Student Name: **Course:** **Grade:**

SHORELINE PROCESSES - FIELDTRIP #3 WORKSHEET

OBSERVATIONS AND ANALYSES OF AN ENCINITAS SHORELINE

NATURE AND ORIGIN OF OUR BEACHES

1. What exactly is a beach?_____

_____

2. What is the Oceanside beach sand cell or compartment?_____

_____

3. Where does the sand on our beaches naturally come from? List the two major sources.

_____ and _____

4 What is the most abundant mineral that makes up our beach sand? _____

5. Sand will eventually leave the beach sand cell permanently at the down-drift end of the beach sand cell. Name the offshore seafloor feature that eats beach sand for breakfast, lunch and dinner.

_____. What's at the end of the Oceanside beach sand cell? _____

MOVEMENT AND MIGRATION OF BEACH SAND

LONGSHORE MOVEMENT OF WATER AND SAND

6. Beaches are actually "rivers of sand" that slowly move parallel to the shoreline over time.

The scientific term for shore-parallel migration of sand is called the _____ _____.

7. The scientific term for the shore-parallel movement of water in the surf that works to carry the sand laterally along the shore is called the _____ _____.

8. What causes a longshore current?_____

9. On our west coast here, the predominant current direction is _____ to _____.

Why is that? _____.

OBSERVATIONS OF THE LITTORAL AND RIP CURRENTS

10. Longshore current present? _____ If yes, then which direction?: _____ to _____

11. Does longshore current direction agree with the predominant swell direction (angle)? _____

12. Rip currents present? _____ If yes: Number?_____ Intensity? _____

13. What affects might rip currents have on the beach sand? _____

SEASONAL CHANGES TO THE BEACH

14. What's the difference between a beach's "Winter Profile" versus its "Summer Profile"?

"Winter Profile":_____

"Summer Profile":_____

15. What conditions cause this seasonal change? _____

16. Which profile does the beach most likely have right now? _____

BLUFF ROCK GEOLOGY AND ERODABILITY: LOCAL SOURCE OF BEACH SAND

17. List the geologic names and ages for the two rock formations making up the bluff.

	Rock Formation Name	Age	Rock Type	Erodability Factor
On Top:				
Bottom:				

18. Which rock unit appears the most erosion-resistant (steepest part of bluff)? _____

19. Which rock unit appears the most erosion-prone (angled part of bluff)? _____

20. Any evidence of active weathering and erosion occurring on the bluff? In other words, does it appear that the bluffs are a significant source of sand for the beach? Yes? No? _____
Describe and explain below your conclusions using your observations as evidence:

_____

PROCESSES AND ACTIVITIES THAT AFFECT THE RATE OF SEA BLUFF EROSION

21. List four (4) processes (natural and human-related) that **help cause** bluff erosion?

a) _____ **b)**_____ **c)** _____ **d)** _____

22. Which process above appears to be the most affective in causing local bluff erosion? How?

_____

23. List four (4) processes (natural and human-related) that **help reduce/prevent** bluff erosion?

a) _____ **b)**_____ **c)** _____ **d)** _____

24. Which process above appears most affective in eliminating or reducing bluff erosion? How?

_____

HUMAN-MADE SEAWALL STRUCTURES:

25. What types of materials are used in the construction of seawalls?

a) _____ **b)** _____ **c)** _____, **d)** _____

26. What appears to be the seawall's primary intended purpose? _____

27. List the two distinct types of seawalls built along here. Can you tell the difference between them?

a) _____ **b)** _____

28. Does it appear that they are doing their job? Explain in some depth. _____

_____

_____

_____

29. List the disadvantages that rip-rap has over cement and rebar seawalls in protecting bluffs.

a) _____ **b)** _____

30. List the three negative effects (direct or indirect) that seawalls have on the beach. In other words, how could seawalls adversely affect the beach sand supply and beach stability?

a) _____ **b)** _____ **c)** _____

31. Estimate the cost to construct a seawall. $ _____ to $_____ per linear foot

32. If you were a bluff-top homeowner with a failing bluff, what types of actions would you take?

_____

_____

POST TRIP REFLECTION:

33. Purpose of trip: _____

_____

_____

34. What did you discover on this trip? _____

_____

_____

_____

_____

35. What did you find most interesting and/or important? _____

_____

_____

_____

_____

36. What did you find most difficult or challenging? _____

_____

_____

_____