment as part of the development agreement with the Pomeroy development on the west side of Scottsdale Road. That actual account, I think it's got over \$500,000 in it right now.

[Time: 01:10:10]

Again, I'm not asking for an action right now, but it would make sense to use stormwater in lieu funding to move this study to the next level. It would have to obviously, if we are going to do \$650,000 be augmented. We would likely be looking to a General Fund contingency transfer to do that. But if we will go to the next level, that's what we would be contemplating doing. You can see the bullet below, that Phase Two, is something that if we decide in 24 months, or I think it says 18 to 24 months, when we come back with the results of Phase One piece, if we decide we want to go forward, we would be looking at spending some serious money to go to full design, hopefully by the time it won't all be our money, it will be Flood Control District money as well. So with that, that's the presentation. We would be happy to address any questions. And take any direction that you may have.

Mayor Lane: Thank you, Mr. Worth and I appreciate the comprehensive look at the project. Let me, well, I tell you what, Councilwoman Milhaven has a question.

[Time: 01:11:24]

Councilwoman Milhaven: Thank you, Mayor. So this presupposes Option A?

Dan Worth: Councilwoman Milhaven, yes, the numbers presuppose Option A.

Councilwoman Milhaven: And we heard from some of the nearby property owners that they take exception to what was considered. You said earlier when you went out for public input that we did not have this level of detail and so I guess my question is: How comfortable are we that the other people who live in the north who may not be paying as close attention as some of these folks have had a chance to review, and we have had an opportunity to comment.

Dan Worth: Councilwoman Milhaven, I would not think by any stretch of the imagination that everybody that owned property adjacent to that Reach 2 portion of the channel was at the public meetings or is even aware of the project. I'm certain that other people as we proceed will raise their hands and say, hey, I don't like this, which is why we came up with Option C, which replaces all of the ugly u-shaped concrete channel from Pinnacle Peak Road down to south of the Deer Valley alignment with a more visually acceptable, but also very expensive covered box culvert.

Councilwoman Milhaven: And you rattled off a number of numbers that define B and C. I wish we had a chart.

Dan Worth: I was going over this thinking to myself, I wish I had a chart.

Councilwoman Milhaven: Yes, a summary chart would have helped. What would it cost for us to include the changes that these property owners have asked? But I'm reluctant to ask the question because there's probably other property owners who have other requests. And so I don't know where to go with, that except to say, I would like to be responsive to their concerns and cost out the impact of what they are requesting.

Dan Worth: I can give you a brief answer. It's not a total answer, but I believe that those properties are in the segment that we're referring to as Reach 2 north. And if we did Option B, which costs \$48.5 million for the total project instead of \$45 million, I believe it would address the concerns of those individuals. It leaves us open to people south of there that may come forward.

Councilwoman Milhaven: I... I... you know, I would like to do the \$48.5 million option, but I'm also concerned about what floodgates that opens and so maybe I will just leave it and say I would like it to be responsive to these gentlemen's concerns and look at how we can do it for the \$48.5 million but maybe not make a commitment to it depending on how the process unfolds. The other is the idea of a stormwater utility is really intriguing. You know, if we see, as I see it, this is a responsibility that the city has to its citizens in the same way that we need to provide clean water and we need to keep people safe with stormwater and so the idea of a utility similar to water is very intriguing. That concept was presented before I was on Council. So I think as we continue down this road, it would be interesting to look at that in more detail. But I'm certainly supportive of Phase One with the addition of the, with the change the property owners have requested. Thank you.

Mayor Lane: Thank you Councilwoman. Councilman Smith.

[Time: 01:15:00]

Councilman Smith: Thank you, Mayor. If we give you approval or if we gave you direction to proceed with Phase One, does that limit you to the \$45 million overall proposal or is this continued study that then later could you say, okay, we are going to change whatever you call Section 2, to boxes or something?

Dan Worth: Councilman Smith, it doesn't limit us. We continue to pursue Option B and Option C.

We continue to develop the costs for those. It will cost us a little bit more but at this stage, it's cheaper than if we go to a 30% design, and decide that we want to develop another alternative. We can continue to pursue alternatives and refine those costs and come back at some point for interim guidance as we know more.

Councilman Smith: Because speaking for myself, obviously, I'm in favor of continuing to go to the next stage, if you will, Phase One, whatever you call it. But I do not necessarily want to foreclose options that were described as B and C alternatives. I may not be able to afford them when we get there but I would like to keep them in the mix. The second question I have, could you go back to the slide that shows insurance premiums that aggregated \$1.8 million? It doesn't surprise me that the government is pricing the insurance this way. Is it true that a resort only would pay, whatever, three times what a homeowner pays, considering the massive investment that the resort might have and the massive number of properties and so on and so forth and for that matter, multi-family paying only half again more than a single homeowner?

Dan Worth: I am not positive, although I'm reasonably certain that what you see here is a resort structures that are in the vicinity of the Princess hotel, not the Princess hotel itself which is not in the Reata Wash floodplain, but some of those smaller time share units, individual resort structures. So it would be more equivalent to residential houses.

Councilman Smith: This is, what looked like 40 homes.

>>Dan Worth: Something like that.

[Time: 01:17:42]

Councilman Smith: And then to the multifamily. Presumably they don't look like homes but they are paying half again more than a residential is that bizarre governmental pricing or....

Dan Worth: I'm not sure if it's bizarre governmental pricing, a reflection of the relative sizes or whatever it is, but we did use figures from FEMA to estimate these.

Councilman Smith: These are the real numbers?

Dan Worth: These are the real numbers. One thing I will add, we just completed, or the county with our assistance completed a study for the next major wash to the north, the Rawhide Wash, the Pinnacle Peak West study, and they did a similar cost analysis and when they took a look at the value of eliminating premiums, flood insurance premiums, the numbers they used were higher than this, and that's as a result of legislation that's been passed within the last couple of years. It's, you know, I had to work this into the discussion, it's referred to as the Grimm-Waters Act. Two Congressmen, one named Grimm, one named Waters. It's forcing FEMA to do a better job of recovering costs of their payout and it will result in an increase in premiums. The county study in the Pinnacle Peak West area factored in about a 50% increase in premiums over the next three years to account for that. We have these numbers. By all rights, it will probably go up.

Councilman Smith: And we are all speculating, but it wouldn't surprise me if they did as well. Often when the federal government pays out on an insurance program and realize how poorly priced they were, they change the pricing, but, to the question. There's obviously a symmetry between \$1.8 million in premiums and \$1.8 million in debt service if you went with Option A, but in a practical sense, how do you achieve that symmetry. How would we ever get these people to say, yes? We'll pay for this because we are going to save the money. Do we draw a district and then hold an election? Can you describe the process?

Dan Worth: It would be the creation of an improvement district. We would draw boundaries. Most likely it would be equivalent to the A.O. flood zone. They are the primary beneficiaries of project. It requires, and I haven't reviewed the rules recently but half of the property owners and I think there's multiple tests. Half of the property owners and half of the owners by value or something but it's laid out in state statute. We would have to satisfy those requirements but we would have to have that majority support it. Do we have a reason to believe we haven't done anything close to polling to identify that. We talked with very limited sample, but I will tell you, there was people in that limited sample trying to do the math at their public meetings. What does it cost me in an assessment, versus the cost of the insurance premiums.

Councilman Smith: The other tact that you suggested, the stormwater utility, can you explain more fully how that would work? I mean is that an assessment on everyone's water bill?

[Time: 01:21:31]

Dan Worth: It would be an assessment on the utility bill. It would be a city of Scottsdale utility, wastewater and solid waste. In most places that have implemented it, the trick is to come up with a means of pressuring the benefit or the amount of that utility that a property is using, so to speak. A lot of places have taken a look at the roof area and the paved parking or driveway area of a property. The impermeable area, where before development, water would hit the ground and some of it would soak in, but now because of development it flows off the roof and down the driveway and into the city's infrastructure and that's what this assessment is paying for is the city infrastructure, the cost of billing it and maintain it. So that permeable area is more often than not the indicator that's used to calculate what the portion of that utility's cost is going to be allocated to every individual property.

Councilman Smith: And that seems, I understand how that works but that seems distantly related to the issue that we are talking about here. I mean, it's not permeability, per se. It's not pavement vs. raw land but it's creating the cost benefit. I'm assuming that as easy as this might be, it's fairly imprecise assessment. And may be challenged by some for that reason. Let me switch then to my last question that I had here. And that is if we moved out of Phase One, after 24 months, and into Phase 2, figuring out in some way or another how we will pay for this, from this moment in time, when could this project actually be complete? In your most optimistic estimate? Or your estimate, either way.

Dan Worth: I can't put a time frame on my most pessimistic, but another two years for design and

assuming we have all of our agreements in place for the county and the county has their funding lined up and we have our funding lined up, two or three years to build the project, two plus two plus three, could be seven years before we are completed.

Councilman Smith: And then we have 93 years to wait for the flood.

Dan Worth: Of course, it could happen this week.

Councilman Smith: I understand that and I hope the listeners understand that as well. Mayor, I have no other questions. Obviously, I'm going to lend my support to continuing to Phase One, continued advance this project.

Mayor Lane: Thank you, Councilman. Councilman Phillips.

[Time: 01:24:43]

Councilman Phillips: Thank you, Mayor. And, Dan, I just want to say, you know, thank you and staff. I know you have over the years trying to handle this big problem, and you put a lot of time and money and energy into it and I tried to find a way to resolve this, but unfortunately, I kind of look at it in a different light and I look at the heavy hand of government and FEMA coming in and telling us that what we had before is no longer valid. They come in with a better number and they have come in with a better number across the country, it's not just us. And they are doing this because they have a national flood insurance program that pays for things like floods in Louisiana and stuff.

We are all paying for it. So I don't see where FEMA wants to get rid of flood insurance, no matter what we do. And even if we did this, we are all down and we go to FEMA, okay, we mitigated. We did this and we get rid of your flood control insurance, well, you know, we did a new study and really think there will be 17,000 flowing down that Reata Wash and you didn't really do enough. You know this is just sitting on the idea that they might do that, if we spend all of this money on it, but we really don't know if they will or not.

And now the other thing, on the 100 year flood and you showed a big map of floods where it dumped in an area and it was like a 500 year flood. If we do all of this, whether it's the \$21 or \$45 or the \$68 million, that's only if we get the 100 year flood just north of Pinnacle Peak. If we get it south of Pinnacle Peak, it will go into the alluvial fan, you know? So all of this money and this flood control channeling and the culverts and the ditches and the washes and everything, it's only if that flood happens there. That changes it from 100 year flood to 1,000 year flood.

Because now you are picking a specific spot, excuse me, my mouth is dry. So I don't feel like we are mitigating anything by doing this. We are just saying if the water all dumps right there, we'll be able to channel it here. But if it dumps somewhere else, oh, well. It will still go to the floodplain and I think this FEMA will say, that's great if it dumps there. But if it dumps south of Pinnacle Peak, you will still going to have your flood and you will have to keep your flood insurance. I know there has been talk in the past, like we had the Reata Wash. I mean, sorry, the Indian Bend green belt and they

have been talking about that being the brown belt. I think the only viable solution of having a brown belt. It comes down the fan, holds water and slows it down so you don't have a force and allows for percolation in all of these different areas besides. I really see that as the only viable alternative.

Also what's going on is because this is happening across the country, there's a lot of lawsuits going on across the country and even in Arizona and even in Phoenix, and there's going to be a lot of congressional hearings on this. And I think FEMA is going to back off on a lot of it. So I don't feel like right now we should be trying to appease FEMA by spending \$21 to \$50 million when we don't even know if they will accept it or not. The one grouted rock thing as a comment, down by my house, there's a Mescal Park and it's a flood control basin and all the water flows in there and it has grouted rock and it's pretty much deteriorated to nothing. And that's water just sitting there.

When you have the Pinnacle Peak watch and box culverts in and if it did dump than much water and you did get the 100 year flood and you have 13,000cfs raging through those things it will tear up everything coming down its way. That's a lot of force. As if the alternative where the water comes down and it's raining everywhere and it soaks into the ground and, of course, it puddles up and creates streams and little rivers and gets your flows. But to try to channel the water, it's going to create a force. And I don't see anywhere on here where we are slowing down that force. I know way down necessity end when you have the 320, the 320-foot levee, it's slowing it down but it's too late by then and then what happens is inside the box culvert, it's not, you are not stopping any rock along the way.

[Time: 01:29:44]

So that will fill up with dirt and rock. That could fill up. That could clog up. We have seen storm drains that clog up all the time. Then what happens? If you have that much water, it could flow somewhere else and cause more damage somewhere else. It's man trying to play with nature. So I just don't see this as a solution. And I really don't want to spend any more money on it until we do have congressional hearings and, I mean, we can get back to where we were before, with the 11,000cfs which is much more manageable than 13,000 which is the size of the Colorado River. I think it's just ridiculous. And so I'm sorry.

I know, you know, for staff to go through this much time and trouble and work on this and I applaud them for this and that's their job but I can't see continuing with this thing until, you know, like I said we have a congressional hearing or, and it's not just here. Like I said, the other one Dan brought it up a little earlier about the Rawhide Wash. That goes into Phoenix. Phoenix is sitting on state trust land that they want to build on and they can't do it for the same reasons, because of this wash and because FEMA came in and said it's much more worse than you think and we will be charging all of this and you will have to pay to mitigate it. So that's going to be another lawsuit.

So I don't, I think we are far from solving this problem and I just don't want to see us spend a bunch of money on something that in the future they won't accept anyway or it will just cover a little area and only in a certain place in a certain flood at a certain spot and otherwise, it will flood anyway. So, you know, here's an example, at my house. I have a rain barrel and I put a gutter around my patio. So when it rains on the roof, the water goes into the gutter and flows foot rain barrel and I have this nice

barrel of rain water. But you know what, it doesn't just rain on the roof. It rains on my patio and every time we get a rain, my patio floods. I'm not stopping the flooding, I'm just catching some of the water. I think that's all this will do. You will catch the water where it rains there, but you won't catch it anywhere else. That's my rant and I don't approve of this. I will go the other route of trying to get FEMA to, and the Flood Control District to change their analysis and get it back to where it was or even less, because I think this is just over and above. Thank you.

Mayor Lane: Thank you, Councilman. Councilmember Korte.

[Time: 01:32:27]

Councilmember Korte: Thank you, Mayor. And thank you, Dan and staff. I know there have been many years of effort and research put into this by staff. There's also been many years and effort put into this by the many residents that are impacted by this. And, you know, our audience tonight is Francois, you know, I walked his property and then some and rode around in his 2006 Jeep that I'm going to steal from him one of these days. But also the Andrews, you know, you have spent many, many years as hawks so, to speak, of this project. So while I am going to say yes to move on Phase One, I really believe that it's important that direction must assuage the fears of those residents that are impacted the greatest. And those fears are not only the fears of looking at an eyesore, of a 120-foot wide grouted channel that really becomes a Mason-Dixon line for wildlife crossings, but also the fear of devaluation of the property. You know?

Who is going to purchase your home when you are ready to move on with this ugly grouted channel right in front? It, that's just not right. I'm concerned about the cost, and I'm concerned that whether it's Option B or Option C, what impact that has on the cost benefit analysis, because it will have impact on that. I'm also, I would also like to see some concern, or some effort put into natural catchments. So being on the water conservation side, that natural catchments along this area would benefit our water table and going to keep that water usable in the future so to speak as it goes down into our aquifers. And, plus, natural catchments also provide a benefit to the environment. So, yes on Phase One, but with the real need to prioritize and lessen the impact to those residents that have the greatest impact.

Mayor Lane: Thank you, Councilwoman Korte. Vice Mayor Klapp.

[Time: 01:35:25]

Vice Mayor Klapp: I feel much the same way that, I would proceed with Phase One but the design should be sensitive to the proximity of property owners. When you look at the channel that you showed us that goes from Reach 2 down to Reach 5, it meanders close to houses and far away from houses and when it gets close to houses, particularly the property owners that have spoken tonight, they will have it right next to them, I think that the design has to be very sensitive to that kind of situation. And design something to alleviate the problem that those property owners will likely tell you when you continue on with the design, you will hear, as was mentioned before from other property owners.

So it seems to me that we just need to give heightened consideration to anyone that's getting, that's living very close to where the channel will be and devise a system that would alleviate their situation, which might be a box culvert. I'm not an engineer and I have heard that maybe box culverts won't work but I think we have them in a variety of places in the city. So it seems to me that a box culvert may be needed in an area that's meandering very close to property owners. So that's my only input on this, is to continue on. We know, as you said that you are going to be tweaking the design as you go and changing and I will look forward to seeing what you can do about addressing any property owner that's got a problem with the channel getting very close to their house.

[Time: 01:37:16]

Mayor Lane: Thank you, Vice Mayor. Personally, I think this is something that we need to proceed with and I'm certainly in favor of proceeding with Phase One, and moving forward with an analysis and a design as it's been discussed here and frankly the funding of it. But I do too have concern about what options we work with, the cost benefit of each, and with all due respect, I think that the staff did a very good job of trying to quantify some of the elements of the cost benefit arrangement, but we have a community here in south Scottsdale that has been waiting for many years for the completion of a project, the Granite Reef Floodplain and that has left them with years and years of paying increasingly high flood insurance to the point of homes that aren't a fraction of the size of homes that they are here and they are paying \$800, \$900 a year on flood insurance premiums.

I appreciate that they are not always readily at hand and whether or not FEMA is on top of what their insurance rates right be, that's something else again but the idea of losing your home and personal effects in something like that is sometimes unquantifiable. But there's another major benefit, other than just insurance that might be saved and that's the valuation of property. Right now the properties is within this flood plain are at a different level because they are subject to the flood plain and they are subject to potentially inundation of the 100 year flood and maybe something lesser depending on what direction the water goes in the alluvial fan and we have a great history with that as well.

We also have the consequential effect of not having done this years ago, in an incident we had with flood condition that bumped up and was not routed and there was no consideration for it or it was inadequate consideration bumping up against the 101 and then ending up flooding through and inundating businesses in the airpark. So it's not that this doesn't have consequences, if we don't do something. The cost benefit is always something we have to consider, and when you are talking about 50% more again for Option C throughout the area and I'm presuming and maybe this is a bit of a question, when you have expressed it at \$68 million for Option C, we're talking about in every area where that is, every area of the Reach where that is an option. It's not just what was requested for those homes that presumably are closest to this.

Dan Worth: That's correct, Mayor. \$68 million option would take the open channel and convert it into a boxed culvert for 1.5-mile length of the total 5.5-mile channel.

Mayor Lane: And I appreciate that. So it's not just a short run. We are talking about a significant run that would have to be protected from people, kids, animals and otherwise getting into this and in which case you put up some kind of barricade and we have seen this in town here too, where they become literal beaver dams and become a real problem in flood conditions and damming up water and then as Councilman Phillips refers to, become a major problem unto themselves. I know that there are mechanisms we could employ but we have seen that happen before. I'm concerned about that.

I'm also concerned about the idea that when the county says they won't participate in something like this, there is some determination that in order to alleviate the problem, there is an answer. But that does not mean that we shouldn't be sensitive to how we get this done. So on the overall, I would say I think the recommended method, actually, comes as close to what Councilman Phillips had stressed as something that would absorb, at least to some degree the flow and keep the directional aspect of it refined. But that's not really what we are deciding right here, right now, particularly if we are leaving the options open and I appreciate that. The one other thing that I think in a cost benefit analysis, is the increased valuation of every dwelling unit that's in this flood plain. The absence of the insurance is one thing, but certainly from the standpoint of value to someone, I think is another measure of a benefit, a beneficial cost here. So I will leave it at the fact that I'm in favor of giving the direction to move forward to Phase One as you have outlined and looking toward whatever you bring to us as far as how that might be funded in other words in an action item later and understand that.
Councilwoman Littlefield.

[Time: 01:42:45]

Councilwoman Littlefield: Thank you, Mayor. I agree with Councilman Phillips on this. I have think this is too soon. We need to find out where FEMA is going, where the county is going and get some actual real live data and see exactly where it is that is best to go. I don't think that enough stress has been placed on the aesthetics. This is important in Scottsdale. And I don't want to have a culvert 5.5 miles long, concrete, running down the side of this mountain to, in a major part of the city impacting all of the homes that follow along it. It makes no sense. We are better than that, and we need to consider the look and the feel of this thing if we go forward with it. It seems to me that we have kind of created some of this problem ourselves.

According to our charter, the developers are supposed to be responsible for flood control and any areas where they develop, and we obviously have not held them to that standard. That's a fault that we have and I would certainly suggest that we never approve another project of any kind of development in a flood control plain without the developer paying for the flood control. That would have alleviated all of this problem and we wouldn't be sitting here today. I don't feel that an open concrete ditch is appropriate. I know I have talked to some of the other staff members, a charter officer, who had some ideas of possibilities. I think other possibilities ought to be looked into. I do not think that going to a utility fee or a new tax on the citizens of Scottsdale is appropriate and I don't think it's necessary. I would not be in support of that as a member there.

I think if we go ahead with this, and spend the \$650,000 to continue on, I think what the other things

we probably should be looking at is an improvement district as opposed to a general tax on all the citizens. The reason for this is we have not been having very good luck with passing G.O. bonds in Scottsdale, and I can just hear the problems that would be facing the Council if we suggested that we tax all of south Scottsdale to put in culverts in north Scottsdale. It would not go well. I think that we have some more things that we need to find. We need to find out about, and this is not complete. I would like to know what the actual cost would be for improvement district for the citizens on some sort of standardized basis as opposed to a G.O. bond for everybody and a standardized basis.

A lot of that kind of stuff has not been done. I have no idea where the C.I.P. subcommittee is going to come one \$22.5 million for this. It will be an interesting study for them to do. I'm certainly glad I'm not on that. And if we go on with something that's more aesthetically pleasing and better for our city, look and feel and touch and all of that, it's going to be more than that, because we are, as you said, Mr. Worth, going to have to pick up any difference on that. So I would, I would postpone this for a while. I would not approve it and I would wait until we got some information, both from the county and from FEMA as to what their requirements would be and where they would go with these into the future. Thank you.

Mayor Lane: Thank you Councilwoman. Councilman Phillips.

[Time: 01:47:12]

Councilman Phillips: Thank you, Mayor. Yeah, there's something I forgot but then I heard other comments too. One of the problem with the improvement district is the big guys will have more votes than the homeowners and they will probably want to do it and all you will be doing then is replacing your flood insurance with a tax. So you are going to end up spending the same amount of money. It doesn't really help you. I want to reiterate that down here, we had this same thing, a long time ago when we got the Indian Bend Wash and I think the north deserves the same and they should have their brown belt. I think that would, people would go with that more and I would think you might even be able to get it bonded that way. Because it's aesthetic, everybody would benefit from it. And it just kind of completes the picture.

But the thing that I forgot was the stormwater utility, I think that's worth looking into too, Dan because that's a problem for the whole city. And not that I would like this project at all, but we have so many other stormwater projects and we always have to try to find a way to come up with the money and when you mention the Granite Reef, I think the Mayor mentioned the Granite Reef project. Yeah, we just, we can never come up with the money. This might be the thing to do because, you know, we all live in Scottsdale. We all get flooded at one point or another somewhere and this has to be taken care of somehow. So I'm interested in that and I would like to see how that would work out. Thank you.

Mayor Lane: Thank you, Councilman. Councilwoman Milhaven.

[Time: 01:48:50]

Councilwoman Milhaven: Some of my colleagues made some comments that I want to clarify my understanding. Councilman Phillips made a comment to say if it rains below Pinnacle Peak, you showed us a map that showed and you made the point to say, 8 miles from here to here creates a different kind of event. And so Councilman Phillips made the comment to say that this would only help us if it rained north of Pinnacle Peak. Could you speak more about what if we had major event that happened south of Pinnacle Peak, what, within the parameters of the fan.

Dan Worth: Two things would happen, the flows would be less. We take a look at 100 year event happening in multiple locations. And 100 year event happening upstream of the Pinnacle Peak Road bridge is the worst case scenario for this floodplain. So that's the basis for the rest of the analysis. If it happens downstream, the flows are less and it affects less areas and the fact that the flows are less tends to make the unpredictability of the alluvial fan less a factor.

Councilwoman Milhaven: So those were taken into account.

Dan Worth: Yes, it was taken into being.

Councilwoman Milhaven: And then the reliability of FEMA. They almost described like a shell game, FEMA keeps changing the rules, but I see the first bullet point is preparing a letter of map revision. I was reading to say that we would get a commitment from FEMA to say that this plan met their requirements before, before we move forward with, too far into the process.

[Time: 01:50:25]

Dan Worth: Councilwoman Milhaven, that's correct. That's the intent of the conditional letter of map revision process. Although the scenario that Councilman Phillips was talking about, should they give us the approval and then they change the parameters. If you don't trust FEMA, you don't trust FEMA. I can't address that. However, I would point out that even if they do change the parameters again, you have still built an improvement that provides protection for a lot of property.

Councilwoman Milhaven: And I would imagine if they gave us a commitment, and change it, that puts them in an awkward spot to do otherwise. And I heard Councilwoman Littlefield talk about a concrete channel. Did I miss that part of the presentation?

Dan Worth: It's a u-shaped grouted rock concrete channel, from 1,000 feet north of Pinnacle Peak Road, the beginning of this whole channel to 2300 feet south of the Deer Valley alignment if we do the recommended solution.

Councilwoman Milhaven: It seemed to me a big piece of it was the earthen channel. And their picture had.....

Dan Worth: Over half of it is the earthen channel.

Councilwoman Milhaven: Thank you. And in terms of developer pays. We don't have any history of developers paying for this kind of stormwater. In fact, I think you mentioned early on in the presentation, that the community at large paid for most of the, for all of the major stormwater projects is that true?

Dan Worth: Developers have to pay for handling what falls on their property, and their development. They have to pay for their impact on the stormwater system downstream from them. And that's why development often has to put in the detention basins or qualify for a waiver. That's what that is intended to do. We never asked for a developer to solve a large regional solution like this. We asked for them to pay their fair share. We do that on a very regular basis, but we never put the entire onus on them.

Councilwoman Milhaven: So a developer does pay for their share of it. If I could make a comment about insurance premiums. Whether you pay premiums or you pay for a cost, personally, if I could pay a cost and avoid losing my home, versus paying a cost and replacing my home after it's been destroyed in the flood, I would prefer to spend the same dollar amount to avoid the flood. So I think, so thank you and I continue to support moving forward with Phase One.

Mayor Lane: Thank you, Councilwoman. Councilman Smith.

[Time: 01:53:06]

Councilman Smith: Thank you, Mayor. In the lapse of time here, I really came upon one other thing that I would like you or someone to give some thought to. When we talk about the cost benefit analysis of this kind of an improvement, it is not in my mind just that the affected homeowners eliminate insurance premiums. I'm confident that the value of their home would improve. I can only imagine if you sell a home to somebody and say, I do, of course have this little problem. I'm in a flood zone. It's a little bit like saying, you are in a termite area or whatever. So I have got to believe that there's an enhancement to home values that would occur. I have no idea how you can measure it or even estimate it, but I have a hunch, it's a number that's large enough for us to consider when we look at our cost benefit analysis and I challenge you to do something in that regard. Thank you, Mayor.

Mayor Lane: Thank you, Councilman. The only thing I would, I think we have got a good bit of guidance. I hope, Dan, we have given you what you need on this.

Dan Worth: Absolutely.

Mayor Lane: The only thing I see as a little bit of a void, there's still a big question mark on funding mechanisms and methodology that it might employ. I know it's been mentioned a few times but there is a bit of a concern when you talk about, I'm concerned about the box culvert for the physical reasons of how that might impact the area adversely, not by visual but by adverse application of a water flow. But if, in fact, you will increase the cost of a project that's recommended and will be funded in partnership by the County Flood Control District, with an improvement on that order, I think

that we probably need to be looking at least how that might be funded separately almost. I don't know exactly how that is even possible to break out, but if there is an improvement district that, you know, would then go to that issue, that may be something that those who would benefit the most from that improvement, might be the ones that would take care of that particular cost.

Otherwise, I think that this is a difficult thing for us to do without some kind of stormwater assessment, a stormwater district or utility costs. And beyond what we were just talking about for a builder on a piece of property or a developer of a community. We have more and more requests in the northern reaches of Scottsdale for what we used to have natural washes coming across the roadways as being inadequate because they shut down the roads and we are more and more invested in box culverts in that. I think we need to look at how we will handle it going forward and that may be, at least an element that we should be investigating on both of those elements.

Unless there's any other thoughts on it, Dan, I hope again it's given you some direction, certainly to move forward with the Phase One, as you indicated. I think you have got that pretty solid. So thanks again for the great presentation. And since our second item on this was continued forward to date uncertain, that is not on our agenda for tonight. I think that completes our record, I should say our meeting, and thank everyone for their participation and thanks for being here.

ADJOURNMENT

[Time: 1:56:58]

Mayor Lane: With that I accept a motion to adjourn.

Councilmember Korte: I move to adjourn.

Vice Mayor Klapp: Seconded.

Mayor Lane: All of those in favor of adjournment, please indicate by aye. We are adjourned.