

## *Rio Grande Valley Autumn 2022 Review*

### **Autumn 2022 Weather Story for the Rio Grande Valley: Rain Keeps Drought at Bay Along Rio Grande; Dryness Returns Across Ranch Country**

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**Left:** Autumn 2022 may be most remembered for a mid to late November cold snap and a true “Nor’easter” that created pounding surf for several days, eroding the beaches similar to what several tropical cyclones did during the summer and autumn of 2020.

**Right:** Just prior to the cool down, lush green landscapes were common across the Cameron County, which saw ample rainfall through autumn

#### **Month-by-Month Summary**

**September** returned drier-than-average rainfall to the Lower Rio Grande Valley, though there were local exceptions including both the McAllen metropolitan area and areas near Brownsville, where periods of fairly typical (climatological) rainfall between the 2<sup>nd</sup> and 6<sup>th</sup>, and again between the 14<sup>th</sup> and 27<sup>th</sup> (mainly around Brownsville), brought monthly values to near the 30-year averages (generally, between 4.5 and 6”). Other locations – across the Rio Grande Valley and especially the Brush Country and Coastal Plains, failed to exceed 50 percent of the average for the month. The dry trend in the region matched Texas overall, whose averages landed on the drier side. Locations falling within the 25 to 50 percent of the 1991-2020 (30-year) average included northern Zapata through Kenedy County, then southward into northern/eastern Hidalgo and western Cameron, including Harlingen. Fortunately, August rainfall and just enough rainfall in September helped mitigate temperatures, which ended up within a degree of the 30-year average. There were no impacts from tropical cyclones along the Lower Texas coast in September.

# September 2022 Rainfall

Brownsville/Rio Grande Valley, TX

Upper Valley beats the average; lower/mid Valley were mixed and ranchlands began drying out

## 9/2/22 (7 AM) - 10/1/22 (7 AM) Rainfall

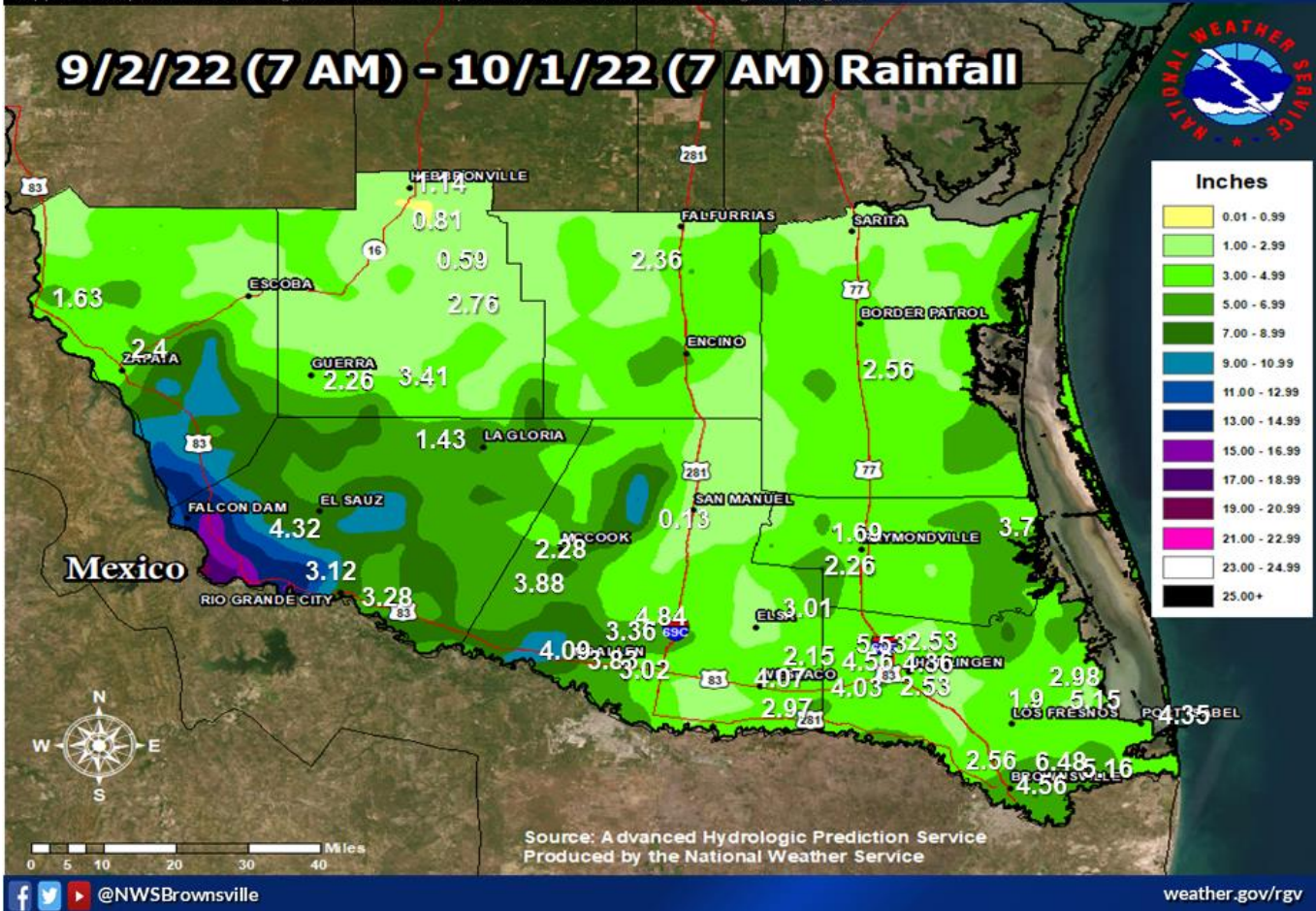
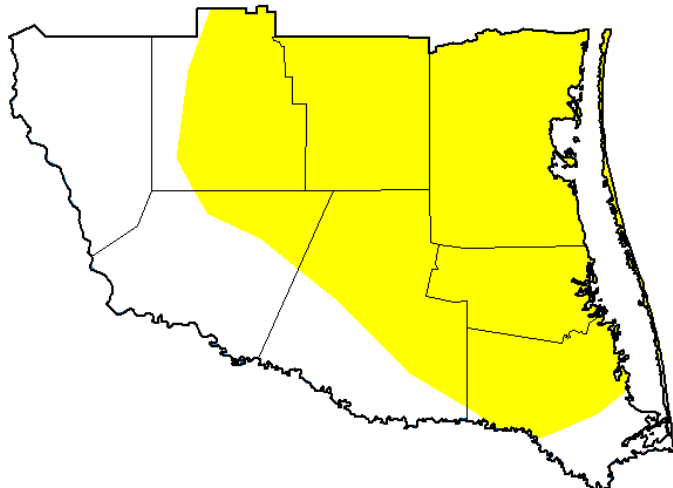


Figure 1. September rainfall estimates across the Lower Rio Grande Valley and Deep South Texas Brush Country/Coastal Plains. Annotations are a combination of NWS ASOS, Cooperative stations, CoCoRaHS, and Texas Mesonet.

**October** continued the drier than average theme for autumn, with all but Zapata County landing in the 10-25 percent of average range. For the Lower Valley (Cameron, Hidalgo, Willacy County) climate division, October was the 15<sup>th</sup> driest on record; combined with the aforementioned modestly drier-than-average September, the two months combined ranked 23<sup>rd</sup> driest. The dryness, which was most intense in Brooks, Kenedy, northern Hidalgo, and a swath along Interstate Highway 2 between Harlingen and McAllen, resulted in the redevelopment of Level 0 (“Abnormally Dry”) conditions for the United States Drought Monitor by November 1. Locations south and east of Brownsville ended the month slightly above average, thanks to a weak upper-level disturbance just south of the border.

**U.S. Drought Monitor**  
**Brownsville/Rio**  
**Grande Valley, TX WFO**

**November 1, 2022**  
 (Released Thursday, Nov. 3, 2022)  
 Valid 8 a.m. EDT



*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	35.63	64.37	0.00	0.00	0.00	0.00
<b>Last Week</b> 10-25-2022	34.72	65.28	0.00	0.00	0.00	0.00
<b>3 Months Ago</b> 08-02-2022	0.00	100.00	88.93	34.16	0.17	0.00
<b>Start of Calendar Year</b> 01-04-2022	72.63	27.37	4.09	0.00	0.00	0.00
<b>Start of Water Year</b> 09-27-2022	100.00	0.00	0.00	0.00	0.00	0.00
<b>One Year Ago</b> 11-02-2021	27.18	72.82	26.60	11.94	0.00	0.00

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>*

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[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

*Figure 2. U.S. Drought Monitor for the Lower Rio Grande Valley/Deep South Texas Brush Country and Coastal Plains, as of November 1, 2022. Yellow signifies Level 0, or Abnormally Dry.*

Temperatures through the 17<sup>th</sup> were a tick above average, before the season’s first legitimate cold front slammed daytime temperatures down into the 50s during the afternoon of the 18<sup>th</sup>. A generally cooler than average regime persisted through month’s end, with the Valley’s anchor cities (Brownsville, Harlingen, and McAllen) ending up 1 to 2 degrees below average – similar to the South Texas region overall.

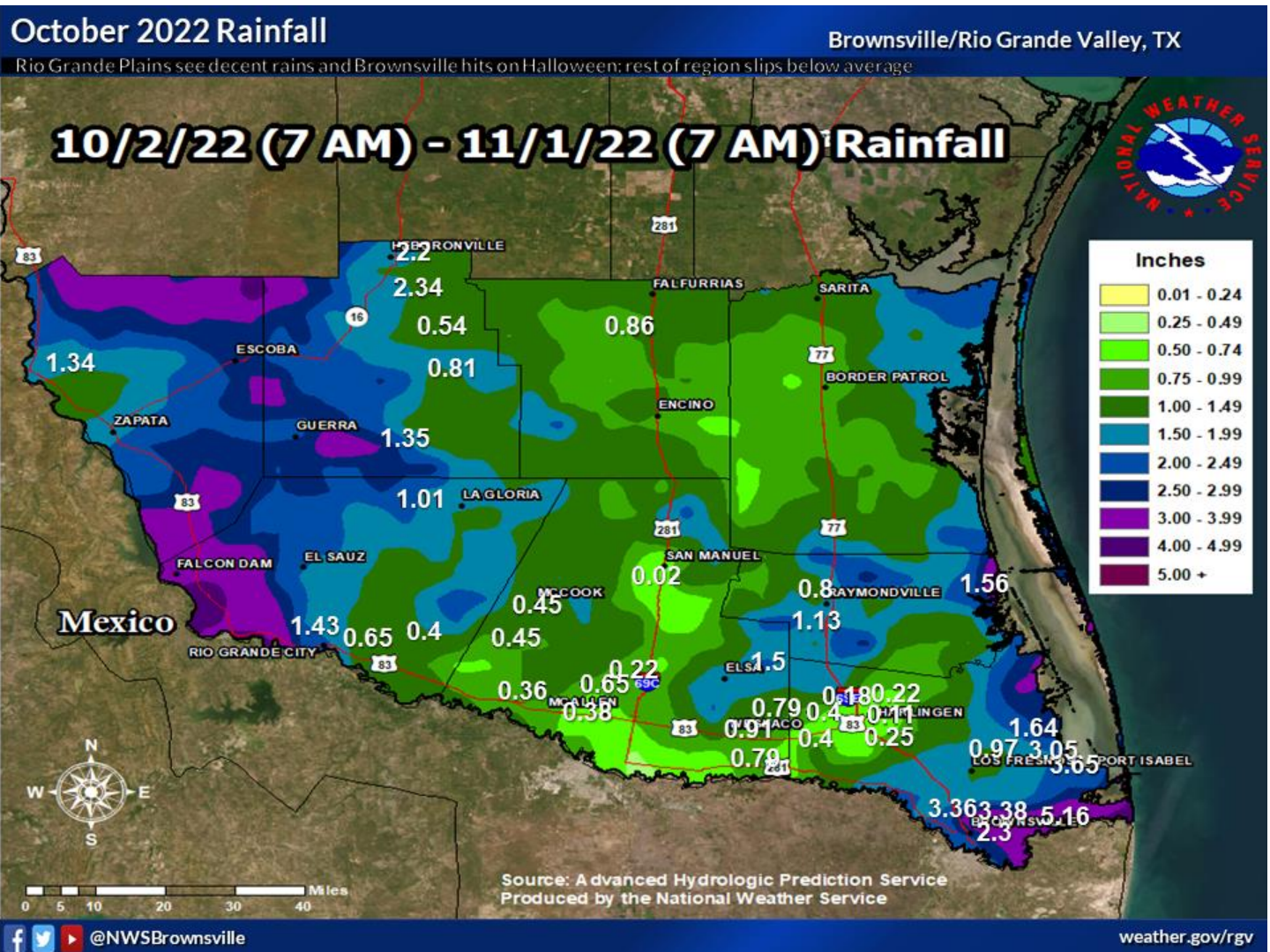


Figure 3. Similar to Figure 1, estimated rainfall for October 2022.

**November 2022** was a tale of two seasons. Through Veterans Day, the month was on track for potential new record for warmth, with the first eleven days running 5 to 8 degrees above the 30-year average. The second notable cold front arrived that evening, along with locally heavy rainfall and even a wind gust of 59 mph (McAllen). A cool weekend would be followed by a single day (Nov. 14) of warmth before the season's coldest air slithered in beginning on the 15<sup>th</sup> as a series of strong high pressure ridges with origins in northwest Canada descended on the Great Plains, with the cold air reaching deep into Mexico.

By the weekend of the 18<sup>th</sup> through 20<sup>th</sup>, an area of low pressure formed east of the Lower Texas coast which, combined with the strong high pressure, created a true Nor'easter that brought persistent pounding surf that flooded the barrier island beaches and eventually eroded many dunes – dunes that were replenished after the multiple events from the 2020 Atlantic Hurricane Season. In addition to the coastal flooding, high and rough surf, and dangerously high and rough seas (Beaufort Scale 7 and 8) that reached nearly 20 feet – more similar to a tropical cyclone than a winter weather event - for shippers in prolonged gale-force winds (November 19-20), several bouts of rainfall moved across Cameron County between the 18<sup>th</sup> and 22<sup>nd</sup>, including more than 2" from Brownsville to South Padre Island overnight on the 21<sup>st</sup> into the morning of the 22<sup>nd</sup>. The total rainfall from all November events pushed Brownsville's official 5.44" to 5<sup>th</sup> wettest all-time (since 1878); McAllen, with 3.73" was 3<sup>rd</sup> wettest (since 1941), and Harlingen was 15<sup>th</sup> wettest (since 1911).



*Above: Left – photo of dune erosion near Beach Park, about a half mile north of the Isla Blanca jetty (taken on November 26, nearly a week later). Right: Remaining water from a combination of rain and tidal overwash through the dunes at Public Beach Access Points 5 and 6 (taken during the peak of the coastal flooding on November 20<sup>th</sup>).*

After the cold and wet period, the month ended quietly; after a one-day warmup on Thanksgiving for the “lower” Valley, a cool-ish and drizzly pattern reappeared into the first half of the weekend, before more significant warming arrived through the 29<sup>th</sup> before a weaker front ended the month. In the end, the very warm start was easily overcome by the cool to cold nineteen days that finished the season, and average temperatures were generally 2 to 3 degrees below the 30-year benchmark across the region – a negative 7 to 11 degree turnabout from the first eleven days.

# November 2022 Rainfall

Brownsville/Rio Grande Valley, TX

Populated Rio Grande Valley more than double the average while ranch counties remain on drier side

## 11/2/22 (7 AM) - 12/1/22 (7 AM) Rainfall

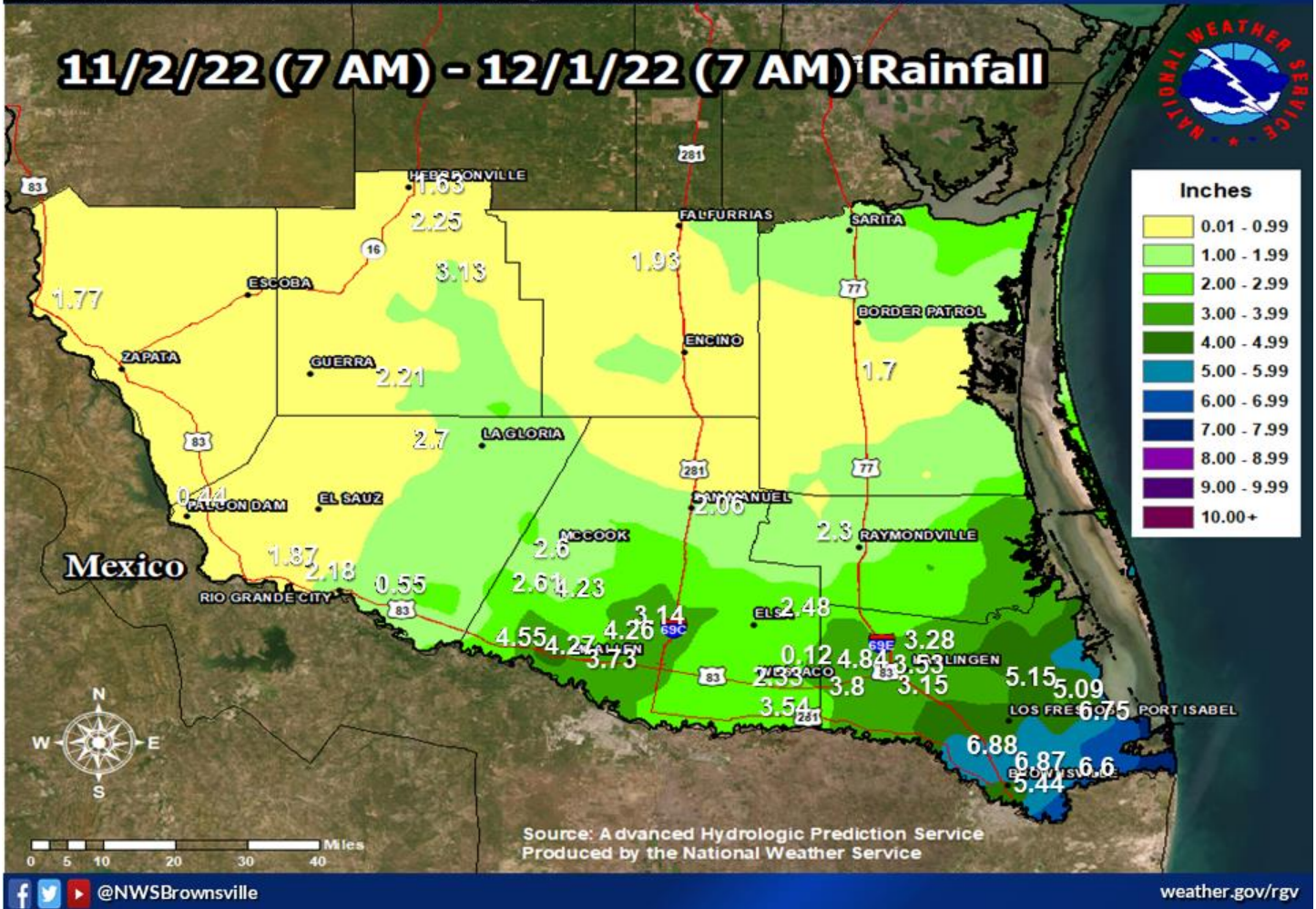


Figure 4. Same as figures 1 and 3, except for November 2022.

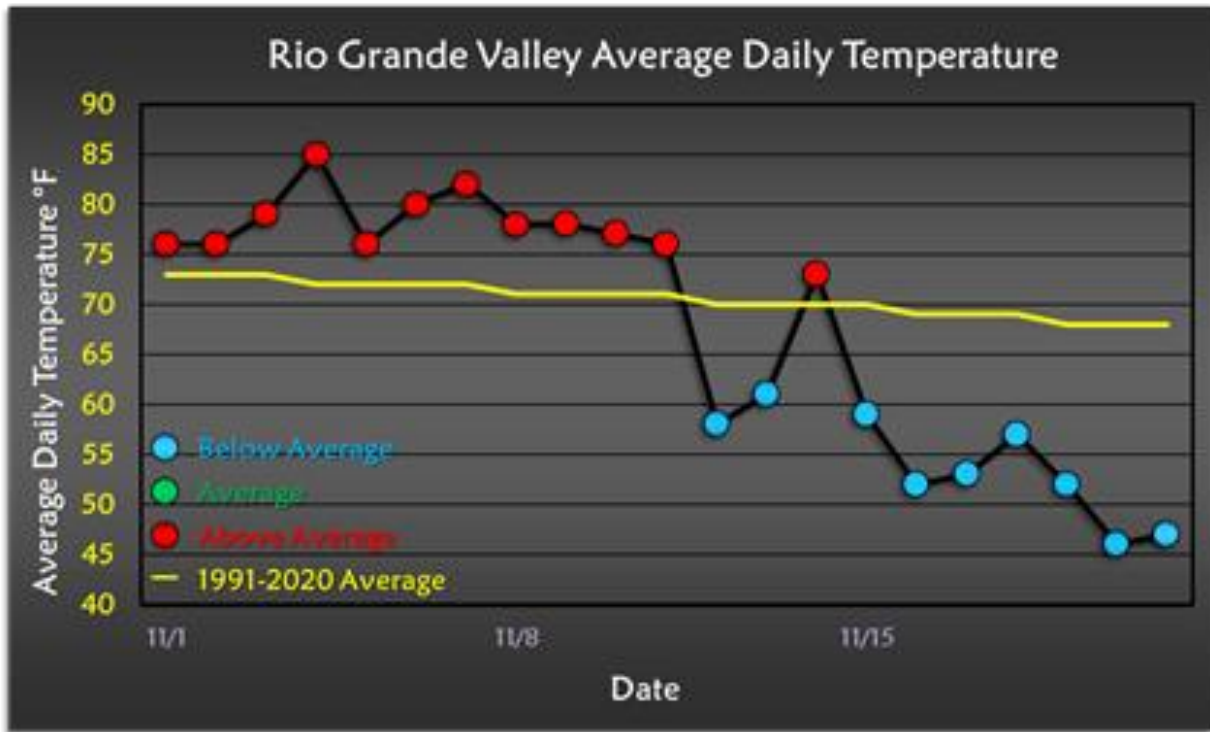


Figure 5. Segment of November average (day and night combined) temperatures for the McAllen/Harlingen/Brownsville combined data, for Nov. 1-21, 2022, showing the dramatic shift in temperatures from much above (red dots) to much below (blue dots) around the middle of the month. Much cooler than average temperatures continued through the 23<sup>rd</sup> before closer to the 30-year average values finished the month.

**For the Autumn Overall**, the notably lower than average temperatures in November nudged the season to be 1 to 2 degrees cooler than the 1991-2020 benchmark; however, for the entire period(s) of record, autumn 2022 finished in the top third warmest in Brownsville (48<sup>th</sup> out of 145 years), just below the midpoint in McAllen (47<sup>th</sup> warmest of 81 years), and just below the top third warmest in Harlingen (39<sup>th</sup> out of 111 years). Rainfall for the season varied; Brownsville (since 1878) which saw multiple decent rain events through the season, ended up with 12.3" which ranked 46<sup>th</sup> (top 33 percent) on record – though well below the top ten which were largely influenced by direct or relatively close landfalls of tropical cyclones. McAllen (since 1941) (7.94") finished at 33<sup>rd</sup> (top 40 percent) on record, but Harlingen (since 1911) finished with 8" at 56<sup>th</sup> wettest, right in the middle of the period of record.

# Autumn 2022 Rainfall

Brownsville/Rio Grande Valley, TX

Populated Rio Grande Valley, southwest Starr border hit marks: Jim Hogg-Kenedy Ranches Come Up Short

## 9/2/22 (7 AM) - 12/1/22 (7 AM) Rainfall

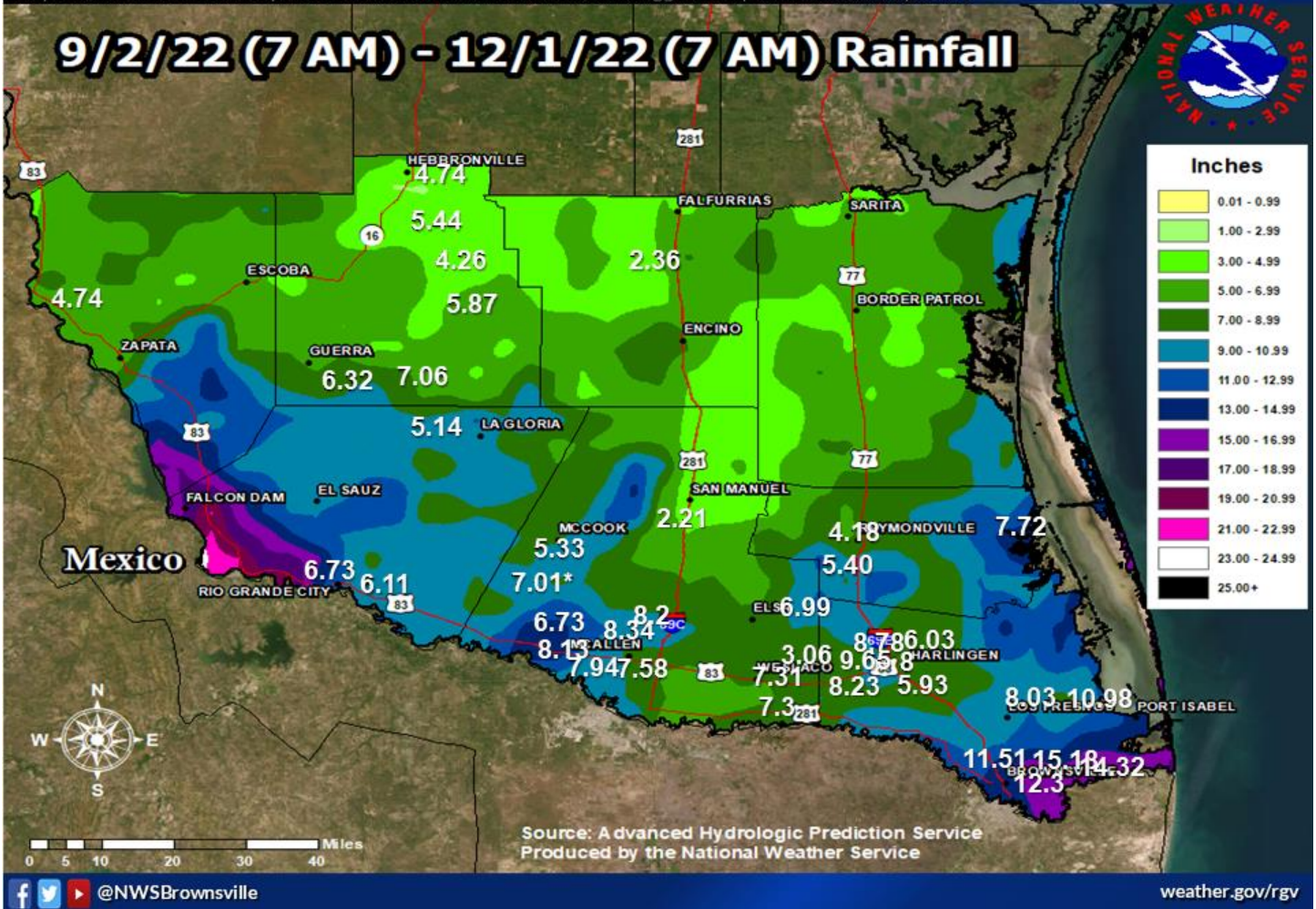


Figure 6. Same as Figures 1, 3, and 4, except for Autumn (September-November) 2021.

Farther north, across the Kenedy, Brooks, and northern Hidalgo County ranch country, a “donut hole” of low rainfall contributed to a gradual worsening of dryness/drought, with moderate (D1) conditions arriving by the end of the season.



December 13, 2022 90-Day Percent Precipitation

Created on: December 13, 2022 - 19:12 UTC  
Valid on: December 13, 2022 12:00 UTC

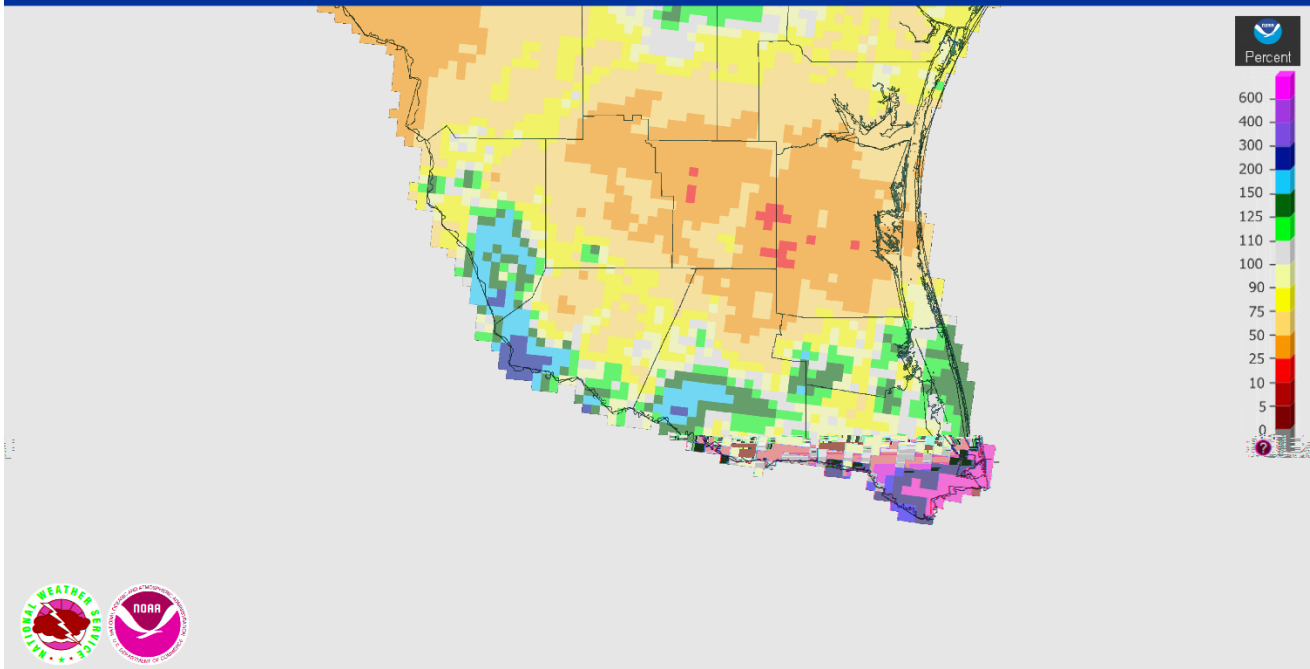
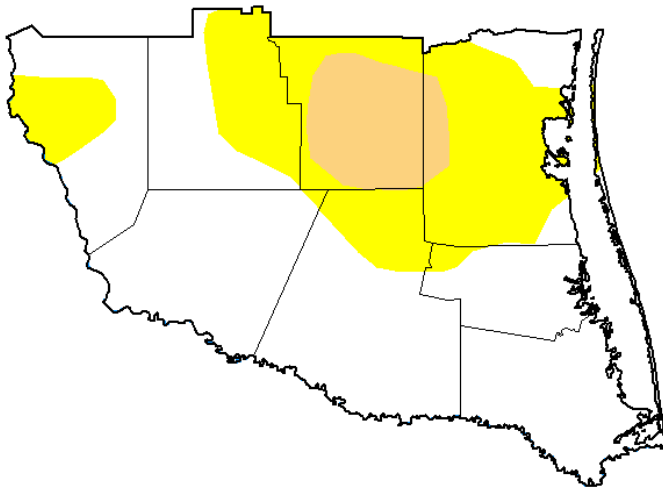


Figure 7. 90-day rainfall percentage of average, via bias corrected data from the Advanced Hydrologic Prediction Service. While data begin in mid-September and end on December 13<sup>th</sup> (7 AM CST), the “donut hole” of low rainfall in Brooks, Kenedy, and northern Hidalgo County clearly shows up with splotches of 10-25 percent of the 1991-2020 average appearing there.

**U.S. Drought Monitor**  
**Brownsville/Rio Grande Valley, TX WFO**

**November 29, 2022**  
(Released Thursday, Dec. 1, 2022)  
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	62.27	37.73	8.67	0.00	0.00	0.00
<b>Last Week</b> 11-22-2022	56.28	43.72	0.00	0.00	0.00	0.00
<b>3 Months Ago</b> 08-30-2022	80.16	19.84	10.70	5.19	3.15	0.00
<b>Start of Calendar Year</b> 01-04-2022	72.63	27.37	4.09	0.00	0.00	0.00
<b>Start of Water Year</b> 09-27-2022	100.00	0.00	0.00	0.00	0.00	0.00
<b>One Year Ago</b> 11-30-2021	81.77	18.23	0.00	0.00	0.00	0.00

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

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[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

Figure 8. U.S. Drought Monitor depiction of the Lower Rio Grande Valley/Deep S. Texas region as of November 29th, 2022.

For Falcon International Reservoir, heavy rainfall from mid-August into early September across headwaters of the Rio Grande Watershed briefly nudged up storage levels that had been in the neighborhood of all-time low values (10.75 percent total storage on August 15<sup>th</sup>) since the dam and reservoir was constituted in 1954 by early October (18.7 percent). Dry weather, without any inflows from an Atlantic or an eastern Pacific tropical cyclone, stopped the rise soon after, and values into November dropped back to 17.8 percent before returning above 18 percent by month's end. These levels were still very low headed into the dry season, including a forecast drier than average winter through mid-spring 2023 – continuing to rival the lowest in the period of record (non-constitution) and just below the values between 1998 and 2002/2003. For the Texas share, the end of November values were below the 30-year low benchmarks, and are an ominous sign for Lower Valley agricultural and some municipal water supplies in the first half of 2023.

Amistad International Reservoir, whose releases can help provide necessary water to help recover some of the lost water in Falcon, fared better from additional rainfall events in the headwaters of the Rio Conchos basin as well as upstream on the Rio Grande into October. Slow rises continued into early November before leveling off. Despite the welcome rainfall, which doubled the percent capacity from a record low (post-constitution in 1971) of 22 percent of capacity on August 15<sup>th</sup> to 45 percent on November 30<sup>th</sup>. Still, the 45 percent capacity was near the end-of-year low 30-year benchmark here as well. With slow reduction expected to resume later in winter and especially into spring 2023, the available water to be released downstream to assist Falcon will be limited.

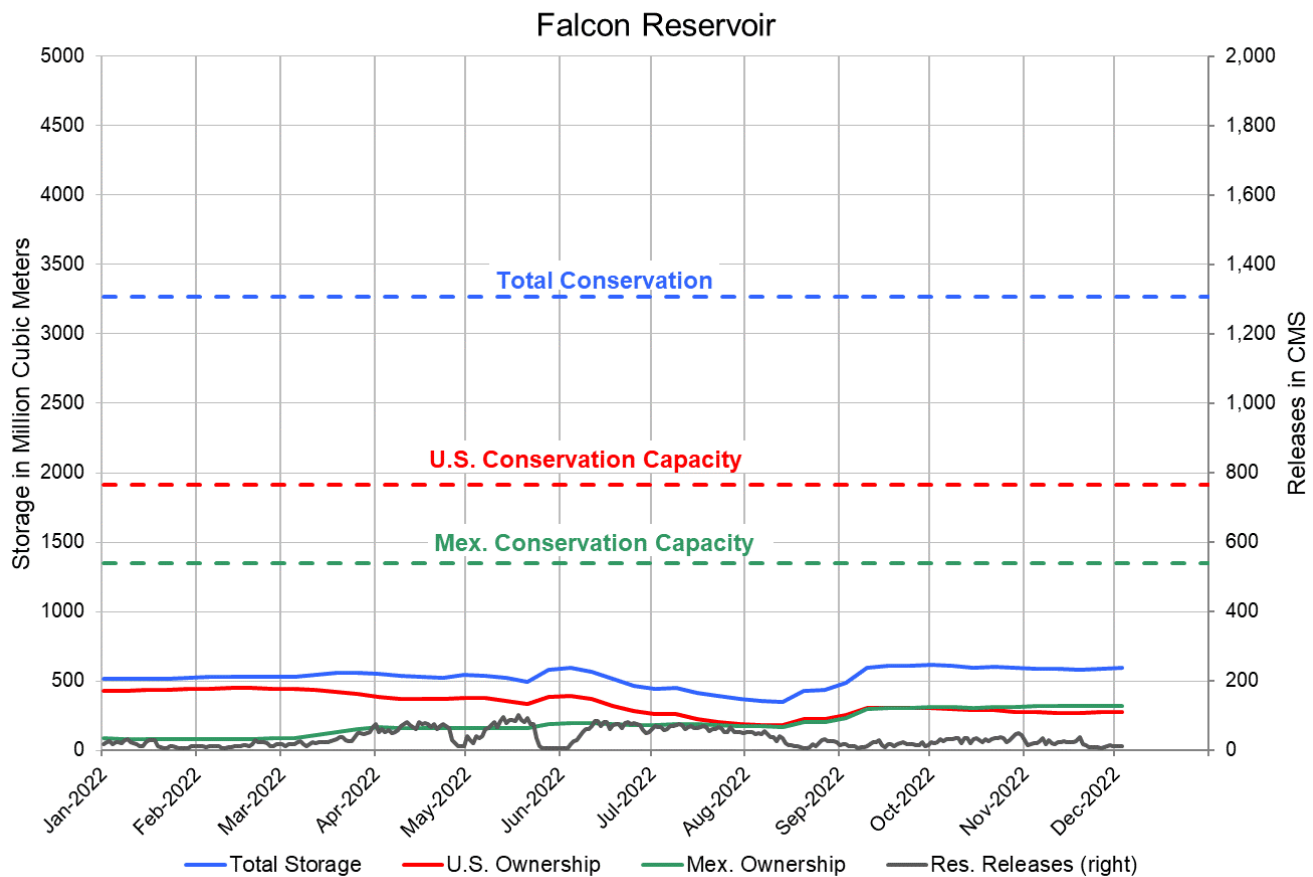


Figure 9. Total, U.S. only, and Mexico only storage levels at Falcon International Reservoir (along the Rio Grande between Zapata County and northwest Tamaulipas State, Mexico) as of the start of December, 2022. Note the rise into early October before leveling off, followed by very slow decreases through November.