

*A candidate who performs satisfactorily on Text A will be placed in AGUSL Prep Reading Level 3. A candidate who performs unsatisfactorily on Text A will be placed in AGUSL Prep Reading Level 1 or 2. A candidate who performs satisfactorily on Text A **AND** on Text B will be exempted from AGUSL Prep Reading. A candidate who performs unsatisfactorily on Text B will be placed either in AGUSL Prep Reading Level 3 or Level 4.*

**Duration: 60 minutes**

**Note that every candidate should bring their own dictionary. It must be of paper/book form (NOT electronic).**

**WARNING: A student who does not have a dictionary will be significantly disadvantaged!**

## Text A

### **Global warming is shrinking river vital to 40,000,000 people**

*By Dan Elliott Associated Press March 01, 2017*

Global warming is already shrinking the Colorado River, the most important waterway in the American Southwest. It could reduce the flow by more than a third by the end of the century. This is according to two scientists. The river's volume has dropped more than 19 percent during a drought that has gripped the region since 2000. A shortage of rain and snow can account for only about two-thirds of that decline. This is according to hydrology researchers Brad Udall of Colorado State University and Jonathan Overpeck of the University of Arizona.

In a study published in the journal *Water Resources Research*, they concluded that the rest of the decline is due to a warming atmosphere induced by climate change. The change is drawing more moisture out of the Colorado River Basin's waterways, snowbanks, plants and soil by evaporation and other means. Their projections could signal big problems for cities and farmers across the 246,000-square-mile basin. The area spans parts of seven states and Mexico. The river supplies water to about 40 million people and 6,300 square miles of farmland.

"Fifteen years into the 21st century, the emerging reality is that climate change is already depleting the Colorado River water supplies at the upper end of the range suggested by previously published projections," the researchers wrote. "Record-setting temperatures are an important and underappreciated component of the flow reductions now being observed."

The Colorado River and its two major reservoirs, Lake Mead and Lake Powell, are already overtaxed. Water storage at Mead was at 42 percent of capacity Feb. 22. Powell was at 46 percent. Water managers have said that Mead could drop low enough to trigger cuts next year in water deliveries to Arizona and Nevada. They would be the first states affected by shortages under the multistate agreements and rules governing the system. But heavy snow in the West this winter may keep the cuts at bay. Snowpack in the Wyoming and Colorado mountains that provide much of the Colorado River's water ranged from 120 to 216 percent of normal. This was as of Feb. 23.

For their study, Udall and Overpeck analyzed temperature, precipitation and water volume in the basin from 2000 to 2014. They compared it with historical data. That included a 1953-1967 drought. Temperature and precipitation records date to 1896. River flow records date to 1906. Temperatures


in the 2000-2014 period were a record 1.6 degrees Fahrenheit above the historical average. Meanwhile, precipitation was about 4.6 percent below, they said. Using existing climate models, the researchers said that such decline in precipitation should have produced a reduction of about 11.4 percent in the river flow. But not in the 19.3 percent that occurred. They concluded that the rest was due to higher temperatures. They increased evaporation from water and soil, sucked more moisture from snow and sent more water from plant leaves into the atmosphere.

Martin Hoerling is a meteorologist at the National Oceanic and Atmospheric Administration who was not involved in the study. He questioned whether the temperature rise from 2000 to 2014 was entirely due to global warming. Some was likely caused by drought, he said. Udall said warming caused by climate change in this century will dwarf any warming caused by drought. He noted that during the 1953-1967 drought, the temperature was less than a half degree warmer than the historical average, compared with 1.6 degrees during the 2000-2014 period.

Udall said climate scientists can predict temperatures with more certainty than they can precipitation, so studying their individual effects on river flow can help water managers. Rain and snowfall in the Colorado River Basin would have to increase 14 percent over the historical average through the rest of the century to offset the effect of rising temperatures, he said.

"We can't say with any certainty that precipitation is going to increase and come to our rescue," Udall said.

1. What could be reduced by more than a third by the end of the century? ***The flow of the Colorado River***
2. How big is the Colorado River Basin? ***246,000-square-miles***
3. How long after the serious 20th century drought did the current regional drought start? ***33 years***
4. How many years after the serious 20th century drought did the current regional drought start? ***33***
5. According to Udell and Overpeck, what fraction of the decrease in the river's volume is due to global warming? ***One third***
6. What is an appropriate dictionary definition for the word *drop* as it used in this text? ***fall/decrease (in an intransitive sense)***
7. What is Mead? ***A lake***
8. Which word in the text means *a period with (almost) no rain*? ***drought***
9. What is Jonathan Overpeck's academic specialization? ***Hydrology***
10. What is the name of the weather expert who is cited here? ***(Martin) Hoerling***
11. Which word in the text means *not sufficiently valued*? ***Underappreciated***
12. Find words in the text to complete the table below:

<i>Find words in the text to complete the table.</i>						
<b>H<sub>2</sub>O</b>	a general word for <i>river or canal</i>	Another word for <i>wetness or water content</i>	a general word for <i>rain and snow</i>	a lake behind a dam	The study of water movement	When water gets hot and changes into a gas
	<b>waterway</b>	<b>moisture</b>	<b>precipitation</b>	<b>reservoir</b>	<b>hydrology</b>	<b>evaporation</b>
	Not enough of something	To get smaller	To make something less	Reduction	To reduce the stock of something	To make something seem smaller
	<b>shortage</b>	<b>shrink</b>	<b>reduce</b>	<b>decline</b>	<b>deplete</b>	<b>dwarf</b>

### **Text B**      **Cybersecurity firm fails to find links between Donald Trump and Russian bank**

*Julian Borger in Washington DC*

Tuesday 1 November 2016 22.17 GMT Last modified on Thursday 3 November 2016 15.26 GMT

A US cybersecurity firm hired by a Russian bank to investigate allegations of a secret line of communication with the Trump Organization said on Tuesday there was no evidence so far of substantive contact, email or financial links.

Mandiant, which is owned by the California-based company FireEye, said it examined internet server logs presented to the bank by media organisations investigating the link.

The online magazine Slate published a story on Monday about communication between a server hosting Trump domain addresses and a server owned by the Moscow-based Alfa Bank, owned by two oligarchs, Mikhail Fridman and Pyotr Aven. Aven worked with Vladimir Putin in city government in St Petersburg in the early 1990s.

The Slate story, quoting a range of cybersecurity experts, said the communication between the servers suggested it was human rather than robotic, and that it was intended to be secret and exclusive.

In a statement, FireEye said it had been presented with a log of the communication between the servers over a period of 90 days, listing the separate contacts.

“The information presented is inconclusive and is not evidence of substantive contact or a direct email or financial link between Alfa Bank and the Trump campaign or Organization,” the statement said. “The list presented does not contain enough information to show that there has been any actual activity opposed to simple DNS lookups, which can come from a variety of sources including anti-spam and other security software.”

The statement continued: “As part of the ongoing investigation, Alfa Bank has opened its IT systems to Mandiant, which has investigated both remotely and on the ground in Moscow. We are continuing our investigation. Nothing we have or have found alters our view as described above that there isn’t

evidence of substantive contact or a direct email or financial link between Alfa Bank and the Trump campaign or Organization.”

The allegations have triggered debate among security experts in the US, in the midst of a fierce political row over the role of the FBI. Democrats have decried the decision of the FBI director, James Comey, to notify Congress of the discovery of new emails relevant to its inquiry into Hillary Clinton’s use of a private server while secretary of state, without making public parallel investigations into Trump’s ties to Russia.

Computer scientists quoted in the Slate story said that the Trump server had a capacity for mass email but was only being used for a small amount of traffic, nearly 90% of which was with servers from a single organisation, Alfa Bank.

“The parties were communicating in a secretive fashion. The operative word is secretive. This is more akin to what criminal syndicates do if they are putting together a project,” said Paul Vixie, a software expert and one of the creators of the domain name system (DNS) that guides communication on the internet.

Robert Graham, a cybersecurity expert and head of Errata Security, dismissed the claims as “nonsense”. He said the domain in question, trump-email.com, was actually controlled by Cendyn, a company that handles marketing for hotels, including Trump’s hotels.

Graham also argued that there was no sign of human communication between the servers, which appeared to be looking up each other’s IP (internet protocol) addresses, the first step towards establishing communication. The logs show that two Alfa Bank servers sent a total of more than 2,700 lookup requests to the Trump email server.

Donald Trump: Hillary Clinton has 'no right to be running' – as it happened

Follow along for the latest updates from the trail, as Donald Trump, Hillary Clinton and co engage in a last-minute sprint across battleground states

“The requests are spread out evenly throughout the day, with no correlation to time zones,” Graham said in an email. “This would indicate automated tools looking up incoming spam addresses, not humans sending email. If it were sign of human activity, we would see spikes around 9am when people got to work and 1pm when they got back from lunch.”

John Bambenek, a consultant with Fidelis Cybersecurity, who has also studied the logs, said there were unanswered questions about their provenance and authenticity.

“The identity of the person bringing the data can be more important than the data,” Bambenek said. “I’m suspicious of the claims that this was gathered legally. They tell an interesting story, but it’s not clear whether there is selection or filter applied ... I smell smoke. I just don’t know where the smoke is coming from.’

L Jean Camp, a professor of informatics at Indiana University, said there were still a lot of unanswered questions about the communication between the servers.

“It doesn’t act like a marketing server. Because you wouldn’t use a heavy-duty mailer with over 80% of its communication with just one organisation,” Camp said. “I don’t know of any marketing campaign that would do that.”

According to Slate, the Trump email domain was hastily reconfigured after a New York Times reporter approached Alfa Bank about the connection in September. On Tuesday, the New York Times

reported that the FBI had spent weeks looking into the Alfa-Trump logs but concluded that “there could be an innocuous explanation, like a marketing email or spam, for the computer contacts”.

**TEXT B**

1. Why do you think the Russian bank hired Mandiant, a US company, to carry out their investigation?

**To appear objective / to show no bias / more credibility**

2. Which publication carried the story about the link between the Trump and Alfa Bank email servers?

**Slate**

3. Is a “lookup request” a human activity?

**No / it is automatic / computer**

4. According to one of the experts, there is no link between the lookup requests and \_\_\_\_\_ (two words)

**Time zones**

5. According to Robert Graham, what are the busiest times for people to send emails?

**9am and 1pm / start of work and lunch time**

6. Which person said the following? Match the person’s **paraphrased** statement to their initials.

LJC (L Jean Camp)

FE (FireEye)

JB (John Bambenek)

RG (Robert Graham)

PV (Paul Vixie)

*Example: “According to what we’ve found, there’s no proof of a link” \_\_FE\_\_*

- I. There clearly aren’t humans involved in interactions between the servers. \_\_\_\_\_ **RG**
- II. I don’t know of any company that would send more than three-quarters of its advertising emails to one place. \_\_\_\_\_ **LJC**
- III. I’m pretty unsure about this, but I don’t know exactly why. \_\_\_\_\_ **JB**

IV. This is the kind of behavior I would expect from the mafia. \_\_\_\_\_ **PV**

V. We think that there isn't sufficient detail to suggest anything more than routine, automated activity. \_\_\_\_\_ **FE**

7. **In the context of the article**, what is the meaning of "operative"? (You may copy a definition from your dictionary)

8. Why did the FBI decide to close its investigation into Alfa-Trump logs?

**Concluded it was likely innocuous / spam / marketing /**