

Agenda
Hermosa Advisory Panel Meeting #2
May 19, 12p-2p

Patagonia Public Library, 46 Duquesne Ave (Cady Hall outside under shade tent)

- 12:00 Review Agenda and Acceptance/Amendments to Meeting Minutes
- 12:10 Advisory Panel Terms of Reference/Panel Name/Affiliations for Media
- 12:20 Hermosa Project Update: South 32
- 12:25 Panelist-Recommended Issues to Explore
- 12:35 Studies and Report Updates
- Clear Creek Third Party Water Flows Study – Key Findings
 - Patagonia Area Resource Alliance water study/comments on ADEQ permitting
 - Santa Cruz County Study With a Focus on the Nature Based Economy
- 1:00 Working Lunch
- South 32: Case Studies on Potential Mitigation/Alternative Water Uses
 - Data Party: Discuss Concerns, Questions, Priorities and Rank Issues By Timeline
- 1:45 Timeline Discussion - Feasibility and next steps
- 1:55 Next Steps/Looking Ahead - Agenda for June 16

Hermosa Advisory Panel Meeting #2
May 19, 2021
Patagonia Public Library, 46 Duquesne Ave

The meeting of the Hermosa Advisory Panel Meeting #2 was called to order at 12:05 pm on May 19, 2021 at Patagonia Public Library, 46 Duquesne Ave by Angie Donelson.

Attendance

- Meeting Facilitators: Angie Donelson, Robin Breault
- Hermosa Advisory Panel: Adelmo Sandoval, Carolyn Shafer, Damian Rawoot, Linda Shore, Liz Collier, Marcelino Varona, Maritza Cervantes, Mark Beres, Michael Young, Olivia Ainza-Kramer, Ron Robinson, Ruth Ann LeFebvre
- Hermosa Advisory Panel Members Absent: Jaime Chamberlain, Nils Urman
- South32: Melanie Lawson, Pat Risner
- Scribe: Lizbeth Perez

12:05 Review Agenda and Acceptance/Amendments to Meeting Minutes

- **Panel approves Meeting #1 Minutes**
- **Panel gives permission to publish their information online**

12:10 Advisory Panel Terms of Reference/Panel Name/Affiliations for Media

- **Voting took place on:**
 - Panel name - Results: **Santa Cruz County Advisory Panel on the South 32 Hermosa Project** (6 votes); South 32 Hermosa Advisory Panel (4 votes) ○ Number of meetings allowed to be missed - Results: **Three meetings** (8 votes);
Two meetings (2 votes) ○ Proportion of members present to constitute forum voting - Results: **Two thirds** (7 votes); More than half (2 votes); Three quarters – 1 vote ○ Proportion of members sufficient to pass an action item voting - **Results: Two thirds** (5 votes); More than half (2 votes); Three quarters (2 votes)
- Panelists also updated their affiliations (on list that was circulated) for release to the media

12:27 Hermosa Project Update: South 32

- Pat, South32
 - Prefeasibility study on track to finish at end of June ○ Outcomes of that study available in mid-July
 - New drilling program coming up, have begun geophysical surveys near Flux Canyon Rd, near old flux mine as seen in South32 newsletter ○ Surveys are non-ground disturbing exploration, minimizes amount of drilling ○ Proposing limited drilling exploration program (near old Flux Mine) ○ Separate potential resource, to Taylor and Clarke deposit, will submit plan midsummer to USFS

- Q, Carolyn Shafer: Is there a map available of new claim?
 - A, South32: Map available on South32 (corporate) website

- Q, Mark Beres: Roughly how far are the drilling sites from SR 82, and what is their footprint?
 - A: Pad size 4x4. Drill is transported by semis, and after it is installed, no other heavy machinery will be delivered. Footprint about the size of a water well. South32 will move from original site to prospective site (not on SR82)

- Q, Mark Beres: Winery business dependent on tourist traffic; how will traffic be impacted? Does it run at certain times?
 - A: Drills run 7 days a week, will divert traffic off SR 82 onto Flux Canyon/SR 82. Drill pad is run by 4 people, and equipment to travel from Hermosa site.

12:38 Panelist-Recommended Issues to Explore

- Angie Donelson: Referred panelists to discussion of slides, included as Attachment A to the minutes. This summarizes panelists' concerns and questions to date raised at the first meeting, a survey she sent to panelists after the first meeting (via survey monkey), and the initial zoom interviews she did with panelists to welcome them and discuss their concerns and questions.
 - Slide7: 3 main sets of issues were brought up by panelists (water, workforce and transportation). Water is the most frequently cited and recurring theme.
 - Slide 8: Took interview transcripts and ran them through Natural Language Processing algorithms to summarize them ○ Slides 9-10: Main themes of interviews: Water, the panel's role in workforce/community investment, the role of South 32 in the community, and the panel's work as a public process
 - Slide 11: Central sentences that came from the initial interviews reinforce these themes.

12:45 Studies and Report Updates

- Clear Creek Third Party Water Flows Study – Key Findings
 - Town of Patagonia meeting introduced concerns with flooding and discharge associated with the South 32 dewatering project
 - South32 and the Town of Patagonia identified neutral third party of hydrologists to do study on the impacts of the discharge on Patagonia. Clear Creek Associates began in January, met biweekly to gather data and information
 - Did surface water and ground water modeling. Report is out this week, was presented during town meeting, is online as 67 page report. Executive summary provided at meeting as 1-page handout.

- Carolyn Shafer for Patagonia Area Resource Alliance (PARA) on water study/comments on Arizona Department of Environmental Quality permitting
 - Noted importance of county as a unique biological area.
 - Sonoita Creek Watershed is major contributor to Santa Cruz Watershed, changes will impact entire county.
 - State of Arizona does not have laws that recognize the interconnectedness of surface water and ground water
 - Committed to provide additional resources on water issues every meeting. Provided one page handout about water and its importance to the area. Clear Creek Associates Presentation attached, valuable to watch in full
 - Will share PARA’s reaction to presentation at a future meeting

- Q, Mike: Does PARA consider impact on invasive species in their impact studies
 - A, Carolyn: PARA does not, Friends of Sonoita does

- Forthcoming Santa Cruz County Study with a focus on the Nature Based Economy
 - New economic study being launched, see recent article in Nogales International.
 - Result of group of 12 individuals who convened in November 2021 to understand nature-based impacts on in the economy of Santa Cruz County
 - Group seeking to identify parts of the economy that are not mining or agriculture, instead looking into ecological side, including tourism
 - Raised \$50,000 from individuals, Nature Conservancy, Tucson Audubon, Circle Z, South32, sponsors
 - Consultant to establish pre-COVID baseline, then the projections for the next 10,

- 30 years. Report will be available to any business in the county
- Board of Supervisors issued letter of support
- Issued a Request for Proposal to 16 consultants, 12 responded from all over the United States.
- Signed contract, 5/18/2021, with University of Arizona Department of Agriculture and Economic Resources, they have done work in Santa Cruz County. The Town of Patagonia will be the fiscal agent.
- Panelists may be contacted by consultants. Committed to finish study by Oct 1st, 2021

1:05 Working Lunch

- Angie Donelson – directed panelists to Slide 13.
- The first issue the panelists will address is: What can you as a panel do as it relates to 1) mitigation/alternative uses of water 2) community monitoring; 3) water quality or other?
- As the panel addresses these issues, and transportation and workforce issues in the future, consider the chart on slide 13 as to the level of public participation.
- For any given issue, you could conceivably influence a continuum: from receiving information to having full empowerment in decision making. We will continue to return to this continuum of public participation throughout our work as the panel makes recommendations, and South 32 considers them. This will clarify the level of panel influence on any given phase of decision making and panel voting.

Melanie Lawson - South 32: Case Studies on Potential Mitigation/Alternative Water Uses

- The panel can consider case studies as to how other communities have addressed water uses:
- In northern Nevada, Barrick's Cortez mine included a dewatering project. Groundwater was directed to a rapid infiltration basin, which is a mile long trench 29 feet deep, 100 feet wide, with easy to infiltrate soil such as sand and silt. Water pumped into this basin soaks back into ground water. Ground water can also be pumped and sent to nearby ranches for irrigation in alfalfa and corn

- Resolution Copper in Superior, Arizona has treated water and used it for irrigation as well, as stated on their website. They continuously monitor the water to make sure it meets water quality standards.
- Freeport McMoran copper mine in Safford identified potential impacts on Gila River. Freeport developed a model, monitor, and mitigation program in partnership with the US Geological Society. Rotational Fallowing Program – adjusting the amount of mitigation benefit to the Gila River, rotation where used for irrigation part of the time and part of the time discharged to the river.
- Considerations for any use of water include:
 - Private vs public land, which affects timing. Piping water over public land requires going through USFS approval process
 - Decisions would include who would benefit from water discharge, private land owners or other entities
- One message we have heard so far: water for this project is better used to recharge aquifer and not go somewhere else
- Timeline, in current AZPDES permit, proposes discharge to Harshaw Creek. Can work through other plans, working with consultant (NewFields) to propose new plan if wanted. In fall, NewFields can talk through options with panel and incorporate feedback.
- Industry standard now is to have closed circuit water use, will be a possibility (discussion of process water)

1:25 Data Party: Discuss Concerns, Questions, Priorities and Rank Issues By Timeline

- Panelists broke into three groups and reviewed issues, ideas and concerns the panelists have expressed to date about water (see Attachment B, “data party”)
- Panelists in groups then discussed and responded to the questions as follows:

Issue:	Flooding	Water related to mine: groundwater/surface/recharge/quality	Water related to mine
1. What do you know about the issue?	<ul style="list-style-type: none"> - Flood and Flow and Santa Cruz County presentations - History of flooding/personal experience 	<ul style="list-style-type: none"> - Still governed in the US by 1872 mining laws – and only applies to US citizens – extractive - Carolyn Shafer will share comments as they come in from companies across the state 	<ul style="list-style-type: none"> - Experience drilling wells and irrigation - Basics on hydrology and Arizona water law
2. What are your concerns?	<ul style="list-style-type: none"> - Flooding - how far will it reach? - Amount of flood water 	<ul style="list-style-type: none"> - Future of water and lives of the region - Ground water and Surface water: where does it go? How do we find out more about quality? 	<ul style="list-style-type: none"> - Water quality/potential contamination risk related to recharge - Subsidence - Water supply impacts long term and who is responsible
Issue:	Flooding	Water related to mine: groundwater/surface/recharge/quality	Water related to mine
		<ul style="list-style-type: none"> - Recharge!! How does it get paid for? How does it happen? 	<ul style="list-style-type: none"> - Gases and other sources of contamination resulting from mining operations - Availability of water (quantity per unit time)
3. Are there opportunities?	Recharge	<ul style="list-style-type: none"> - Require investment in watershed preservation and protection - Request long-term engagement of the community longer > 4 yrs: Youth participation, engagement in environmental issues 	<ul style="list-style-type: none"> - Yes – using this recharge water for agriculture or ecological restoration - Hydroelectric potential
4. What are your top ranked unknowns?	Possible flooding	<ul style="list-style-type: none"> - How land will respond to water “plans” of the mine - Recharge issues - Longer term impact of mine 	<ul style="list-style-type: none"> - The mechanics of dewatering: S 32 needs to define the “flavors” of water: De-watering to mine and water used ore processing? - Flooding impacts of town/infrastructure - Chemistry of water coming out of the mine - What is the impact zone or footprint of hydrologic impacts? - Changes in water supply (rainfall, etc)? - What is the definition of “contaminated” water? (chemistry of water coming out of the mine)

5. What are the unknown unknowns? (what we do not even yet know what to ask?)	Climate change – drought	<ul style="list-style-type: none"> - What is actually happening at the mine – this is a highly fractured area and how will that impact outcomes for the community? - 50 years of mining opportunity? Our plan is only 4 yrs? - How to engage community? 	<ul style="list-style-type: none"> - Hydrology of mountains/aquifer where water is being pulled from - Future climate
6. Who else needs to be engaged?	Anyone possibly impacted - region	<ul style="list-style-type: none"> - More public engagement and education 	<ul style="list-style-type: none"> - At some point, lawmakers - Harshaw Creek stakeholders (with subject matter experts that can inform us) - Everyone who might be impacted

2:05 Next Steps/Looking Ahead - Agenda for June 16

- Wrap up and Survey
- How are you feeling about this process? What could improve?
 - Good – maybe include pre-meeting info so we are all informed
 - People are being asked to make recommendations with limited knowledge
 - Decisions cannot be made on my prior knowledge, but I find this process very interesting and look forward to continuing to serve
 - Educational; great.
 - It is a learning experience.
 - Spend more time on discussion
 - We are here not to stop South 32, but to advise them.
- How well have you felt heard so far? (0-5, with 0 not at all and 5 very well)
 - 3 (2)
 - 4 (5)
 - 5 (4)
- Next meeting June 16th, within Cady Hall

Agenda for Next Meeting

- Continue to learn more about water issues (data party); establish timeline of priorities

Meeting was adjourned at 2:05 by Angie Donelson. The next general meeting will be on Wednesday, June 16, 12-2p, in Patagonia.

Attachment A

Hermosa Advisory Panel Meeting #2

May 19, 2021

Terms of Reference: Guidance for the Panel's Work

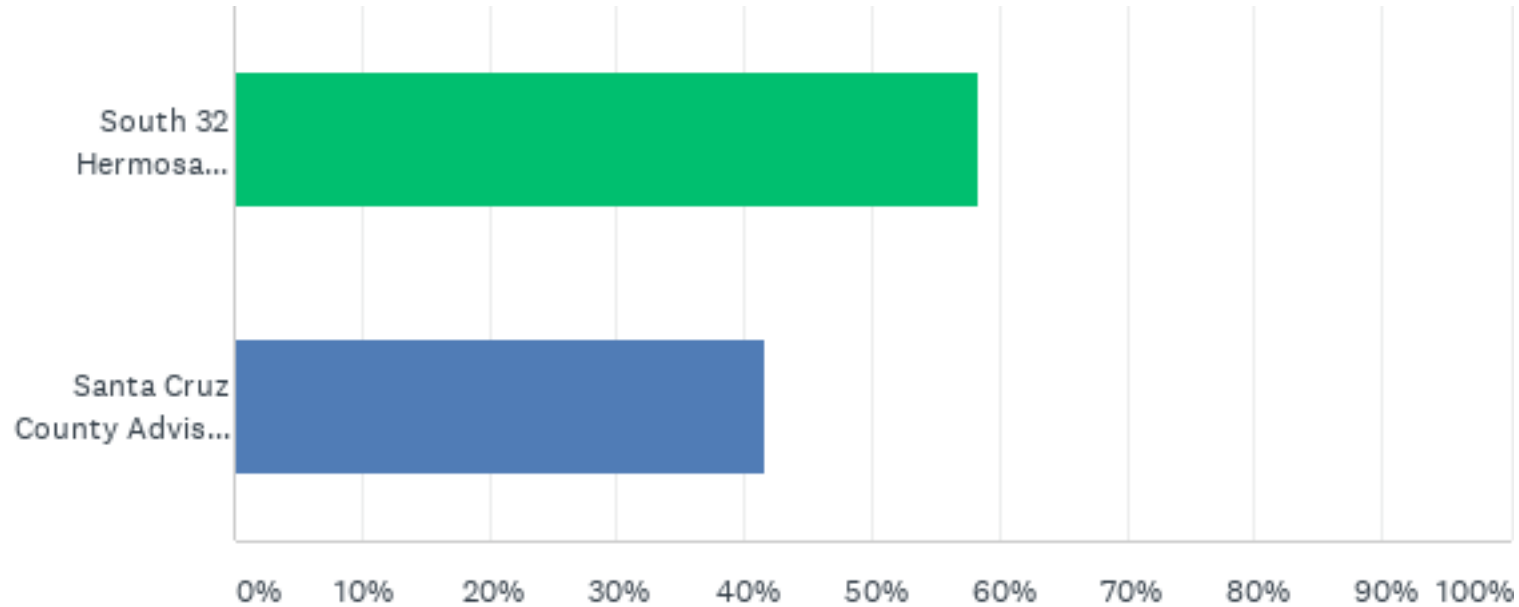
Need to Decide on the Following:

voting with stickers before you leave

- **Name of Panel**
- **How Many Meetings Can You Miss?**
- **What is a Quorum?**
- **What proportion of votes of the panel is sufficient to pass an action item?**
- **Also check with sign in table: are your affiliations correct for media release?**

Terms of Reference: Name of Panel

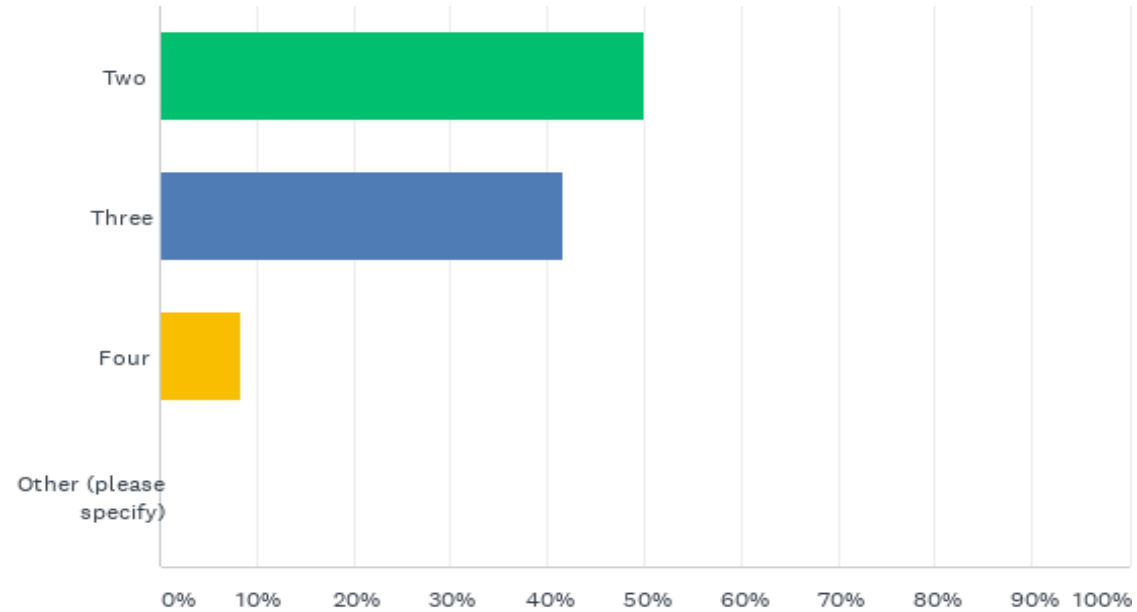
The panel voted on naming the group, but there was no clear consensus among the four choices. Which of the following two names would you prefer?



ANSWER CHOICES	RESPONSES	
South 32 Hermosa Advisory Panel	58.33%	7
Santa Cruz County Advisory Panel on the South32 Hermosa Project	41.67%	5
Total Respondents: 12		

Terms of Reference

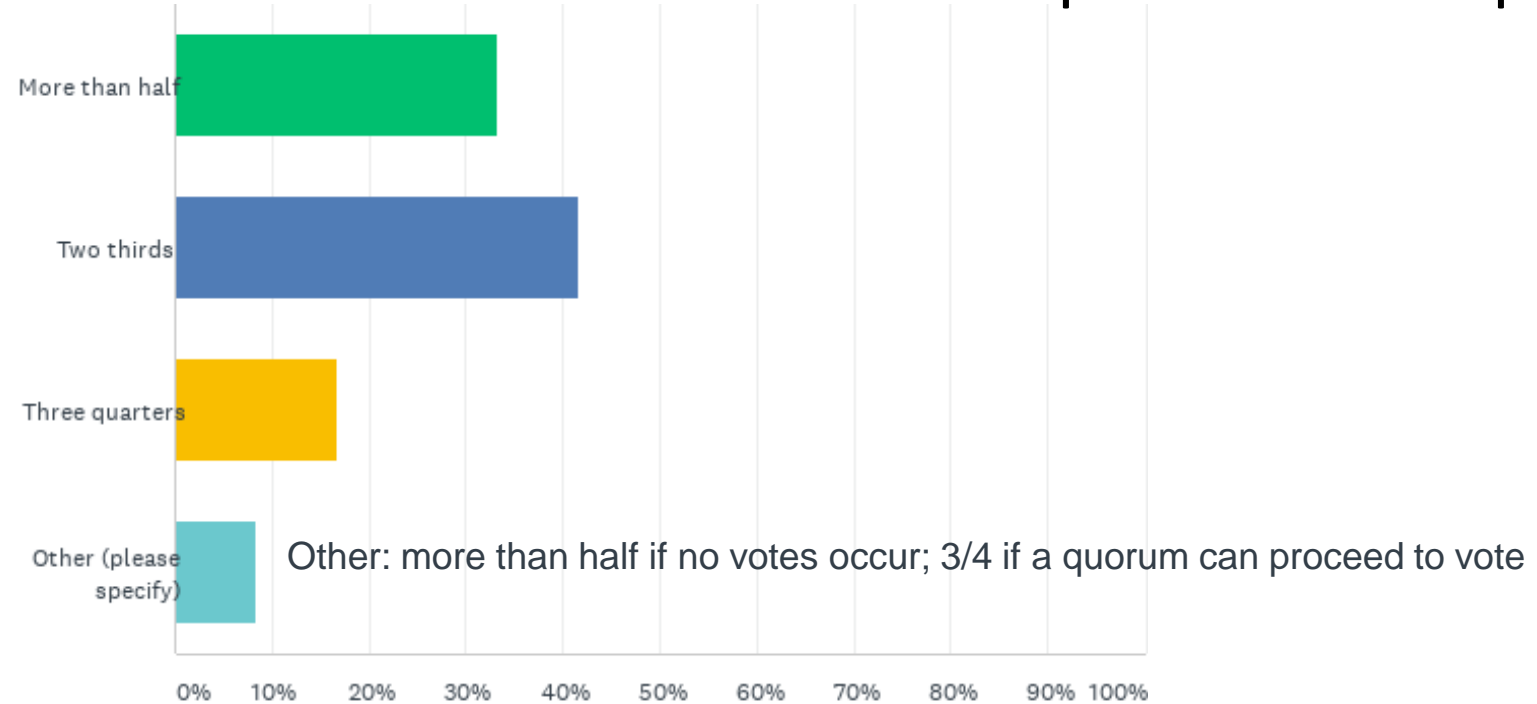
How many meetings should panelists be able to miss per year? (assuming we will meet 10-11 times the first year)



ANSWER CHOICES	RESPONSES	
Two	50.00%	6
Three	41.67%	5
Four	8.33%	1
Other (please specify)	0.00%	0
Total Respondents: 12		

Terms of Reference

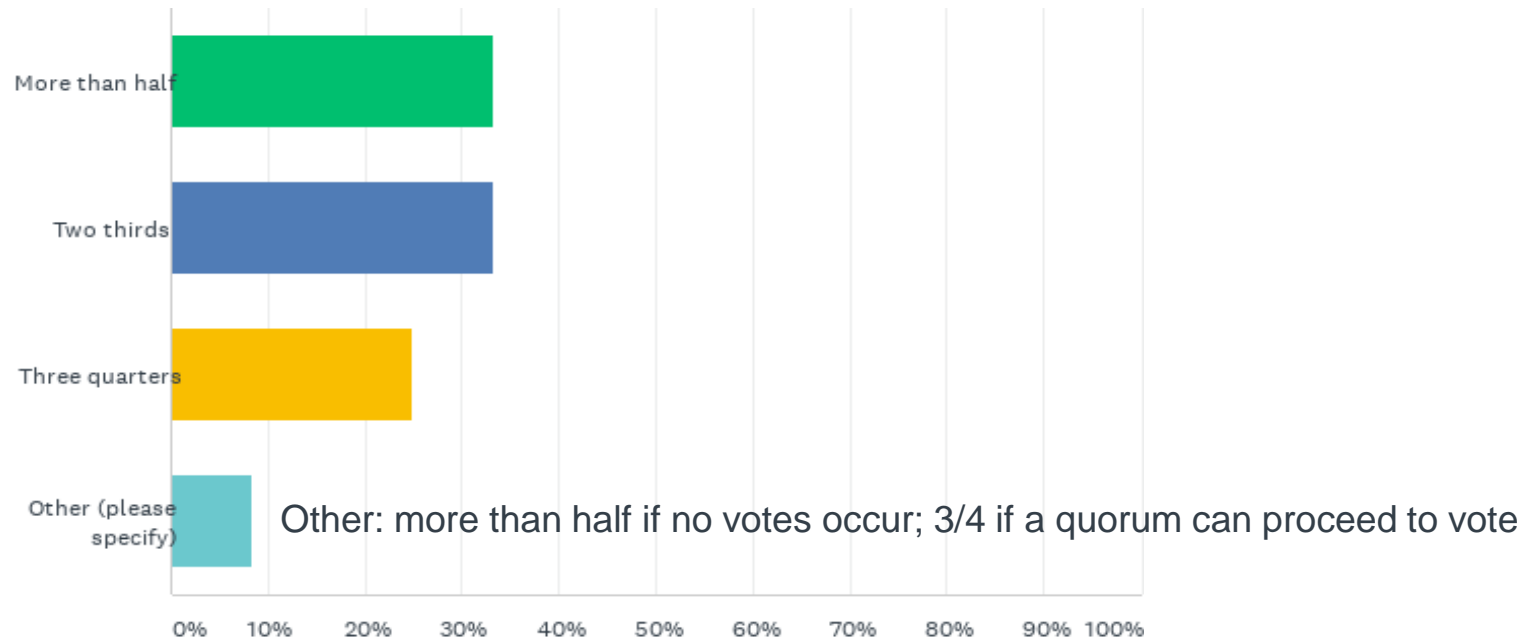
What proportion of members should constitute a quorum of the panel?



ANSWER CHOICES	RESPONSES	
More than half	33.33%	4
Two thirds	41.67%	5
Three quarters	16.67%	2
Other (please specify)	8.33%	1
Total Respondents: 12		

Terms of Reference:

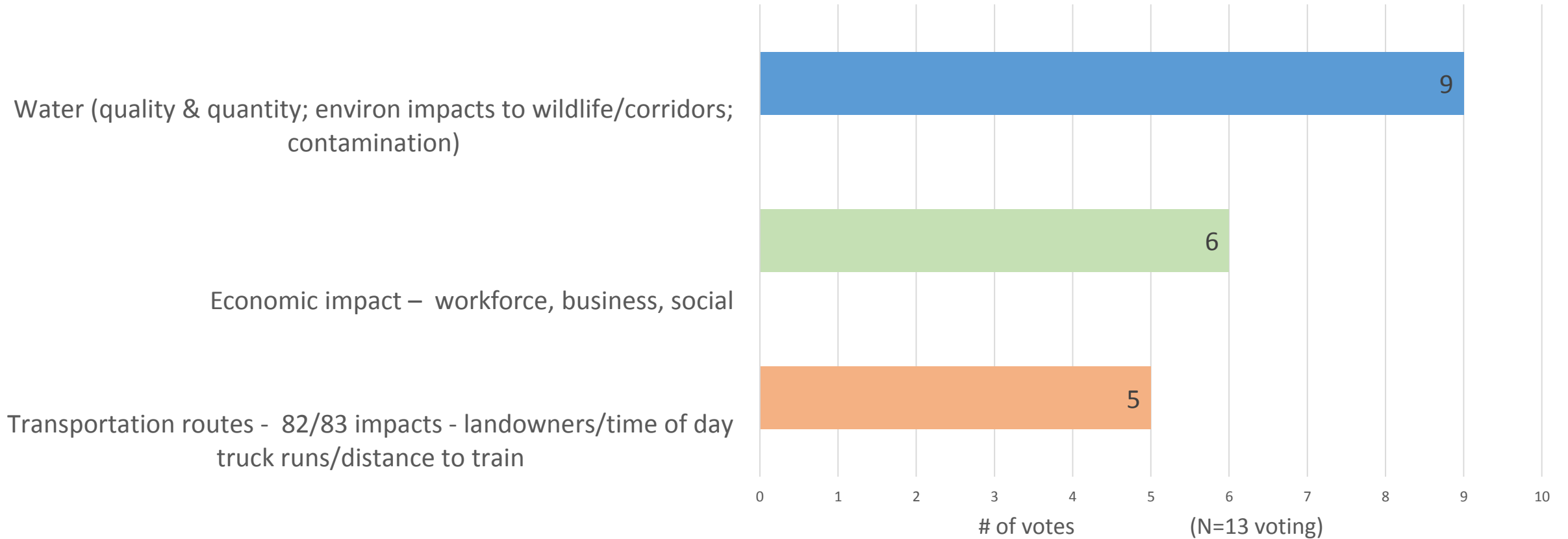
What proportion of votes of the panel is sufficient to pass an action item?



ANSWER CHOICES	RESPONSES	
More than half	33.33%	4
Two thirds	33.33%	4
Three quarters	25.00%	3
Other (please specify)	8.33%	1
Total Respondents: 12		

Hermosa Advisory Panelists: Priorities for Meeting #2

End of Meeting #1: What top concerns or priorities do you have for the panel to address/ explore at the next meeting?



Hermosa Advisory Panelists: Themes/Concerns Raised in Interviews

Most “central” sentences, by themes*

1) Public process

2) Panel represents community: networks, asking and allowing for questions

3) Panelist commitment

4) S32 interests

5) Issue: Workforce/ promises about workforce commitments

6) Issues: Water; Transportation

7) Social impact

Relevant words encompass 4 themes**

1. Water issues and mining – recharge, quality, treatment
2. Panel – investment in work, school people
3. S32 role in community – long term, important questions, economic feasibility/impacts
4. Public process for understanding

Interviews with the 14 panelists were conducted on Zoom and transcribed with Audix, an electronic transcription service. Interview text was run through two Natural Language Processing algorithms:

*GloVE (Global Vectors) text summarization algorithm developed at Stanford University converts sentences into network graphs to display those most central in a network

**Topic modeling algorithm developed at Columbia University produces visual networks of words (themes)

“Central” Sentences Organized By Themes

Most “central” sentence in the network of interviews with panelists.
Key Themes are Boxed.

1) Public process

Like any time you can bring light to something as much as possible and make it as public as possible, I think that if you have a better if you have a better process.

Open and I really hate the word transparent, but the political environment has ruined the word transparent for me forever, but share as much as they can about what the future is going to bring because things like that, OK.

2) Panel represents community: networks, asking questions, allowing for community questions

I have found I had to find that just by having like right now that we are doing special projects for some of the businesses are asking in individual meetings, and that is when we start talking because we know that that person is going to go to another one and another one and another one.

I will take that data, just a regular citizen, I don't think that they're going to come and say, hey, you know, I have this question with the business community.

I mean, everything put into my statement as to the different interest overall, making sure that we're there representing everybody and everybody's interest, everybody's concerns, listen to all their interests and concerns

It would be healthy and good for the group to talk about in future meetings, to have a space for the community to come and speak if they want to, if the community can come listen and they can observe, but then they can also have an opportunity to speak if that's going to be needed to be the case so that people can feel free to come in and speak in a reasoned kind of way, in a structured kind of way and take over the whole meeting either so that that people have an opportunity to share concerns.

make sure we get as many voices here as possible and make sure we get people who are supposed to have the opportunity to participate.

So what kind of things are you working on that you see might be parallel, right, that you have knowledge of this year?

3) Panelist commitment

And if you have to go talk to somebody in your community or your way, that counts as part of your time that you feel you have to do that right or you have to get any information like that.

We asked for a year commitment, but I this panel's going to work well beyond a year.

We may want to do a field trip and we're going to find out together as a panel how much flexibility we have

4) S32 interests

One of the things we are asking is to define in our first meeting is what do you want?

There's an opportunity for South 32 to see that this this is a unique situation that they're in to really develop a mine that is a twenty first century mine.

5) Issue: Workforce/ promises about workforce commitments

Where they're going to get their employees from and if their requirements for employment are too high, then we need to say that and say stop all PR.

If the panel decides to work on workforce issues they really try to address Nogales needs and really work on some of those relationships with families.

6) Issues: Water; Transportation

This (water) is the number one issue right now and possibly transportation. I think transportation has a lot of people.

7) Social impact

Some of the other places they've worked and other types of impact statements - we could do what we want with this one.

Hermosa Advisory Panelists

What Can You Influence?

Hermosa Advisory Panel - Issues To Consider In Your Level of Empowerment as a Panel

How Much Influence You Have At Different Points in Negotiating with S32

developed by the international association for public participation



Road design and mitigation strategies

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives and/or solutions.	To obtain public feedback on analysis, alternatives and/or decision.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

Route selection



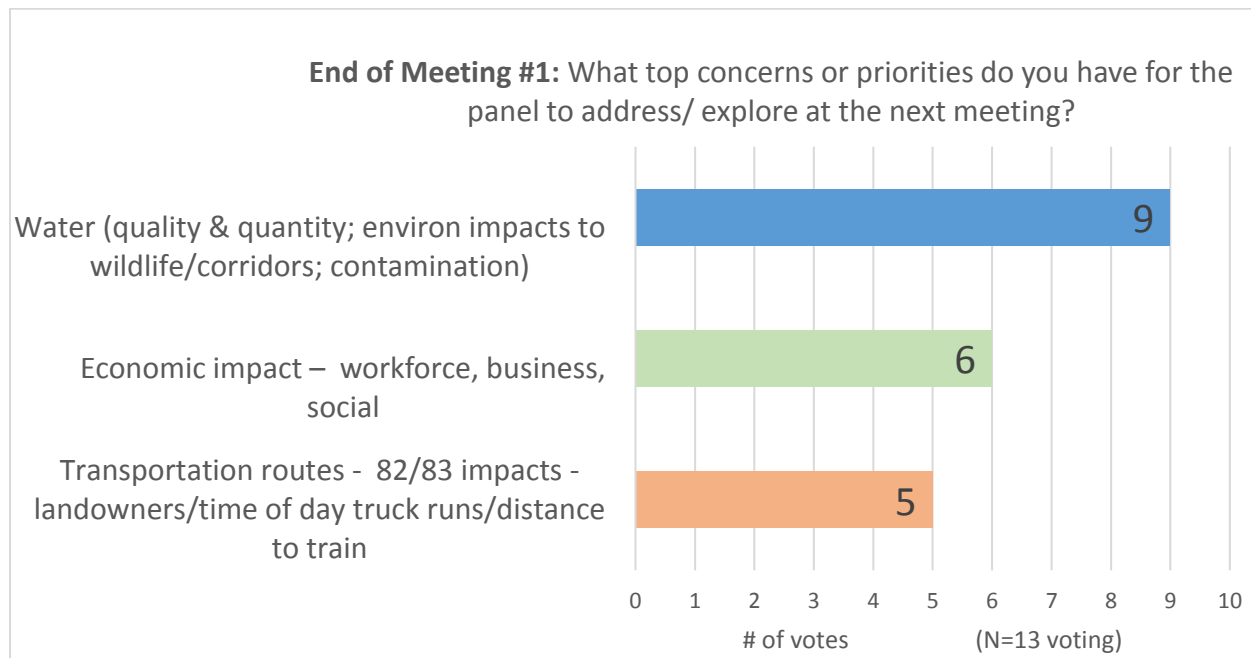
Attachment B

Data Party – Perceptions, Reports, Studies Relating to South 32 Use of Water

Water/Environment Issues Raised By Panelists to Date

End of meeting #1 (purple reflection sheet):

Now that you have heard more today about the planned work of this panel...



Specific water related issues named:

- Protecting natural resources
- Watershed impacts on the community of Patagonia
- Explore the broad scale environmental impacts of the Hermosa project development and explore ways to offset, mitigate these impacts
- Environmental impacts of water/wildlife
- Possible potential issues for contamination
- Contamination/water issues
- Top priority – water and groundwater
- Water mitigation issues – quantity and quality

Water/Environment Issues Raised By Panelists to Date

Survey question post meeting #1 (on survey monkey via email) - The panel's current priorities are reflected in the draft meeting minutes. Which of these issues do you hope to address first?

- WATER because Water is LIFE. Proposed use of water, impacts on the aquifer, protection and improvement of quality, and long term repercussions. NOW.
- Environmental impacts to water/wildlife/ways to offset them - I think these issues relate to many of the other key issues identified at the end of the first meeting. Issues related to water, transportation routes, and even the local economy all connect to this realm. We need to think holistically at all the ways the mine and its development may impact the environment, as there will be trickle down impacts across multiple sectors. Let's start thinking now!
- Water and how South 32 will work with water to prevent ecological damage. Water is life, of course. How will South 32 use of water affect ground water?
- Answers to the main issues related to water. The quantity that will be diverted for use by the mine. The quality of the water will be released by the mine after the process ends.
- Water quality and quantity; contamination
- Water impact is most important - how will the mine impact the water table(s), water quality and water security of the region?
- Contamination impact in our county
- I would like to gain knowledge based on facts derived from the studies, on potential water issues, opposed to assumptions. This issue seems to fall right into place considering the phases explained at the meeting.
- What are the environmental impacts of cutting more forest land?

Water/Environment Issues Raised By Panelists to Date

Initial Panelist Interviews – Statements and Questions

- This is an ecoregion that is a bridge between Sierra Madre and Rocky Mountains. It is a biodiverse area on a continental scale. The mine is located within a central point. Species need to move north as climate change happens.
- It would be interesting to have a dialogue on joint water modeling – this is a lesson that came out of work in the San Pedro Riparian area
- In the Northwest, there are some mines that develop “good neighbor” agreements (legally binding contracts that are generally effective at holding corporations accountable for their environmental conduct) with their respective communities
- Scientists have identified this region as one of top 5 in the world for species survival. Water supports wildlife and people. We need a larger conversation about the ecosystem – how we can create an economic system that supports this outcome?
- What are the impacts of underground mining? What are the impacts of tailings?
- I am concerned about acidity of the water. Will they use large quantities of industrial acid? If so, how is South 32 going to manage the acid? What is their plan? How will acid runoff impact groundwater?
- Water issues are the most contentious. How will dewatering impact residents? How will it impact ground water and surface water?
- We have heard different numbers about the release of gallons per minute of water and the impacts on Patagonia. Why and how have the numbers changed?
- The quality of water will be impacted by the quantity of water discharge. How will dewatering impact the quality of water for residents of Patagonia?
- We lack quantifiable data on the value of our nature based restorative economy. This is one of the top 10 birding destinations. We are commissioning a study to learn about the sector’s economic role in the community.
- We have two wells and have monitoring the wells for two years at least. We have already been doing water quality testing (in our HOA as well) with a certified tester.
- Some of our smaller wells are starting to dry up. What pockets of aquifers could be affected by mining?
- I want to provide accurate information. There are people wondering if it is open pit mining.
- We need to leave what we found better for our grandkids. I saw (the mining operations) when they was just starting. The two companies (AMI and South 32) take great pride in how they take care of the environment.

EXECUTIVE SUMMARY

The Town of Patagonia (Town) and Arizona Minerals Inc. (AMI) retained Clear Creek Associates as a third-party consultant to conduct an evaluation of the potential discharge of 10 cubic feet per second or cfs (4,500 gallons per minute or gpm) of treated water from the AMI Hermosa Project into Harshaw Creek. The Town of Patagonia was concerned that the additional flow to Harshaw Creek would negatively increase groundwater levels through recharge along Harshaw and Sonoita Creeks as well as exacerbate flood flows in the Town. Clear Creek Associates met six (6) times with the Town and AMI personnel to confirm the scope of work, review the progress of the work, exchange information pertinent to the modeling, and discuss the model results at various stages of development. The modeling performed as part of the project was designed to quantify impacts using industry-accepted techniques, assumptions, and software.

The result of the modeling indicates that a constant inflow of 10 cfs to Harshaw Creek from WTP2 would have minimal impacts to flood flows in the Town during the simulated 2-year, 10-year, and 50-year, 24-hour storm events. Projected surface water level (stream stage) rises attributable to the 10 cfs are less than one inch for all storm events. As indicated in **Table 4**, 10 cfs is a very small percentage of even the 2-year storm event, therefore, the impact to stormwater stage height is small.

The groundwater modeling shows that the addition of 10 cfs to Harshaw Creek would cause groundwater mounding along both Harshaw and Sonoita Creeks, with the maximum predicted groundwater mounding to be about 4.5 feet after 5 years of flow. The area of projected maximum water level rise is where Harshaw Creek enters the basin. Within the Town, projected water level rises are mostly in the range of 2 to 3 feet. After five years of recovery, groundwater levels were predicted to return to pre-discharge levels. Additional groundwater mounding from flood events on top of the long-term discharge impacts was also evaluated. For the largest flood event, the 50-year, 24-hour event, additional mounding of up to two feet may occur. No simulations indicated groundwater rising to ground surface except in the areas of predicted perennial flow along Sonoita Creek where groundwater levels are already at the ground surface.

Social Baseline Study – ERM

3. SOCIAL RISK AND OPPORTUNITIES

The topics that were most important to Project stakeholders as indicated by the April and October 2019 key in-person interview and Community Perception Survey have been included in this report. The following social risks and opportunities were identified in relation to the development of the Hermosa Project:

- Traffic and Transport Routes
- **Water**
- Employment, Business Opportunities, and Training
- Sense of Place and Community Cohesion
- Environmental Quality and Wildlife
- Recreation and Eco-tourism
- Approach to Tribal Engagement and Cultural Resources

3.2 Water

3.2.1 Stakeholder Feedback

Water is always a concern of residents in water-scarce Arizona. A majority of respondents to the Community Perception Survey (20 respondents or 67%) were concerned about potential impacts on water. Many survey and interview respondents noted concerns about water, and water was a top concern for some respondents. Local concerns about water range from the amount the Project might use to quality, access, and other concerns. Topics of discussion included the Asarco legacy and water issues, that water impacts are commonly linked to mining, impacts on water quality and quantity and concern that this information be provided to the community, water management, and impacts to the water supply surrounding the Project.

Additionally, many respondents indicated that Patagonia is known for the high quality of air and water and that these are a major draw to the area. Some respondents noted interest in Project water studies and how the Project might recycle water. Other respondents stated concern about the invasive use of water by the Project and felt that the Project should have a plan to recharge aquifers based on the age of water in local aquifers. Finally, there is concern that certain aspects of the Project may result in impacts to water lines in the area. While water is likely important to most, environmental advocates and ranchers commented more extensively than others.

Table A1: Community Perception Survey October 2019

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	N/A
1.	<i>South32 is working to establish a positive relationship with communities near to the Hermosa Project</i>	8 (27%)	13 (43%)	6 (20%)	3 (10%)	0	0
2.	<i>I am concerned about South32's proposed Hermosa project</i>	21 (70%)	5 (17%)	3 (10%)	1 (3%)	0	0
3.	<i>I am concerned about the amount of water the proposed project may use</i>	20 (67%)	7 (23%)	3 (10%)	0	0	0
4.	<i>I am concerned about the amount of traffic the proposed project may generate</i>	22 (73%)	6 (20%)	1 (3%)	1 (3%)	0	0
5.	<i>The Hermosa Project workforce and contractors have shown good conduct in our communities</i>	7 (23%)	10 (33%)	6 (20%)	4 (13%)	0	1 (3%)

INFORMATION for the Santa Cruz County Advisory Committee on Hermosa Project
Presented by Panelist Carolyn Shafer: May 19, 2021

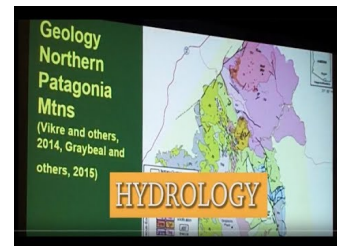
These are three sources for information relative to water issues in the Sonoita Creek Watershed that I recommend:

- The [Town of Patagonia “Sonoita Creek Flood & Flow Committee”](#) (“F&F”) which conducts (currently via Zoom) monthly public meetings the second Thursday of each month at 10 a.m.
- [Friends of Sonoita Creek](#) (“FOSC”)
- [Patagonia Area Resource Alliance](#) (“PARA”)

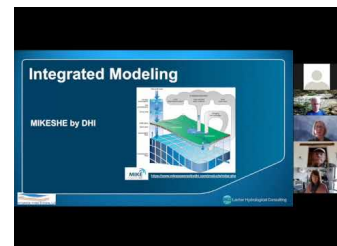
As this Advisory Committee meets over the coming year, I will share relevant articles and videos with all panelists. Here are this month’s offerings:

- ASU Kyl Center for Water Policy report: [“The Myth of Safe-Yield: Pursuing the Goal of Safe-Yield Isn’t Saving Our Groundwater”](#)
- Audubon’s presentation [“Understanding Arizona’s Groundwater: Why Sustaining Healthy Groundwater is Critical to Birds, Habitat, and People”](#)
- On May 5, Governor Ducey signed the legislation for the state’s assumption of clean water rules. [Here is link for ADEQ’s Press Release](#). Because of PARA’s advocacy work, the bill was amended to include the Harshaw Creek. There are many concerns about this legislation as stated by the [Sierra Club Grand Canyon Chapter in its letter to the Senate](#) when HB2691 was moving through the legislature.

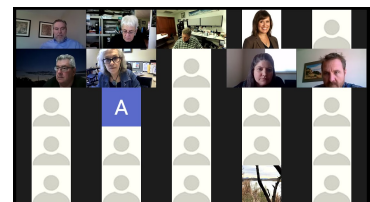
- A three minute “Hydrology in the Patagonia Mountains” video presentation by USGS Hydrologist James Callegary



- “Hydrologic Evaluation of Proposed Hermosa Mine Water Discharge” (1:17:53) by Hydrologists Laurel Lacher and Bob Prucha (PARA’s experts) presented to F&F Committee in January 2021



- Clear Creek & Associates Presentation (third-party experts retained by South32 and Town of Patagonia to address the Town’s concerns about the proposed discharge from a four year dewatering program) presented to F&F Committee in May 2021



Mining cases - how water has been utilized for beneficial use
source: Melanie Lawson, South 32

1. Barrick Cortez - dewatering water is recharged and can be used for irrigation

In northern Nevada, Barrick's Cortez mine included a dewatering project. Groundwater was directed to a rapid infiltration basin, which is a mile long trench 29 feet deep, 100 feet wide, with easy to infiltrate soil such as sand and silt. Water pumped into this basin soaks back into ground water. Ground water can also be pumped and sent to nearby ranches for irrigation in alfalfa and corn <https://www.barrick.com/English/news/news-details/2016/using-only-what-we-need/default.aspx>

2. Resolution Copper – dewatering water is treated and used for irrigation

Resolution Copper in Superior, Arizona has treated water and used it for irrigation as well, as stated on their website. They continuously monitor the water to make sure it meets water quality standards. Freeport McMoran site in Safford <https://www.resolutioncopper.com/water.html>

3. Freeport McMoran Copper

Freeport McMoran copper mine in Safford identified potential impacts on Gila River. Freeport developed a model, monitor, and mitigation program in partnership with the US Geological Society. Rotational Fallowing Program – adjusting the amount of mitigation benefit to the Gila River, rotation where used for irrigation part of the time and part of the time discharged to the river. <https://www.arcgis.com/apps/MapSeries/index.html?appid=2bd59791b5ea4ee58f47b211883a6aba>