

**RIO GRANDE WATER CONSERVATION DISTRICT  
BOARD OF DIRECTORS QUARTERLY MEETING  
January 18, 2022 at 10:00 A.M.  
Rio Grande Water Conservation District Conference Room  
And By Zoom Teleconference**

**Present:** Greg Higel, President; Armando Valdez, Vice-President; Dwight Martin, Secretary/  
Treasurer; Peggy Godfrey, Director; Steve Keller, Director; Zeke Ward, Director; Mike Kruse,  
Director; and Cory Off, Director.

**Absent:** Dale Bartee, Director

**Staff and Consultants:** David Robbins, Hill & Robbins, P.C.; Amber Pacheco, Acting Deputy  
General Manager; Chris Ivers, Program Manager; Marisa Fricke, Program Manager; Wylie Keller,  
Water Resource Specialist; Rose Vanderpool, Program Assistant; Linda Ramirez, Program Assistant;  
Clinton Phillips, Davis Engineering; Michael Carson, Database Administrator; and April Mondragon,  
Administrative Assistant.

**Guests:** Cathy Garcia, Doug Gunnels, Erin Minks, Daniel Boyes, Daryl Kohut, Rio de la Vista, Chris  
Lopez, Becky Brooks, Vern Heersink, Susan Storm, Chris Schaefer, John Gerstle, William Myers, Mike  
Dill, Lori Laski, Monica McCafferty, Rosalee Reese, David Hofmann, Deb Sarason, Sarah Parmar, Jake  
Burris, Craig Cotten, Dave Defreez, Kelle, Ryan Unterreiner, Emma Ressor, Jenny Nehring, David  
Frees, Heather Dutton, Sharon Vaughn, Pricilla Waggoner, Sean Tonner, Heather Greenwolf, Antonio  
Huerta, Travis Smith, Alan Jones, Brian David, Lynn Berry.

**CALL TO ORDER**

President Greg Higel called the meeting to order at 10:05 a.m. There was a quorum present for the  
meeting. The Pledge of Allegiance was recited.

**INTRODUCTION OF STAFF AND GUESTS**

President Greg Higel welcomed all those present and asked for introductions.

**APPROVE AGENDA**

President Higel announced a few changes to the agenda. A motion was made by Cory Off to approve  
the agenda as amended. The motion was seconded by Peggy Godfrey and unanimously approved.

**APPROVE THE CONSENT AGENDA ITEMS**

President Higel asked for a motion to approve the consent agenda items.

- June 18, 2021-Special Meeting Minutes
- October 19, 2021-Quarterly Meeting Minutes
- December 10, 2021-Budget Hearing Minutes

A motion was made by Cory Off to approve the consent agenda items as presented. The motion was  
seconded by Armando Valdez and unanimously approved.

**PUBLIC COMMENT**

President Higel asked for public comment. There were none.

**FINANCIAL REPORT**

President Higel asked for the financial report. Amber Pacheco presented the profit and loss budget vs.  
actual statement for December 2021. Ms. Pacheco provided the property tax revenue collected and  
reported falling close in line with the projected amount. She highlighted the reimbursements made by  
the Subdistricts, interest on investments accounts, and the Bureau of Reclamation reserve funds.  
Discussion was held on the mill levy and Ms. Pacheco highlighted the expenditures, accounting  
reimbursements and described the portion the District covers and the portion covered by the  
Subdistricts. She also reported on some of the special projects the District budgeted for.

A motion was made by Peggy Godfrey to approve the financial report. The motion was seconded by  
Cory Off and unanimously approved.

### **STEALEY II-BECKY BROOKS**

President Higel asked for the Stealey II report. Becky Brooks reported the general assembly started up last week, she highlighted the number of bills that had been filed, and described a bill that came out of the water interim committee sponsored by Cleave Simpson. Ms. Brooks highlighted the necessity of Senate Bill 28 and stated it may be one of the first bills to be heard in committee. Ms. Brooks reported on the wildfire mitigation bills and described the concern with water speculation in regards to Senate Bill 29.

### **COLORADO OPEN LANDS-SARAH PARMAR**

President Higel asked for Colorado Open Lands report. Sarah Parmar reported Colorado Open lands hired a second project manager and highlighted what the new hire would focus on. Ms. Parmar provided an update on the groundwater conservation program and the pilot project being worked on with Subdistrict No. 4. She also reported Colorado Open Lands looks forward to standing with the San Luis Valley as a front-line ally in the RWR/Douglas County export proposal.

### **MANAGER'S REPORTS**

President Higel asked for the Manager's report. Amber Pacheco reported on the Board of Director terms set to expire and provided an update on the RWR proposal submitted to Douglas County. Michael Carson highlighted the Protect the San Luis Valley Water website.

- Update from the Management Committee Meeting-recommendation for modified leadership with the proposal of an Acting Deputy General Manager role for 2022

Amber Pacheco described the shift in leadership while Cleave Simpson is at the legislature. Armando Valdez reported on a meeting held by the Management Committee to revisit the Acting Deputy General Manager position and formalize the position description. Mr. Valdez reported the Management Committee proposal to the Board is the Acting Deputy General Manager position be approved for an entire year and also the Board continue to support General Manager Simpson in his role as Senator and not require his use of personal or vacation time during his absence while at the legislature.

- Recommendation for staff to update the Rio Grande Water Conservation District's Employee Handbook (last update was in 2008)

Amber Pacheco reported on the work that had been done by Cheryl Anderson and Employers Council to update the employee handbook. A recommendation was given from the Board to direct staff to continue to work with the Management Committee and Employers Council to update the Employee Handbook.

- Discussion on updating the Rio Grande Water Conservation District Rules and Regulations (Bylaws) (last updated in 1991)

Amber Pacheco provided an update on when the Rules and Regulations were last edited by the Bylaws Committee. She provided the names of the individuals on that committee. Mike Kruse made a recommendation that Zeke Ward become part of the Bylaws Committee and Zeke accepted the invitation.

A motion was made by Armando Valdez to authorize Amber Pacheco to work with the Bylaws Committee to undertake a review of the current Rules and Regulations and make necessary revisions.. The motion was seconded by Cory Off and unanimously approved.

Cory Off resigned from the Bylaws Committee. Steve Keller volunteered to take his place. President Higel announced Steve Keller, Peggy Godfrey and Zeke Ward were the members of the Bylaws Committee.

- Discuss possible future work session regarding existing District water assets and how to treat them

Amber Pacheco updated the Board on a discussion that was held regarding the District assets. Ms. Pacheco reported that a formal policy is needed and recommended that the

Board of Directors authorize staff and council to compile a report of all of the assets that have been accumulated in order to provide the Board with options to consider. David Robbins reminded the Board of the statues and explained a policy would need to be adopted stating how assets are to be handled. Zeke Ward asked to see a list of all of the assets prior to the July meeting. Direction was given to staff to compile a list of assets and set up a work session to further discuss the development of a policy.

### **PROGRAM MANAGER'S REPORTS**

President Higel asked for the Program Manager's reports.

- ***Subdistrict No. 1-Marisa Fricke***

- ***Discussion and Action regarding Groundwater Only seat on SD #1 Board of Managers:***

- Marisa Fricke reported Les Alderete's Groundwater Only seat was expiring and she provided the appointment requirements of the Groundwater only Board of Manager seat. She explained the process of appointing a new Board of Manager when a seat becomes vacant. Ms. Fricke announced she received letters of interest from Jake Burris and Doug Gunnels who were the only two (2) candidates running for the open Groundwater Only seat. She provided details regarding a Straw Poll that was done to allow Subdistrict Members who meet the groundwater only designation in Subdistrict No. 1 to identify their preferred candidate to serve in the Groundwater Only seat to represent their interests. Ms. Fricke provided the straw poll results. Doug Gunnels and Jake Burris were present and spoke to the Board in regards to their qualifications and explained why they wanted to be on the Subdistrict No. 1 Board of Managers.

A motion was made by Mike Kruse to appoint Jake Burris as the Groundwater Only board member for Subdistrict No. 1. The motion was seconded by Cory Off and unanimously approved.

**The meeting recessed for lunch at 12:32 p.m. and resumed at 1:35 p.m.**

Marisa Fricke also provided an update on the Plan of Water Management No. 4, the Master Irrigators Course and the reports they have been working on.

- ***Subdistricts No. 2, 3, and 6-Amber Pacheco:***

- Amber Pacheco reported the fee calculations for 2021 were complete and submitted to the assessors to place on the tax notices. She also provided the due dates of the Preliminary Water Report and Annual Replacement Plan which the Subdistrict's were working on. Ms. Pacheco provided an update on a purchase Subdistrict No. 3 is working on in cooperation with the Trinchera Subdistrict to purchase four (4) quarters of land in the southern end of Conejos County. Ms. Pacheco reported she continues to work with the Subdistricts to acquire permanent water sources and at potential ATM's.

- ***Subdistricts No. 4 and 5-Chris Ivers:***

- Chris Ivers reported Subdistrict No. 4 and 5 fees were successfully placed onto the Saguache County tax rolls this year. He provided an update on the progress of a conservation easement in Subdistrict No. 4 and on Well Injury Payment agreements with surface water users on San Luis Creek. Mr. Ivers provided an update on Subdistrict No. 5's augmentation well and the inability to produce the amount of water they had projected for the well. He also reported on the Groundwater Allocation Rules and the allocation amount which was set. Mr. Ivers highlighted a potential lease of surface water on Saguache Creek. Discussion was held on the progress of the judicial review of the State Engineer's denial of the Subdistrict No. 5 2021 ARP and the estimated amount of reduction in groundwater withdrawals from the curtailment of the wells in SD #5.

### **DISTRICT ENGINEER'S REPORT-CLINTON PHILLIPS**

President Higel asked for the District Engineer's report. Clinton Phillips presented an update for the change in unconfined aquifer storage study. He described the change for January 2022, the change between January 2021 and 2022, the current aquifer level, the current five-year average and the amount of acre-feet needed to get to the -400,000 level. Mr. Phillips reported SD #1 is starting January 2022 at the lowest unconfined aquifer level on record. Mr. Phillips also provided an update on the District's confined well monitoring network.

### **DISTRICT ATTORNEY'S REPORT-DAVID ROBBINS**

President Higel asked for the District Attorney's report. David Robbins reported his office would be prepared to assist the Bylaws Committee with the update of the District Rules and Regulations (Bylaws) and is in support of working with the Employer's Counsel to update the Employee Handbook. Mr. Robbins reported he had drafted employment agreements between the Board and Amber Pacheco and Cleave Simpson to capture the instructions provided by Cleave during the time he is at legislature and away from the District. Mr. Robbins also updated the Board on his participation in the Master Irrigators course. Mr. Robbins informed the Board of the new Waters of the United States (WOTUS) Rule under President Biden and compared it to what was in prior Rules. Mr. Robbins also gave updates on Senate Bill 28, the Texas vs. New Mexico case and the SWAG augmentation plan. He also provided an update on the Douglas County Commissioners meetings regarding RWR.

A motion was made by Cory Off to grant legal council the authority to comment on the new Waters of the United State (WOTUS) Rule. The motion was seconded by Mike Kruse and unanimously approved.

A motion was made by Cory Off to authorize legal counsel to file a statement of opposition in the SWAG augmentation case. The motion was seconded by Mike Kruse. Further discussion was held. The motion was unanimously approved.

A motion was made by Mike Kruse to file a statement of opposition in the BLM's change of water rights case in order to monitor it. The motion was seconded by Dwight Martin and unanimously approved.

### **SALAZAR RIO GRANDE DEL NORTE CENTER-RIO DE LA VISTA**

President Higel asked for the Salazar Rio Grande Del Norte Center report. Rio de la Vista updated the Board on the Water 101 course at Adams State University. She highlighted the focus of the class and how she hopes it will appeal to a wide range of students. Ms. De la Vista also highlighted the Rio Grande State of the Basin Symposium, the WaterSmart grant, and she gave an update on the Rio Grande Natural Area. She also acknowledged Allen Law and reported he was moving on from Rio Grande Headwaters Land Trust (RiGHT).

### **SENATOR BENNET'S OFFICE-ERIN MINKS**

President Higel asked for a report from Senator Bennet's office. Erin Minks highlighted the American Rescue Plan Act and explained how she anticipates the ARPA funds could be spent. She congratulated Armando Valdez on his new role with the State and reported on the Build Back Better bill.

### **SENATOR HICKENLOOPER'S OFFICE-ANTONIO HUERTA**

President Higel asked for a report from Senator Hickenlooper's Office. Antonio Huerta provided a legislative update on a number of topics. Mr. Huerta also reported his team is in conversations with other congressional members on National Heritage areas.

### **CONGRESSWOMAN BOEBERT'S OFFICE-CATHY GARCIA**

President Higel asked for a report from congresswoman Boebert's Office. Cathy Garcia gave an update on a seminar that was held to go over how ARPA funds would be distributed. She reported the Congresswoman has been busy working on bills and highlighted the work being done at the local level.

### **U.S.B.R. REPORT-MORGAN GARCIA**

President Higel asked for a report from the U.S.B.R. A copy of the report is attached to the minutes. Amber Pacheco reported Susan Storm, whom has a long history with the Bureau of Reclamation, accepted the Manager position for the Alamosa Field Office.

### **DIVISION NO. 3 ENGINEER'S REPORT-CRAIG COTTEN**

President Higel asked for the Division No. 3 Engineer's report. Craig Cotten reported being under-delivered under the compact on both stream systems. Mr. Cotten described the difficult time New Mexico is having getting their water through the system and he reported on the compact lawsuit. Mr. Cotten highlighted the much-needed snow pack boost that was recently received and gave an update

on the position of the Division of Water Resources in connection with RWR/Douglas County Commissioners.

**U.S.F. & W.S. REPORT-CHRIS SCHAFFER**

President Higel asked for the U.S.F. & W.S. report. Chris Schaffer reported he is working with staff on resolving the non-payment contract issues. Mr. Schaffer also reported staff was looking at creative solutions for using their water rights to lower impacts.

**U.S. FOREST SERVICE-DARYL KOHUT**

President Higel asked for the U.S. Forest Service report. Daryl Kohut reported the Saguache Ranger District is looking for interest in elk fitting and guiding services. Mr. Kohut also reported there would be some pile burning taking place in the forest and provided the locations. He also provided an update on the flood control structure on North Crestone Creek.

**U.S.P.S. REPORT-LYNN BERRY**

President Higel asked for the U.S.P.S. report. Lynn Berry introduced herself and highlighted how long she would be filling in for Pam Rice. She gave an update of the hydrologic information for the park. Ms. Berry reported the Park experienced a drier than average year and the fourth hottest year on record. She also provided an update on a study of visitor use and preferences, an update on work being done in the visitor center, and an update on the Medano Ranch acquisition.

**RIO GRANDE HEADWATERS RESTORATION PROJECT-EMMA REESOR**

President Higel asked for the Rio Grande Headwater Restoration Project report. Emma Ressor had signed off the meeting; a copy of her report is attached.

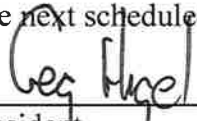
**SLV CRANE ECONOMIC IMPACT REPORT-JENNY NEHRING**

President Higel asked for the SLV Crane Economic Impact Report. Jenny Nehring gave a report on the economic impact of the Spring Crane Migration on the San Luis Valley of Colorado. She thanked Rio Grande Water Conservation District for their sponsorship. Ms. Nehring presented a map of the Sandhill Crane's migration route and breeding grounds. She reported on a survey and explained the direct economic impact and how intertwined cranes are in the San Luis Valley. She also discussed the additional benefits of going to the refuge to witness the cranes at a close proximity and how to engage the local Valley residents.

**ADJOURN**

The meeting was adjourned at 4:44 p.m.

The next scheduled quarterly meeting will be held on April 19, 2022.

  
\_\_\_\_\_  
President

  
\_\_\_\_\_  
Secretary/Treasurer

**Bureau of Reclamation Report to the RGWCD  
January 18, 2022**

**OPERATIONS**

Water salvage operations continued as recommended by the Project Operating Committee to meet Rio Grande Compact and mitigation obligations.

For the YTD (1/1/2021 to 12/31/2021)

A total of 2,111 AF was delivered to the Alamosa National Wildlife Refuge through CHO1 & 2.

A total of 1,274 AF was delivered to the Blanca Wildlife Habitat Area through CHO3 & 4.

A total of 438 AF was delivered to Head Lake West, through the Head Lake Pipeline.

Delivery to the Rio Grande has been 7,883 AF.

San Luis Lake started the year at an Elevation of 7511.9 ft. and has since declined by evaporation to 7509.1. The lake will be totally dry at an Elevation of 7509.0.

**San Luis Lake (12/31/2021)**

San Luis Lake	San Luis Lake Elevation ....	7509.1 ft. MSL
	Storage	9 acre-feet
	TDS	5651 ppm TDS

**Project Deliveries: (1/1/2020 to 12/31/2021)**

Deliveries to:	Rio Grande—total	7,883 acre-feet <sup>1</sup>
	Alamosa National Wildlife Refuge—total	2,111 acre-feet <sup>2</sup>
	Blanca Wildlife Habitat Area—total	1,274 acre-feet <sup>2</sup>
	San Luis Lake—total	0.0 acre-feet
	Head Lake (West)	438 acre-feet <sup>3</sup>
	<b>Total Deliveries as of December 31, 2021</b>	<b><u>11,706 acre-feet</u></b>

<sup>1</sup> Preliminary total subject to change.

<sup>2</sup> Includes 450 AF exchange delivered to BLM but credited to USFWS mitigation total.

<sup>3</sup> Exchange with CPW with delivery to RG.

### **MAINTENANCE BRANCH**

The maintenance branch currently has two crews performing well rehabilitation and drilling operations. Two new wells were drilled, and 19 wells were rehabilitated in 2021. Canal maintenance including mowing, mucking, grading, and erosion repair continued in 2021. CHO 1 gate and Check 4 gate were repaired. Outside lighting on office and shop properties were updated and trees were trimmed up for added security. A short-term repair was added done on the Pumping Plant structure wall. Technical evaluations are being planned for infrastructure in 2022.

### **Rio Grande Water Conservation District**

District staff continues to assist with blading and mowing canal berms and lateral access roads, removal of aquatic weeds and sediment from the canal and associated structures, and repair of erosion along the canal berms.

### **WATER LABORATORY**

A total of 1,308 samples were collected from the Closed Basin Project during the period of January 1, 2021, through December 31, 2021.

Total Dissolved Solids at the Outlet was an average of 283 mg/L for the period.

To: Rio Grande Water Conservation Board of Directors

From: Charlie Goodson, Groundwater Conservation Project Manager, Colorado Open Lands

RE: Colorado Open Lands Update

1. Colorado Open Lands (COL) Staffing Update

- a. COL has brought on another Conservation Projection Manager: Joel Nystrom; Joel will focus on our conservation easement program in Costilla County and our ongoing partnership with the acequia community.
- b. Charlie will focus on our conservation easement work within the operating area covered by the RGWCD, especially groundwater easement outreach and acquisition.

2. Groundwater Program

- a. COL has secured \$7 million for easement acquisition and revegetation contracts from the Colorado Water Conservation Board and National Resource Conservation Service (RCP program). This continues to be a collaborative project with the Rio Grande Headwaters Land Trust and funds are available to both organizations.
- b. We are working with a private landowner on an active pilot project in Subdistrict 4, with the partnership and support of the Subdistrict.
  - i. While we anticipated that interest in this program would be for less than 100% pumping reduction, this pilot project anticipates a full shutdown for wells on a portion of the property.
  - ii. We are close to completing a broad revegetation plan for this pilot, which can serve as a model for potential projects in the valley considering 100% groundwater pumping reduction.
  - iii. The framework for pumping shutdown and revegetation is based on the CREP program, but allows more flexibility in water amount and timing.
- c. We are creating outreach materials for landowners interested in exploring groundwater conservation easements and hope to identify potential projects with Subdistricts.
  - i. COL would appreciate Board input on the best way to disburse information about groundwater conservation easements to landowners (informational meetings, information packets via Subdistrict email/ mailing lists, local media articles, etc.). COL is happy to have conversations with anyone interested.
  - ii. If Board members are willing to meet to vet materials and share ideas, please contact me at [cgoodson@coloradoopenlands.org](mailto:cgoodson@coloradoopenlands.org) or (719) 695-0202.

3. RWR Proposal to Douglas County

- a. COL's Board of Directors stands in opposition to this proposal and tasked staff with supporting the San Luis Valley community. COL coordinated with the RGWCD to publish an op ed, which ran in Douglas County newsletters online and was distributed in print on December 29<sup>th</sup>; the Alamosa Courier also ran the op ed on January 7<sup>th</sup>. <https://douglascountypress.net/stories/douglas-county-should-take-high-road-on-water,386658>.



# THE ECONOMIC IMPACT OF THE SPRING CRANE MIGRATION ON THE SAN LUIS VALLEY OF COLORADO



BY:  
MAX CIAGLO  
KYLE BALINT  
JENNY NEHRING

FEBRUARY 2021



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## **Acknowledgements**

This project would not have been possible without so many partners and volunteers. Funding for this work was provided by the Colorado Water Conservation Board, Colorado Open Lands, and the Monte Vista Crane Festival. We would like to thank Dr. Bree Dority for her guidance throughout this project. Colorado Parks and Wildlife and their wonderful volunteers helped to administer the surveys, and this project would not have been possible without them or Brian and Diane Underwood from the Friends of the San Luis Valley Refuges. We would also like to thank the Rio Grande Basin Roundtable and the San Luis Valley National Wildlife Refuge Complex for their support of this project.

*Cover photo by Michael Ciaglo*

## **Background**

Every year tens of thousands of Rocky Mountain greater sandhill cranes migrate through the San Luis Valley (SLV) of Colorado. This sub-population of sandhill cranes numbers about 25,000 and is endemic to the intermountain west. In Colorado and throughout their range, they face threats from habitat loss due to drought, human development, and changing agricultural practices.<sup>1</sup> Virtually the entire population of Rocky Mountain greater sandhill cranes migrates through the SLV, and the Valley represents a significant and vulnerable bottleneck in their yearly migration (Donnelly et al. In press). The SLV provides prime wetland roosting habitat and upland feeding grounds in the form of agricultural grains, but the wetlands have undergone historic change in recent decades,<sup>2</sup> and existential forces of water export<sup>3</sup> and fluctuating agricultural markets threaten the future of these habitats and the crane migration.

The natural wonder of this migration brings tourists from around the state and the country to the SLV. The Monte Vista Crane Festival was established in 1983 to celebrate the migration and has increased this draw by providing crane tours, educational programming, and a wide variety of other entertainment for crane tourists. As the tourism surrounding this migration has grown it has become a significant economic driver for the area, particularly Alamosa and Rio Grande counties which have hotels and businesses in closest proximity to crane viewing opportunities.

Outdoor recreation constitutes a large part of Colorado's economy, and in recent years it has become an increasing focus of economic opportunity for the state. Wildlife watching has also grown in popularity due to its relative ease and accessibility, and this sector alone contributes \$2.4 billion dollars to the state's economy annually, according to a study conducted in 2017.<sup>4</sup> The same study reported that in the South-Central region of Colorado, which includes the SLV, wildlife watching activities generated \$277 million dollars and was responsible for creating 1,916 jobs. Tourism specific to sandhill cranes has been shown to be a major economic driver in other areas. In Nebraska, where there is another large migration of sandhill cranes, it was found that sandhill crane tourism generated over \$9 million in direct spending<sup>5</sup>.

While wildlife watching, and crane tourism in particular, confer an obvious benefit to local economies, there is a lack of data specifically for the SLV. The counties within the SLV all rank in the bottom 10% of per capita income in the state and understanding specific economic drivers in the region would be of great value. The purpose of this study is to quantify the economic impacts of crane tourism to the SLV, and to provide local governments and a broad swath of stakeholders with the information necessary to understand, preserve, and capitalize upon this economic opportunity.

## **Methods**

To conduct this study, we followed the methodology of two previous studies conducted to estimate the economic impact of the sandhill crane migration in Nebraska.<sup>5,6</sup>

*Study Area*— We estimated the economic impact of the annual crane migration on the San Luis Valley of Colorado (SLV), a geographic area defined by mountain ranges on the north, east, and west (the Sawatch, Sangre De Cristo, and San Juan ranges, respectively) that comprise the Upper Rio Grande watershed, and the border of New Mexico and Colorado to the south. When using political boundaries (e.g., counties or



To estimate the total number of visitors and visitor days from the car counts we used the answers to a number of questions on the survey instrument. First, we categorized survey results by local or non-local visitors using zip codes from Question 2. Question 17 asked guests to estimate the number of times per day they visited each viewing area where a road counter was deployed. We used the average of answers to this question to correct the total number of cars for multi-site visitation. We then used average group size (Question 11) to estimate the total number of visitors. To calculate visitor days, we first corrected the total length of stay for each individual group using Questions 15 and 16 to only capture days spent in the San Luis Valley specifically for the sandhill crane migration, and then estimated the average length of stay. This average was finally used to estimate the total number of visitor days over the entire 30-day period, grouped by local and non-local visitation.

*Direct Economic Impact*—Questions 5-10 on the survey instrument asked respondents to estimate their typical daily spending per group per day based on nine different spending bins for six categories of activity (Hotel/Lodging, Food and Drinks, Gasoline/Fuel, Shopping, Entertainment, and Other). To evaluate spending when a group chose the ninth bin (More than \$176) we used a formula of: (category 8 – category 7) + low point of category 9 = category 9 spending. Due to the categorical nature of the data, we used the mode of the responses and the midpoint of the spending bins to estimate typical daily spending.

## **Results**

*Survey Administration*—Survey administration was constrained by staff or volunteer availability, and surveys were administered on 3/1, 3/6, 3/7, 3/8, 3/10, 3/11, 3/14, and 3/15. During these times surveyors approached 273 groups for survey responses and received 261 survey responses, a 95.6% response rate. We intended to administer surveys throughout the 30-day period that cranes were present but stopped after 3/15 due to the spread of Covid-19 into Colorado and out of precaution to avoid contact between volunteers and tourists.

*Visitation*— We estimate visitors from the SLV made up 11.5% of visitation groups, and visitors from outside the SLV made up 88.5% of visitation groups. We observed an 89.3% decrease in car count visitation from the 30-day period with cranes to the 30-day period after cranes had left the SLV. Adjusting for normal local visitation through car counters, we estimate that 7,457 cars/groups visitors went through the Valley specifically for crane watching. Of these groups, 857 were local and 6,600 were from outside the SLV. Multiplied by the average group size (1.933 people per local group, 2.53 people per non-local group) we estimate that 1,657 local people and 16,685 non-local people visited crane viewing areas over the 30-day period.

Tourists visited from 164 different zip codes, 15 different states (Colorado, Arizona, Connecticut, Iowa, Kansas, Louisiana, Massachusetts, Michigan, Minnesota, New Mexico, New York, South Dakota, Texas, Wisconsin, Wyoming), and one other country (Canada). The majority of visitors (90.1%) were from within Colorado, and the top 5 counties Colorado survey respondent groups came from were: El Paso (29 groups), Denver (27 groups), Arapahoe (19 groups), Boulder (18 groups), and Jefferson (17 groups). Figure 2 displays the locations of residence for all respondents from within Colorado.

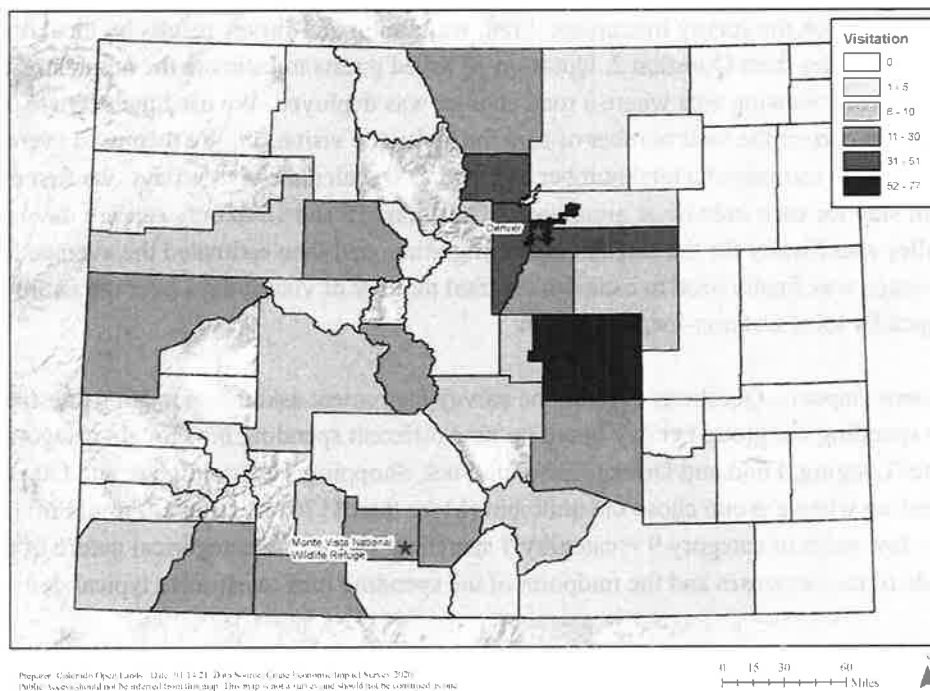


Figure 2. Visitation frequency of Colorado survey respondents by county.

*Economic Impact*—The average SLV local was likely to spend between \$1-25 on gasoline and between \$1-25 on shopping. Therefore, the average spending from a local crane watcher was \$26 at midpoint. The average non-local visitor was broken down into two groups, 1) those not spending on a hotel (potentially camping) or passing through and 2) those spending on a hotel. The minority of non-local visitors (72; 31.17%) were in category one, and the majority (159; 68.83%) were in category two. The average group in category one spent \$25-50 on food and \$25-50 on gas per day. The average group in category 2 spent \$101-125 on lodging, \$51-75 on food, \$25-50 on gas, and \$25-50 on shopping per day. Using the midpoint of the categorical data we estimate that SLV residents spend \$26 per day, nonlocals staying in hotels spend \$252 per day and other non-locals spend \$76 per day (Table 1).

	SLV Local	Non-local pass through	Non-local hotel
# of respondents	42	72	159
Spending person <sup>-1</sup> day <sup>-1</sup>	\$26	\$76	\$252
Direct economic impact	\$3,713.67	\$473,31.49	\$2,872,800.04
<b>Total direct revenue</b>	<b>\$3,349,885.20</b>		
<b>Total tax revenue</b>	<b>\$118,402.33</b>		

Table 1. Spending and direct economic spending by visitor categories.

Therefore, discounting for local visitors and calculating the direct impact from non-local visitors, we estimate the economic impact of the crane watching over the 30-day period to be \$3,349,885.20. Broken down by categories of visitors, we estimate the economic impact to be \$3,713.67 from SLV residents, \$2,872,800.04 from non-locals who spent on hotels, and \$473,371.49 from other non-locals (Table 1).

To estimate tax revenue from visitor spending, we used the local tax rate of Alamosa county, where the majority of hotels and restaurants are located in the SLV. The local tax rate of 3% is similar to those of the surrounding counties (Conejos, 0%; Costilla, 1%; Rio Grande, 2.6%; Saguache, 2.5%). We excluded gasoline and state tax from this estimate because the majority of visitors are from Colorado. Using the 3% tax rate we calculated the tax revenue from visitor spending at \$92,638.33. Further, all local counties except Saguache county collect a 2% tax rate for lodging. Using this tax rate, we calculate an additional tax impact of \$25,764. Therefore, the total revenue from these two tax bases is \$118,402.33 (Table 1).

Finally, we asked respondents to estimate the total amount of money they would be willing to spend on additional services if they were offered in the SLV (Question 14, Appendix A). The small communities in the SLV have a limited ability to provide an abundance of services for the inconsistent tourists that visit for the crane migration. We asked respondents to identify potential services, such as additional tours or entertainment opportunities in town, that businesses might be able to provide as additional revenue sources. We estimate that on average, if additional services were offered, the local economy could capture an additional \$316,778 in revenue, including \$34,578 from local residents, \$229,571 from nonlocals who spend on hotels, and \$52,629 on nonlocal who do not spend on hotels.

## **Conclusion**

We conducted the first comprehensive economic impact study of the sandhill crane migration in the San Luis Valley of Colorado. We found that the sandhill crane migration is a significant economic driver for the region, contributing nearly \$3.5 million to the local economy, including \$118,000 in local taxes. These findings show that the livelihoods of communities in the SLV are uniquely intertwined with this single species and the habitat that supports them.

Sandhill crane related ecotourism provides businesses in the Valley with significant revenue and allows the local economy to remain diversified. The crane migration attracts a unique group of tourists to the SLV that may not typically travel to this area. Virtually all tourists surveyed were visiting the SLV for the primary reason of viewing the sandhill crane migration, and the majority of these tourists were from outside of the region. The most common visitors to the SLV for other tourist activities are from metropolitan areas in Colorado, and while our data on the crane migration mirrors this trend, this event is attracting tourists during a time of the year when the majority of other tourism is not occurring. Sandhill crane migration ecotourism creates a unique opportunity for businesses to capture tourism dollars that are not typically available outside the region.

While sandhill cranes bring an obvious economic benefit to the SLV, the critical habitat that supports them is currently in decline. Sandhill cranes rely almost entirely on private agricultural lands while they are migrating through the SLV. Nearly 90% of their food requirements are met by waste grain left on barley fields after the harvest, and major crane roosts are located in wetlands on private land (Gammonley and Laubhan, unpublished data). As sustained droughts become the new normal, these private

agricultural operations are struggling to maintain the habitat that has supported the cranes up until now. Declining water supplies threaten to dry up wetlands and have caused the price of water to increase to a point where some farmers can no longer grow barley. If these trends continue without intervention the SLV may begin to see fewer cranes arriving each year, and eventually fewer tourists.

The annual sandhill crane migration through Colorado is a natural marvel. Sandhill cranes, and the habitat that they depend on, provide countless benefits to ecosystems and communities alike. By reporting on this research, we hope to demonstrate just one more reason that the sandhill cranes are intertwined with prosperity in the San Luis Valley.



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Appendix A

## Sandhill Crane Economic Impact Survey – Spring 2020

Please complete only one survey per group

Your answers to this survey will be an important part of an economic impact study to help us preserve the Sandhill Crane Migration in the San Luis Valley of Colorado. Please make your answers applicable to your current visit to observe the Sandhill Crane Migration. Your answers will be completely CONFIDENTIAL and ANONYMOUS. Thank you for your time!

- In which country do you live?  United States  
 Other: \_\_\_\_\_
- If you live in the United States, what is your zip code? 

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- Have you visited and observed the Sandhill Crane Migration in the San Luis Valley before?  Yes  
 No
- How did you learn about the Sandhill Crane Migration? (Check all that apply)
 

<input type="checkbox"/> Word-of-Mouth	<input type="checkbox"/> Magazine
<input type="checkbox"/> Website	<input type="checkbox"/> Visitors Bureau
<input type="checkbox"/> Social Media	<input type="checkbox"/> Hotel
<input type="checkbox"/> Newspaper	<input type="checkbox"/> Brochure

Please estimate your group's **typical DAILY** spending in the following categories while viewing Sandhill Cranes in the San Luis Valley. That is, please include **ALL** spending for and by the entire group locally, not just your individual spending.

	N/A	\$1-25	\$25-50	\$51-75	\$76-100	\$101-125	\$126-150	\$151-175	\$176+
5. Hotel/Lodging	0	0	0	0	0	0	0	0	0
6. Food and Drinks	0	0	0	0	0	0	0	0	0
7. Gasoline/Fuel	0	0	0	0	0	0	0	0	0
8. Shopping (Souvenirs/Gifts)	0	0	0	0	0	0	0	0	0
9. Entertainment (Arts, Museums)	0	0	0	0	0	0	0	0	0
10. Other (list) _____	0	0	0	0	0	0	0	0	0

- How many people are in your group and included in the above spending? \_\_\_\_\_ people
- How many days have you or will you be visiting the San Luis Valley? \_\_\_\_\_ days  
 I live Locally
- If you are spending money on lodging in the San Luis Valley, please write the **name** of your accommodations (i.e. Airbnb, hotel name, campground name) and the **town** in which you are staying.  
Name: \_\_\_\_\_  
Town: \_\_\_\_\_

- If the following additional services/options were available during your trip, which would you spend money on? Please select all that apply and estimate how much your group would be willing to spend over your entire trip.

Additional Service	est. \$
<input type="checkbox"/> Private company crane tours	_____
<input type="checkbox"/> Access to crane photography blinds on private land	_____
<input type="checkbox"/> Additional events at businesses in town (e.g. live music, happy hours)	_____
<input type="checkbox"/> Other (specify) _____	_____

- How important was the Sandhill Crane Migration in your decision to visit the San Luis Valley? Please choose **ONLY ONE** response.
  - It was the principal reason I came to the area
  - It was one of several reasons I came to the area
  - It was mentioned in local visitors guides and looked interesting
  - It was not important because I would have visited the area anyways.
- If it is not your principal reason for visiting the San Luis Valley how many **extra** days will you stay because of the Sandhill Crane Migration?
  - 0 days (it has no effect on the length of my trip)
  - 1 day
  - 2 days
  - 3 days
  - 4 days
  - 5 or more (please list \_\_\_\_\_)
- Please estimate the number of times **per day** that you visited each area on the Monte Vista Refuge.
  - \_\_\_\_ Road 8 South Pullout for barley field
  - \_\_\_\_ Highway 15 east pullout for loafing wetland
  - \_\_\_\_ Auto Tour Loop at Monte Vista Visitor Center
- What other tourism venues have you or are you planning to visit?
  - Alamosa National Wildlife Refuge
  - Great Sand Dunes National Park
  - Rio Grande Natural Heritage Area
  - Local State Wildlife Areas
  - Bureau of Land Management Areas
  - Forest Service Land
  - Hot Springs (please name): \_\_\_\_\_
  - Other (please specify) \_\_\_\_\_

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