

## Agenda

### **Hermosa Advisory Panel Meeting #4 Wednesday, July 21, 12p-2p**

**Patagonia Public Library, 46 Duquesne Ave (inside Cady Hall)**

- 12:00 Working Lunch  
Review Agenda and Acceptance/Amendments to Meeting Minutes
- 12:10 Call to the Public  
USDA's Rural Placemaking Grant - Bob Jacobson and Pepe Ariaza
- 12:15 Panelists: Report Updates
- Patagonia Area Resource Alliance
  - Patagonia Flood and Flow Committee
- 12:25 Discussion: Retain University Distinguished Professor Ty Ferre,  
Hydrology and Atmospheric Sciences as a neutral, third-party hydrologic  
expert
- 12:30 "Groundwater 101" with South 32 - Tomas Goode
- 1:55 Looking Ahead: August 18 meeting

**Hermosa Advisory Panel Meeting #4**  
**Wednesday, July 21, 12p-2p**

**Patagonia Public Library, 46 Duquesne Ave (inside Cady Hall)**

The meeting of the Hermosa Advisory Panel Meeting #4 was called to order at 12:12 pm on July 21, 2021 Cady hall, 46 Duquesne Ave by Angie Donelson.

Attendance

- Meeting Facilitators: Angie Donelson, Robin Breault
- South 32 Hermosa Advisory Panel Members: Adelmo Sandoval, Carolyn Shafer, Damian Rawoot, Gerry Isaac, Linda Shore, Liz Collier, Marcelino Varona, Maritza Cervantes, Michael Young, Olivia Ainza-Kramer, Ruth Ann LeFebvre
- South 32 Hermosa Advisory Panel Members Absent: Mark Beres, Jaime Chamberlain, Nils Urman
- South32: Melanie Lawson, Tomas Goode
- Scribe: Lizbeth Perez

12:03 Working Lunch

Call to the Public: USDA Rural Placemaking Grant - Bob Jacobson

Bob spoke and shared an information sheet about his Patagonia-based nonprofit, tax-exempt technology-policy consultancy, Atelier Tomorrow Inc (see Attachment A). He discussed how their organization is looking to collaborate and connect with community partnerships for broadband service systems/infrastructure in Patagonia.

They will be applying for federal resources; however, they did not apply for the USDA grant noted on the agenda because of the tight timeline getting it in.

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

First agenda item, accept minutes and updated terms of reference.

- ***Terms of reference amended – 2/3 vote of entire panel membership is required to carry a vote***
- ***Previous meeting minutes to be distributed at same time as next meeting agenda***
- ***Motion to approve minutes passed***

Angie Donelson

- Feedback from June meeting: some felt the group was a bit overwhelmed and wanted more time for discussion. We will have time for more discussion on water issues (September); and for workforce issue in August.

- Panel has done an amazing amount of work in just three meetings, raising excellent and thoughtful questions about water issues – these are relevant and important to even broader issues in the county/community.

Melanie Lawson, Prefeasibility Study (PFS) Update

- The PFS was slated to be released this month, but is still in independent peer review. South32 has delivered their part. Delays have been challenged by COVID.
- Will keep panel informed once PFS is released. We can still proceed with robust discussions on workforce issues even before the release of that report.

12:20 Discussion: Retain University Distinguished Professor Ty Ferre, Hydrology and Atmospheric Sciences as a neutral, third-party hydrologic expert

Angie Donelson

- The questions you raised in June raise the need for an independent hydrogeology professional. Through conversations at the University of Arizona and colleagues, contacted Dr. Ty Ferre, distinguished professor in hydrology and atmospheric sciences. He has 136 refereed publications, was a dissertation advisor to 18 Ph.D. candidates (including South 32's Tomas Goode) and 13 post-Docs. He could serve as a “hydrologic intermediary” to community questions and concerns on issues such as yours.
- Recommendation: approve \$5,000 of the panel’s budget now out of the \$150,000 allocation South 32 has provided to retain him. Will come back to you with a scope of work in August for your approval.
- **Panel votes to use Technical Assistance Budget to hire Ty Ferre**

12:30 Panelists: Report Updates

Carolyn Shafer for Patagonia Area Resource Alliance and Patagonia Flood and Flow Committee - Refer to attachment B

12:35 “Groundwater 101” with South 32 - Tomas Goode, Principal Hydrogeologist for South 32

- Background: degree in history and environmental geology. PhD in hydrogeology with emphasis in geophysical engineering. 20 years consulting experience in Phoenix.
- Has been with South32 for past year. Today: presenting a basic understanding of groundwater issues.
- Hydrological cycle consists of 3 main groups: atmospheric water, surface water, groundwater
- Oceans contain most water, next largest is groundwater, then ice, then atmosphere.

Marcelino Varona

- What can you explain today that has local impacts?

Tomas Goode

- Goal: familiarize panel with hydrology terminology.
- Some specific concepts will be discussed that are unique to AZ

Gerry Isaac

- Is domestic supply a subset of public supply?

Tomas Goode

- Small scale water supplies (like wells) are outside of public supply.
- Refer to 3D figure of groundwater from slide deck. Blue line represents water table. Water table is where everything below is saturated. Shallow water table here in Patagonia, but in other parts of Arizona (even near Flagstaff), it's 1,000 ft down.

Maritza Cervantes

- Explain the layers in the graphic? How is water lost/gained in a system?

Tomas

- Groundwater environment. Each photo represents types of ground substrate. Groundwater can reside in porous spaces.
- Storage within rocks depends on the type and can also be impacted by fractures
- Disconnected streams don't connect with water table if it is too low. During flooding, banks can store water that can then feeds streams.

Marcelino Varona

- Trying to connect lecture to concerns with mine. Concerned about that mine won't drain water of Patagonia community.

Tomas Goode

- Trying to focus today on groundwater fundamentals so panel can be informed in later Hermosa discussions/concerns.
- Important to note Arizona has much volcanic rock that can cause water contamination with arsenic and fluoride. Poor water quality can be from reactions with natural formations as well as previous mining activity.

Carolyn Shafer

- Has heard water, when reacting with air, can impair water quality

Tomas Goode

- Oxidation (exposure to air) of certain rocks and minerals can break down into harmful chemicals. For example, iron sulfide will oxidize and leave sulfide in water creating sulfuric acid
- Explained concepts behind Darcy's law, important to hydrogeologists in calculating water flow and impacts. The law describes the flow of a water through different porous rock – taking into account area, gravity/speed, and hydraulic conductivity of soil. Allows hydrogeologists to do modeling and estimate water flows.

Ruth Ann Le Febvre

- When you measure conductivity of an area, how long is that model good for?

Tomas Goode

- Once measured, parameter is set as geologic features; these do not change quickly. However, other parameters like temperature can change conductivity.

Gerry Isaac

- Time wasn't involved in your explanation; usually water flow is measured in volume unit per time

Tomas Goode

- It was simplified, it assumes equilibrium.

Tomas Goode

- Santa Cruz County has a range of types and combination of aquifers
- Fractured aquifers are common in mountainous, hard rock areas like Patagonia mountains. Water volumes are highly variable within fractured rocks.

Carolyn Shafer

- USGS classifies Patagonia mountains as highly fractured which complicates groundwater systems

Marcelino Varona

- Explain why mountains are fractured and how it complicates systems?

Tomas Goode

- Patagonia mountains have various rock types, including large volcanic rock layers. The different rock layers have been fractured and broken to different degrees based on age and location. Some of the youngest volcanic rocks are less broken are not very permeable; it is difficult for water to go through. Many mountainous regions have these conditions

Melanie Lawson

Can you explain the cone of depression created through dewatering?

Tomas Goode

- In a stable groundwater environment, recharge equals discharge.
- Dewatering will remove water from storage near mine
- Pumping water will induce a cone of depression in the water table. Cone would be created by Hermosa purposefully to make a safe environment for mining.
- Need to increase recharge to balance increased discharge (possibly in other areas).

Marcelino Varona

- Is Tomas going to come back?

Melanie Lawson

- Tomas or Ty will be available for more questions in the future.

Michael Young

- What local studies have been done on how water has been flowing and the state of our watershed?

Tomas Goode

- USGS has done studies, don't know if it relates to exactly what you're looking for. Happy to present what we have done, our research on local hydrogeologic conditions.

Gerry Isaac

- Could we continue the discussion with Tomas before the next meeting? Offered space for the continued discussion at his restaurant in Patagonia.

Tomas Goode

- Will present and answer questions, and will make his "Groundwater 101" slide deck available to the panel afterwards. (Follow up meeting with Tomas set for Friday, August 6, at 10am, 309 W Duquesne, Wild Horse Restaurant in Patagonia). Meeting will be recorded by South 32 for panelists unable to attend).

2:15            Looking Ahead: August 18 meeting

- Wrap up and Survey
- How are you feeling about this process? What could improve?

- Great; gaining understanding of the issues. Would like more presentations like today to lay a foundation
  - Enjoyed hearing the presentation; this is critical to create strategies to manage water issues
  - Today's presentation increased my depth of understanding about water flow – groundwater, surface water, storage and flow. Presentation should have a relationship to previous discussion/talking points
  - Positive; my major concern was the group/panel previously wasn't starting from the same knowledge point. It started to connect today.
  - I enjoyed today's presentation and want to learn how all this information applies to Patagonia.
  - We didn't discuss decision making options for alternative uses of water other than discharge
  - Gaining more knowledge in reference to groundwater is fundamental in being able to move forward with this process. Great presentation. We need to link new knowledge to actual concerns in reference to water discharge.
  - The presentation was very informative. We need to discuss where the water truly feeds into Patagonia -- what impact does Mt Wrightston to Sonoita have as to the watershed in Patagonia?
  - Feeling much more informed. We could use more time for lectures, thanks.
- How well have you felt heard so far? (0-5, with 0 not at all and 5 very well)
    - 3 (1)
    - 4 (3)
    - 5 (6)
  - Agenda for Next Meeting – August 18, 12-2p, within Cady Hall

Panel will address workforce issues -- specifically, which “buckets” of transferable skills the mine needs. Many of the panelists will be presenting/discussing this with South 32 human resources staff.

- Community Behavior Standards - Melanie Lawson

South 32 would like input from the panel via a survey link to be sent out after the meeting about behavior standards for employees on issues such where to park in Patagonia, but also in the larger community

Meeting adjourned 2:18

## Attachment A

### Notes for Hermosa Community Committee Presentation Atelier Tomorrow Inc., July 21, 2021

ATI is an Arizona nonprofit, tax-exempt technology-policy consultancy to the public and nonprofit sectors. We're based in Patagonia and Sonoita. Our board and team members live in Patagonia, Sonoita, and Tucson.

#### ***ATI's Mission: Bringing Broadband Service To Our Borderlands Communities***

Broadband is essential infrastructure for 21st Century communities. Yet there's little or no broadband service in our neighborhoods and in Santa Cruz County generally, and only halting progress toward its acquisition. We are constrained to 1980's-era telephone service (DSL).

One consequence, though other factors also are at play, is that Patagonia and its Borderlands neighbors remain, as designated by the USDA and other relevant federal agencies, "persistent pockets of poverty."

Currently, local governments, schools, health providers, and emergency services must do with catch-as-catch-can telecommunications systems. Their planners are always busy, but their plans are seldom realized.

Non-technological efforts to remedy the situation — for instance, using current satellite internet services — are palliative but largely ineffective. Elon Musk's StarLink may offer a solution, but right now, the service on a community basis — it's now being tested in Coconino County — remains experimental.

Alas, telecom is hardly a typical concern of towns, community foundations, or other third parties who might underwrite and thereby accelerate availability of broadband service. In other parts of Arizona, public foundations set up for this and related purposes are investing in broadband service, but in Southern Arizona there are none.

In response, ATI, a nonprofit, tax-exempt consultancy now headquartered in Patagonia, was set up to do exactly that: to invest in the future of the region. In the course of evaluating regional broadband options, ATI is working to identify and, in behalf of our region and its communities, apply for relevant planning grants while at the same time establishing beneficial industry, agriculture, and university partnerships. Sources we've approached for economic and policy assistance include:

— *Arizona's Congressional delegation (very helpful).*

— *Federal agencies: USDA (Community ReConnect), NTIA/USA Broadband (America Recovery Act), EDA, and Federal Reserve Bank.*

— *State agencies: Arizona Commerce Authority (ACA), ADOT (AZ Dept. of Transportation), and the Governor's Office. Public universities: ASU, NAU, and UA CAST. (Most resources dedicated for other purposes.)*

— *COGs and other local-government agencies. Most have limited resources.*



— *Private sector: Suppliers of 5G technology have offered testbeds. However, access to Lumen/CenturyLink technology and networks, including access to CenturyLink’s “backbone” fiber optic cable extending from Sierra Vista to Patagonia remains problematic.*

— *Our region’s largest local new enterprise, the very-modern Hermosa Mine, employs a full range of cutting-edge telecom and info-tech resources and is served by an R&D laboratory in Tucson. However, none of its assets are yet accessible to the public, a situation that became evident with the onset of the Covid crisis, when Patagonia asked for and was pledged — but ultimately did not receive — access to South32 broadband service that could have served data to downtown and schools hotspots.*

### ***The Atelier Tomorrow Inc. Team***

Our team comprises co-founders and board members Dr. Charles Grantham of Tucson, an organizational sociologist formerly with AT&T and Pacific Telesis (one of the Baby Bells); in Patagonia, Dr. Robert (Bob) Jacobson, ATI Principal & Strategist, and Bob’s wife, Charlotte Lowe, a Patagonia native, writer, and now game developer; and a “recent” addition (as of last year), Sonoita’s Jose “Pepe” Araza, retired career officer and military telecom expert. All are currently working pro bono.

Bob’s relevant background as ATI’s Principal and Strategist includes setting up and helping to run Los Angeles’ first public-access video studio, serving a decade as the California Legislature’s first principal telecom and information policy consultant — a position for which he was personally recruited by the late Assembly Speaker Willie Brown, Jr. — and then serving on the L.A. Cable Television Commission (which he lobbied into existence).

Prior to joining the Legislature, Bob spent a Fulbright year abroad in Scandinavia, where he studied and helped guide the use of cellular telephony for creating and sustaining transnational and transborder communities in the Nordic Arctic Circle.

On leaving the Legislature, Bob was drafted to co-found, and serve as associate director, the West Coast’s first public VR laboratory, the Human Interface Technology Lab at the Washington (State) Technology Center. After five years of cutting-edge experimentation with the use of virtual (simulated) worlds as communication tools, he left the HITLab to start-up VR and viz-tech companies in Seattle, Silicon Valley (for Siemens and for SRI), and San Diego. He was a founding broad member of the Silicon Valley Association of Startup Entrepreneurs (SVASE).

After returning to Sweden, where he founded Atelier Tomorrow AB to do community and economic development R&D for the EU and the Swedish Innovation Agency, he returned to USA, settling in Tucson. As a concerned citizen and with the County Administrator’s enthusiastic support, he conducted Pima County’s first study of “community connectedness” and wrote the County Charter’s provision, approved by the Supervisors, designating community communications and broadband service as necessary planning concerns.

### ***ATI’s Immediate Future Plans***

1. Two years ago, ATI lobbied the State, via the ACA, to apply for an EDA economic development grant in our region’s behalf, but the Legislature didn’t act on our combined request. We’ll apply again to the EDA, this time directly, to create in Patagonia a world-class XR R&D center and global innovation platform.

2. A year later, having arranged and managed small meetings of local electeds regarding the

use of Cox Cable broadband services for development purposes, Bob and Charlotte relocated to Patagonia. This year, following months of field research and preparation, ATI applied for and was on track to receive a USDA grant to begin the process of acquiring broadband services for Patagonia and its hustings when Covid intervened: just as he was completing ATI's grant application, Bob was felled by an extreme reaction to his second vaccination.

The USDA then encouraged ATI to apply for either for a Rural Placemaking Innovation grant or a more conventional economic-development grant. The first proved too complex to complete in the week before its deadline. We subsequently shifted focus back to community and economic development, where it stays today.

3. With the cooperation and support of community agencies including those of you here now, we plan to encourage and increase community awareness of the need for and value of broadband resources in our Borderlands communities — and then translate that awareness into rewarding, do-able projects that all parties can get behind as we collectively bootstrap our way into the 21st Century. As we apply for USDA and NTIA/BroadbandUSA (America Recovery Act) funding, community support is more important than ever. Having your organizations as partners is more valuable than your contributions, though those are important, too!

Here's to establishing Borderlands' Broadband in 2021, with your help and that of our communities.

***Thanks for your Attention...And Do Get in Touch!***

***Bob Jacobson, Ph.D., Principal & Strategist  
Atelier Tomorrow Inc., A Nonprofit, Tax-Exempt  
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ATI-Future Facing.png ↵

## Attachment B

### **INFORMATION for the Santa Cruz County Advisory Panel on Hermosa Project Presented by Panelist Carolyn Shafer as PARA Board Member: July 21, 2021**

**INVITATION** to attend an "Assessment of Hydrologic Risks and Concerns Related to the Hermosa Mine Project" presentation to the Santa Cruz County Board of Supervisors by PARA's Hydrologists at a study session at 2 p.m. on Tuesday, August 3, 2021.

From the County: We will post a Notice for the Study Session at least 24 hours prior to the meeting as we do with Regular Meetings which normally take place the Friday before the meeting, in this case July 30<sup>th</sup>. The notice will contain the following Zoom link unless there are changes to the notice prior to posting:

- Dial (669)900-6833
  - Enter the Meeting ID: 914 664 2271
- Presentation Zoom Meeting Link: <https://us02web.zoom.us/j/9146642271>

Recording of the study session is posted at <https://drive.google.com/file/d/1WzqvXcUAq5KQTOiBGRQeUHDTraQRdW2O/view?usp=sharing>

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")

Updated with recording link August 10, 2021