Where Water Went

Use geographic evidence to trace change in the Aral Sea.

WG.P.2.3 "Demonstrate a mastery of geographic concepts and the use of geographic tools to understand the impact of geography on the past and present. Actively engage in asking and answering geographic questions by acquiring, organizing..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline details that show where the water changed, circle decisions that affected the water, and number the different sources of evidence. Use your marks to connect the decisions with their effects.

The Changing Aral Sea

1. In 1960, the Aral Sea spread across a dry region between what are now Kazakhstan and Uzbekistan. The Syr Darya entered from the northeast, and the Amu Darya entered from the south. Survey maps from that period show a continuous lake, with fishing towns on its shore. Beginning in the 1960s, Soviet planners expanded cotton farming and sent river water into irrigation canals. Canal records document the growing diversion, but they do not show every change in the lake's shape. The region's hot, dry climate makes incoming river water especially important because evaporation removes water from the lake.

2. Satellite images taken decades later show that the shoreline retreated and the lake split into northern and southern sections. The images reveal exposed lakebed where the older survey maps show water, but an image alone cannot establish why the change occurred. Comparing the images with canal records links the retreat to reduced river flow. Fishing communities lost access to water as some former ports ended up far from the shore. Wind can lift salt and dust from the exposed bed, affecting nearby farmland and air quality. Reports from fishing communities add evidence about lost jobs, a change that shoreline images cannot measure.

3. In 2005, Kazakhstan completed the Kok-Aral Dam to hold more Syr Darya water in the northern section. Later satellite images show water covering part of the previously exposed northern lakebed, and field measurements show lower salinity there. Fish stocks also recovered enough to support some fishing. The southern section, which depends largely on the Amu Darya, remains much smaller than in 1960. The dam held water in one section rather than restoring the whole sea. To evaluate whether this policy worked for people and the environment, compare shoreline images, salinity measurements, and fishing records from the same places and years.

2 ANSWER WITH EVIDENCE

Use the passage

1. What spatial change appears when the 1960 survey maps are compared with later satellite images, and what did it mean for some ports?

2. How did the location of the rivers and the dry climate make the irrigation decision especially consequential for the Aral Sea?

3. What difference between the northern and southern sections shows that the dam did not restore the whole sea?

4. A satellite image shows water returning to the north. What two other kinds of evidence would help you evaluate whether water quality and livelihoods improved?

3 YOUR TURN

Your own words

Propose a location near the northern or southern former shoreline for a small wetland restoration project. In five to seven sentences, state a geographic question, name at least two kinds of evidence you would collect, and explain a likely benefit, a tradeoff for farmers or fishers, and how you would test your prediction.

Where Water Went

PART 1 · READ AND MARK

Underline details that show where the water changed, circle decisions that affected the water, and number the different sources of evidence. Use your marks to connect the decisions with their effects. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What spatial change appears when the 1960 survey maps are compared with later satellite images, and what did it mean for some ports?	**The continuous lake retreated and split into northern and southern sections. Some former ports ended up far from the shore.**
2	How did the location of the rivers and the dry climate make the irrigation decision especially consequential for the Aral Sea?	**The two rivers supplied the lake from the northeast and south. Diverting their water reduced the lake's supply in a hot, dry region where evaporation already removed water.**
3	What difference between the northern and southern sections shows that the dam did not restore the whole sea?	**Some water returned to the northern section after the dam held Syr Darya water there, but the southern section remained much smaller than it was in 1960.**
4	A satellite image shows water returning to the north. What two other kinds of evidence would help you evaluate whether water quality and livelihoods improved?	**Salinity measurements would show changes in water quality, and fishing records would show whether fishing livelihoods improved.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I would test a small wetland near the southern section where the Amu Darya reaches the former shore. My question is whether sending some river water there would cover exposed lakebed without sharply reducing irrigation supplies. I would compare satellite images from before and after the project to measure the area covered by water. I would also collect dust readings and canal flow records from the same months each year. The wetland might reduce blowing dust, but farmers might receive less water. I would support expanding it only if dust readings fell while canal flows stayed high enough for farms.

Accept different proposed sites if the response connects location, evidence, a benefit, and a tradeoff. Predictions should be testable with the evidence the student names.