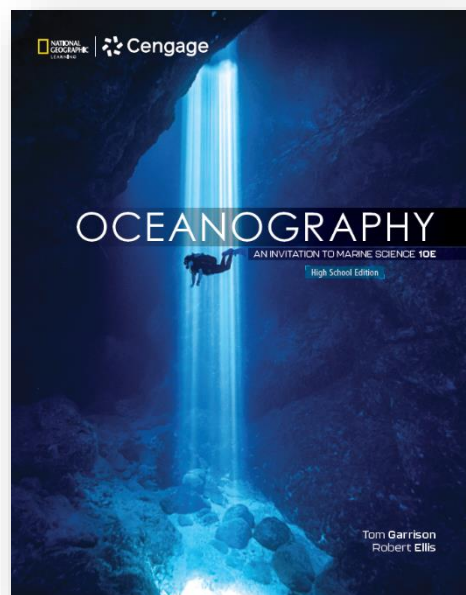




Oceanography: An Invitation to Marine Science, High School Edition

by Tom Garrison and Robert Ellis, 10th Edition ©2024

Correlation to the TEKS



A Correlation of *Oceanography: An Invitation to Marine Science HS* to the TEKS for Aquatic Science

TEKS for Aquatic Science	<i>Oceanography: An Invitation to Marine Science High School</i>
(1) Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to explain phenomena or design solutions using appropriate tools and models. The student is expected to:	
(A) ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	SE page 7 (Narrative) SFLP page L7 (Narrative) SFLP page L15 (Instructional/Assessment) Lab 1 page L19 (Narrative) Lab 1 pages L21-L23 (Instructional/Assessment) Lab 10 pages L137-L139 (Instructional/Assessment) Lab 11 pages L147-L150 (Instructional/Assessment)
(i) ask questions based on observations or information from text, phenomena, models, or investigations;	SE page 7 (Narrative) SFLP page L7 (Narrative) SFLP page L15 (Instructional/Assessment) Lab 1 page L19 (Narrative) Lab 1 pages L21-L23 (Instructional/Assessment) Lab 10 pages L137-L139 (Instructional/Assessment) Lab 11 pages L147-L150 (Instructional/Assessment)
(ii) define problems based on observations or information from text, phenomena, models, or investigations;	SE page 7 (Narrative) SFLP page L7 (Narrative) SFLP page L15 (Instructional/Assessment) Lab 1 page L19 (Narrative) Lab 1 pages L21-L23 (Instructional/Assessment) Lab 10 pages L137-L139 (Instructional/Assessment) Lab 11 pages L147-L150 (Instructional/Assessment)
(B) apply scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems;	SFLP pages L7-L8 (Narrative) SFLP pages L14-L15 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative; this citation only mentions experimental investigations) Lab 1 pages L22-L25 (Instructional/Assessment) Lab 10 pages L133-L141 (Instructional/Assessment) Lab 11 pages L150-L158 (Instructional/Assessment)
(i) apply scientific practices to plan descriptive investigations	SFLP pages L7-L8 (Narrative) SFLP page L14 (Instructional/Assessment)

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(ii) apply scientific practices to plan comparative investigations	SFLP pages L7-L8 (Narrative) SFLP page L15 (Instructional/Assessment)
(iii) apply scientific practices to plan experimental investigations	SE page 7 (Narrative) SFLP pages L7-L8 (Narrative) SFLP page L15 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 1 pages L22-L25 (Instructional/Assessment) Lab 10 pages L133-L141 (Instructional/Assessment) Lab 11 pages L150-L158 (Instructional/Assessment)
(iv) apply scientific practices to conduct descriptive investigations	SFLP pages L7-L8 (Narrative) SFLP page L14 (Instructional/Assessment)
(v) apply scientific practices to conduct comparative investigations	SFLP pages L7-L8 (Narrative) SFLP page L15 (Instructional/Assessment)
(vi) apply scientific practices to conduct experimental investigations	SE page 7 (Narrative) SFLP pages L7-L8 (Narrative) SFLP page L15 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 1 pages L22-L25 (Instructional/Assessment) Lab 10 pages L133-L141 (Instructional/Assessment) Lab 11 pages L150-L158 (Instructional/Assessment)
(vii) use engineering practices to design solutions to problems	SFLP page L8 (Narrative) SFLP page L14 (Instructional/Assessment)
(C) use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards;	SFLP pages L8-L10 (Narrative) L5 pages L73-L74 (Instructional/Assessment) L6 page L85 (Instructional/Assessment) L8 page L112 (Instructional/Assessment) L9 page L122 (Instructional/Assessment) L9 page L122 (Narrative) L13 page L184 (Narrative)

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(i) use appropriate safety equipment during laboratory investigations as outlined in Texas Education Agency-approved safety standards	SFLP pages L8-L9 (Narrative) L5 pages L73-74 (Instructional/Assessment) L6 page L85 (Instructional/Assessment) L8 page L112 (Instructional/Assessment) L9 page L122 (Narrative)
(ii) use appropriate safety equipment during classroom investigations as outlined in Texas Education Agency-approved safety standards	SFLP pages L8-L9 (Narrative) L5 pages L73-L74 (Instructional/Assessment) L6 page L85 (Instructional/Assessment) L8 page L112 (Instructional/Assessment) L9 page L122 (Narrative)
(iii) use appropriate safety equipment during field investigations as outlined in Texas Education Agency-approved safety standards	SFLP pages L9-L10 (Narrative) SFLP page L14 (Instructional/Assessment) L13 page L184 (Narrative) Lab 13 page L184 (Instructional/Assessment)
(iv) use appropriate safety practices during laboratory investigations as outlined in Texas Education Agency-approved safety standards	SFLP pages L8-L9 (Narrative) L5 pages L73-L74 (Instructional/Assessment) L6 page L85 (Instructional/Assessment) L8 page L112 (Instructional/Assessment) L9 page L122 (Narrative)
(v) use appropriate safety practices during classroom investigations as outlined in Texas Education Agency-approved safety standards	SFLP pages L8-L9 (Narrative) L5 pages L73-L74 (Instructional/Assessment) L6 page L85 (Instructional/Assessment) L8 page L112 (Instructional/Assessment) L9 page L122 (Narrative)
(vi) use appropriate safety practices during field investigations as outlined in Texas Education Agency-approved safety standards	SFLP pages L9-L10 (Narrative) SFLP page L14 (Instructional/Assessment) L13 page L184 (Instructional/Assessment) L13 page L184 (Narrative)
(D) use appropriate tools such as Global Positioning System (GPS), Geographic Information System (GIS), weather balloons, buoys, water testing kits, meter sticks, metric rulers, pipettes, graduated cylinders, standard laboratory glassware, balances, timing devices, pH meters or probes, various data collecting probes, thermometers, calculators, computers, internet access, turbidity testing devices, hand magnifiers, work and disposable gloves, compasses, first aid kits,	Lab 1 pages L31-L33 (Instructional/Assessment) Lab 5 pages L46-L49 (Narrative) Lab 5 pages L46-L53 (Instructional/Assessment) Lab 6 page L78 (Narrative) Lab 6 pages L78-L87 (Instructional/Assessment) Lab 10 pages L135-L140 (Instructional/Assessment) Lab 16 pages L229-L232 (Instructional/Assessment)

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<p>field guides, water quality test kits or probes, 30-meter tape measures, tarps, ripple tanks, trowels, screens, buckets, sediment samples equipment, cameras, flow meters, cast nets, kick nets, seines, computer models, spectrophotometers, stereomicroscopes, compound microscopes, clinometers, and field journals, various prepared slides, hand lenses, hot plates, Petri dishes, sampling nets, waders, leveling grade rods (Jason sticks), protractors, inclination and height distance calculators, samples of biological specimens or structures, core sampling equipment, fish tanks and associated supplies, and hydrometers;</p>	
<p>(i) use appropriate tools</p>	<p>Lab 1 pages L31-L33 (Instructional/Assessment) Lab 5 pages L46-L49 (Narrative) Lab 5 pages L46-L53 (Instructional/Assessment) Lab 6 page L78 (Narrative) Lab 6 pages L78-L87 (Instructional/Assessment) Lab 10 pages L135-L140 (Instructional/Assessment) Lab 16 pages L229-L232 (Instructional/Assessment)</p>
<p>(E) collect quantitative data using the International System of Units (SI) and qualitative data as evidence;</p>	<p>SFLP page L7 (Narrative) SFLP page L16 (Instructional/Assessment) Lab 1 pages L26-27 (Narrative) Lab 1 pages 31-33 (Instructional/Assessment) Lab 9 pages 126-129 (Instructional/Assessment) Lab 12 pages 185-189 (Instructional/Assessment)</p>
<p>(i) collect quantitative data using the International System of Units (SI)</p>	<p>SFLP page L7 (Narrative) SFLP page L16 (Instructional/Assessment) Lab 1 pages L26-L27 (Narrative) Lab 1 pages L31-L33 (Instructional/Assessment) Lab 9 pages L126-L129 (Instructional/Assessment) Lab 12 pages L185-L189 (Instructional/Assessment)</p>
<p>(ii) collect qualitative data as evidence</p>	<p>SFLP page L7 (Narrative) SFLP page L15 (Instructional/Assessment) SFLP page L16 (Instructional/Assessment)</p>
<p>(F) organize quantitative and qualitative data using probeware, spreadsheets, lab notebooks or journals, models, diagrams, graphs paper, computers, or cellphone applications;</p>	<p>SFLP pages L11-L12 (Narrative) SFLP page L16 (Instructional/Assessment) Lab 3 pages L51-L52 (Instructional/Assessment) Lab 5 pages L51-L52 (Instructional/Assessment) Lab 6 pages L81-L86 (Instructional/Assessment) Lab 7 pages L93-L104 (Instructional/Assessment) Lab 11 pages L155-L156 (Instructional/Assessment)</p>

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(i) organize quantitative data using probeware, spreadsheets, lab notebooks or journals, models, diagrams, graphs paper, computers, or cellphone applications	SFLP pages L11-L12 (Narrative) SFLP page L16 (Instructional/Assessment) Lab 3 pages L51-L52 (Instructional/Assessment) Lab 11 pages L155-L156 (Instructional/Assessment)
(ii) organize qualitative data using probeware, spreadsheets, lab notebooks or journals, models, diagrams, graphs paper, computers, or cellphone applications	SFLP pages L11-L12 (Narrative) SFLP page L16 (Instructional/Assessment) Lab 6 pages L81-L86 (Instructional/Assessment) Lab 11 pages L155-L156 (Instructional/Assessment)
(G) develop and use models to represent phenomena, systems, processes, or solutions to engineering problems; and	SFLP page L11 (Narrative) Lab 8 pages L109-L116 (Instructional/Assessment) Lab 16 pages L225-L231 (Instructional/Assessment) SE Appendix 4 pages 584-585 (Narrative)
(i) develop models to represent phenomena, systems, processes, or solutions to engineering problems	SFLP page L11 (Narrative) Lab 8 pages L113, L115 (Instructional/Assessment) Lab 11 pages L155-L156 (Instructional/Assessment) SE Appendix 4 pages 584-585 (Narrative)
(ii) use models to represent phenomena, systems, processes, or solutions to engineering problems	SFLP page L11 (Narrative) Lab 8 pages L112, L114 (Instructional/Assessment) Lab 16 pages L225-L231 (Instructional/Assessment) SE Appendix 4 pages 584-585 (Narrative)
(H) distinguish between scientific hypotheses, theories, and laws.	SFLP page L6 (Narrative) SFLP page L13 (Instructional/Assessment) SE pages 7-8 (Narrative) SE page 9 (Instructional/Assessment)
(i) distinguish between scientific hypotheses, theories, and laws.	SFLP page L6 (Narrative) SFLP page L13 (Instructional/Assessment) SE pages 7-8 (Narrative) SE page 9 (Instructional/Assessment)
(2) Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:	

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(A) identify advantages and limitations of models such as their size, scale, properties, and materials;	SFLP page L11 (Narrative) SFLP page L14 (Instructional/Assessment) SE pages 561-566 (Narrative)
(i) identify advantages of models such as their size, scale, properties, and materials;	SFLP page L11 (Narrative) SE pages 561-566 (Narrative) SE page 567 (Instructional/Assessment; Concept Check) Appendix 4, page 585 (Narrative)
(ii) identify limitations of models such as their size, scale, properties, and materials;	SFLP page L11 (Narrative) SFLP page L14 (Instructional/Assessment) SE pages 561-566 (Narrative) Appendix 4 page 585 (Narrative)
(B) analyze data by identifying significant statistical features, patterns, sources of error, and limitations;	SFLP pages L7-L8 (Narrative) SFLP pages L13-L14 (Instructional/Assessment) Lab 1 page L19 (Narrative) Lab 2 pages L35-L44 (Instructional/Assessment) Lab 15 pages L208-L216 (Instructional/Assessment)
(i) analyze data by identifying significant statistical features	SFLP page L14 (Instructional/Assessment) Lab 2 pages L38-L39 (Narrative) Lab 2 page L44 (Instructional/Assessment; Question #1) Lab 15 pages L208-L216 (Instructional/Assessment)
(ii) analyze data by identifying patterns;	SE page 8 (Narrative) SFLP page L8 (Narrative) Lab 2 page L44 (Instructional/Assessment; Question #1) Lab 12 page L168 (Instructional/Assessment; Question #1)
(iii) analyze data by identifying sources of error;	SFLP page L7 (Narrative) Lab 1 page L19 (Narrative) Lab 5 page L76 (Instructional/Assessment; Question #3) Lab 12 page L175 (Instructional/Assessment; Question #5)
(iv) analyze data by identifying limitations;	SFLP page L7 (Narrative) Lab 1 page L19 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 2 page L38 (Instructional/Assessment) Lab 11 page L150 (Instructional/Assessment; Question #4) L 18 page L257 (Narrative)
(C) use mathematical calculations to assess quantitative relationships in data; and	Lab 1 pages L34-L40 (Instructional/Assessment) Lab 2 pages L38-L39 (Narrative) Lab 2 pages L40-L44 (Instructional/Assessment) Lab 12 page L171 (Narrative) Lab 12 pages L172-L173 (Instructional/Assessment) Lab 14 pages L202-L203 (Instructional/Assessment) Lab 18 pages L258-L260 (Instructional/Assessment)
(i) use mathematical calculations to assess quantitative relationships in data	Lab 1 pages L34-L40 (Instructional/Assessment) Lab 2 pages L38-L39 (Narrative) Lab 2 pages L40-L44 (Instructional/Assessment) Lab 12 page L171 (Narrative)

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	Lab 12 pages L172-L173 (Instructional/Assessment) Lab 14 pages L202-L203 (Instructional/Assessment) Lab 18 pages L258-L260 (Instructional/Assessment)
(D) evaluate experimental and engineering designs.	SFLP pages L7-L8 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 11 page L157 (Instructional/Assessment) SE page 517 (Instructional/Assessment; Concept Check)
(i) evaluate experimental designs.	SFLP pages L7-L8 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 11 page L157 (Instructional/Assessment)
(ii) evaluate engineering designs.	SFLP page L8 (Narrative) SFLP page L14 (Instructional/Assessment) SE page 517 (Instructional/Assessment)
(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:	
(A) develop explanations and propose solutions supported by data and models consistent with scientific ideas, principles, and theories;	SFLP pages L6-L8 (Narrative) SFLP pages L14-L15 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 10 page L141 (Instructional/Assessment) Lab 11 page L158 (Instructional/Assessment) Lab 16 page L234 (Instructional/Assessment) Lab 18 page L246 (Instructional/Assessment)
(i) develop explanations supported by data consistent with scientific ideas	SFLP pages L6-L8 (Narrative) SFLP page L15 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 11 page L158 (Instructional/Assessment)
(ii) develop explanations supported by data consistent with scientific principles	SFLP pages L6-L8 (Narrative) SFLP page L15 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 11 page L158 (Instructional/Assessment)
(iii) develop explanations supported by data consistent with scientific theories	SFLP pages L6-L8 (Narrative) SFLP page L15 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 11 page L158 (Instructional/Assessment)
(iv) develop explanations supported by models consistent with scientific ideas	SFLP pages L6-L8 (Narrative) Lab 1 pages L17-L19 (Narrative) Lab 10 page L141 (Instructional/Assessment) Lab 18 page L246 (Instructional/Assessment)
(v) develop explanations supported by models consistent with scientific principles	SFLP pages L6-L8 (Narrative) Lab 1 pages L17-L19 (Narrative) Lab 10 page L141 (Instructional/Assessment) Lab 18 page L246 (Instructional/Assessment))
(vi) develop explanations supported by models consistent with scientific theories	SFLP pages L6-L8 (Narrative) Lab 1 pages L17-L19 (Narrative) Lab 10 page L141 (Instructional/Assessment) Lab 18 page L246 (Instructional/Assessment)
(vii) propose solutions supported by data consistent with scientific ideas	SFLP pages L6-L8 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative)
(viii) propose solutions supported by data consistent with scientific principles	SFLP pages L6-L8 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative)

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(ix) propose solutions supported by data consistent with scientific theories	SFLP pages L6-L8 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative)
(x) propose solutions supported by models consistent with scientific ideas	SFLP pages L6-L8 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative)
(xi) propose solutions supported by models consistent with scientific principles	SFLP pages L6-L8 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative)
(xii) propose solutions supported by models consistent with scientific theories	SFLP pages L6-L8 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative)
(B) communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and	SFLP pages L10-L11 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 10 page L141 (Instructional/Assessment) Lab 11 page L158 (Instructional/Assessment) Lab 16 page L234 (Instructional/Assessment)
(i) communicate explanations individually in a variety of settings	SFLP pages L10-L11 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 10 page L141 (Instructional/Assessment)
(ii) communicate explanations individually in a variety of formats	SFLP pages L10-L11 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 10 page L141 (Instructional/Assessment)
(iii) communicate explanations collaboratively in a variety of settings	SFLP pages L10-L11 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 11 page L158 (Instructional/Assessment)
(iv) communicate explanations collaboratively in a variety of formats	SFLP pages L10-L11 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 11 page L158 (Instructional/Assessment)
(v) communicate solutions individually in a variety of settings	SFLP pages L10-L11 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 16 page L234 (Instructional/Assessment)
(vii) communicate solutions collaboratively in a variety of settings	SFLP pages L10-L11 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 16 page L234 (Instructional/Assessment)
(viii) communicate solutions collaboratively in a variety of formats	SFLP pages L10-L11 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 16 page L234 (Instructional/Assessment)
(C) engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence.	SFLP pages L10-L11 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 10 page L141 (Instructional/Assessment)
(i) engage respectfully in scientific argumentation using applied scientific explanations	SFLP pages L10-L11 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 10 page L141 (Instructional/Assessment)

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(ii) engage respectfully in scientific argumentation using applied empirical evidence.	SFLP pages L10-L11 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 1 pages L17-L19 (Narrative) Lab 10 page L141 (Instructional/Assessment)
(4) Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:	
(A) analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student;	SFLP pages L6-L8 (Narrative) SFLP page L14 (Instructional/Assessment) SE pages 7-8 (Narrative) SE page 60 (Instructional/Assessment) SE page 106 (Instructional/Assessment) SE page 573 (Instructional/Assessment)
(i) analyze scientific explanations and solutions by using empirical evidence so as to encourage critical thinking by the student	SFLP page L6 (Narrative) SFLP page L14 (Instructional/Assessment) SE pages 7-8 (Narrative) SE page 60 (Instructional/Assessment) SE page 106 (Instructional/Assessment)
(ii) analyze scientific explanations and solutions by using logical reasoning so as to encourage critical thinking by the student	SFLP page L7 (Narrative) SFLP page L14 (Instructional/Assessment) SFLP page L16 (Instructional/Assessment) SE pages 7-8 (Narrative) SE page 573 (Instructional/Assessment)
(iii) analyze scientific explanations and solutions by using experimental testing so as to encourage critical thinking by the student	SE pages 7-8 (Narrative) SFLP pages L7-L8 (Narrative) SFLP page L14 (Instructional/Assessment) SFLP page L15 (Instructional/Assessment) Lab 16 pages L229-L231 (Instructional/Assessment)
(iv) analyze scientific explanations and solutions by using observational testing so as to encourage critical thinking by the student	SE pages 7-8 (Narrative) SFLP page L8 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 11 pages 145-157 (Instructional/Assessment)
(v) evaluate scientific explanations and solutions by using empirical evidence so as to encourage critical thinking by the student	SFLP page L6 (Narrative) SFLP page L14 (Instructional/Assessment) SE pages 7-8 (Narrative) SE page 60 (Instructional/Assessment) SE page 106 (Instructional/Assessment)
(vi) evaluate scientific explanations and solutions by using logical reasoning so as to encourage critical thinking by the student	SFLP page L7 (Narrative) SFLP page L14 (Instructional/Assessment) SFLP page L16 (Instructional/Assessment) SE pages 7-8 (Narrative) SE page 573 (Instructional/Assessment)
(vii) evaluate scientific explanations and solutions by using experimental testing so as to encourage critical thinking by the student	SE pages 7-8 (Narrative) SFLP pages L7-L8 (Narrative) SFLP page L14 (Instructional/Assessment) SFLP page L15 (Instructional/Assessment)
(viii) evaluate scientific explanations and solutions by using observational testing so as to encourage critical thinking by the student	SE pages 7-8 (Narrative) SFLP page L8 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 11 pages L145-L147 (Instructional/Assessment)
(ix) critique scientific explanations and solutions by using empirical evidence so as to encourage critical thinking by the student	SFLP page L6 (Narrative) SFLP page L14 (Instructional/Assessment) SE pages 7-8 (Narrative) SE page 60 (Instructional/Assessment)

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	SE page 106 (Instructional/Assessment)
(x) critique scientific explanations and solutions by using logical reasoning so as to encourage critical thinking by the student	SFLP page L7 (Narrative) SFLP page L14 (Instructional/Assessment) SFLP page L16 (Instructional/Assessment) SE pages 7-8 (Narrative) SE page 573 (Instructional/Assessment)
(xi) critique scientific explanations and solutions by using experimental testing so as to encourage critical thinking by the student	SE pages 7-8 (Narrative) SFLP pages L7-L8 (Narrative) SFLP page L14 (Instructional/Assessment) SFLP page L15 (Instructional/Assessment)
(xii) critique scientific explanations and solutions by using observational testing so as to encourage critical thinking by the student	SE pages 7-8 (Narrative) SFLP page L8 (Narrative) SFLP page L14 (Instructional/Assessment) Lab 11 pages L145-L157 (Instructional/Assessment)
(B) relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content; and	SFLP pages L2-L5 (Narrative) SFLP page L14 (Instructional/Assessment) SE pages 44-58 (Narrative) SE page 60 (Instructional/Assessment)
(i) relate the impact of past research on scientific thought, including research methodology	SFLP pages L2-L4 (Narrative) SFLP page L14 (Instructional/Assessment) SE pages 44-49 (Narrative) SE page 60 (Instructional/Assessment)
(ii) relate the impact of past research on scientific thought, including cost-benefit analysis	SFLP pages L2-L4 (Narrative) SFLP page L14 (Instructional/Assessment) SE pages 44-49 (Narrative) SE page 60 (Instructional/Assessment)
(iii) relate the impact of past research on scientific thought, including contributions of diverse scientists as related to the content	SFLP pages L2-L4 (Narrative) SFLP page L14 (Instructional/Assessment) SE pages 42-49 (Narrative) SE page 60 (Instructional/Assessment)
(iv) relate the impact of past research on society, including research methodology	SFLP pages L2-L4 (Narrative) SFLP page L14 (Instructional/Assessment) SE pages 44-49 (Narrative) SE page 60 (Instructional/Assessment)
(v) relate the impact of past research on society, including cost-benefit analysis	SFLP pages L2-L4 (Narrative) SFLP page L14 (Instructional/Assessment) SE pages 44-49 (Narrative) SE page 60 (Instructional/Assessment)
(vi) relate the impact of past research on society, including contributions of diverse scientists as related to the content	SFLP pages L2-L4 (Narrative) SFLP page L14 (Instructional/Assessment) SE pages 42-49 (Narrative) SE page 60 (Instructional/Assessment)
(vii) relate the impact of current research on scientific thought, including research methodology	SFLP pages L4-L5 (Narrative) SE pages 50-56 (Narrative) SE page 58 (Instructional/Assessment) SE page 60 (Instructional/Assessment)
(viii) relate the impact of current research on scientific thought, including cost-benefit analysis	SFLP pages L4-L5 (Narrative) SE pages 50-56 (Narrative) SE page 58 (Instructional/Assessment) SE page 60 (Instructional/Assessment)
(ix) relate the impact of current research on scientific thought, including contributions of diverse scientists as related to the content	SFLP pages L4-L5 (Narrative) SE pages 50-56 (Narrative) SE page 58 (Instructional/Assessment) SE page 60 (Instructional/Assessment)

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(x) relate the impact of current research on society, including research methodology	SFLP pages L4-L5 (Narrative) SE pages 50-56 (Narrative) SE page 58 (Instructional/Assessment) SE page 60 (Instructional/Assessment)
(xi) relate the impact of current research on society, including cost-benefit analysis	SFLP pages L4-L5 (Narrative) SE pages 50-56 (Narrative) SE page 58 (Instructional/Assessment) SE page 60 (Instructional/Assessment)
(xii) relate the impact of current research on society, including contributions of diverse scientists as related to the content	SFLP pages L4-L5 (Narrative) SE pages 50-56 (Narrative) SE page 58 (Instructional/Assessment) SE page 60 (Instructional/Assessment)
(C) research and explore resources such as museums, planetariums, observatories, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers.	SE page 6 (Narrative) SE pages 592-595 (Narrative) Lab 17 pages L237-L246 (Instructional/Assessment)
(i) research STEM careers	SE page 6 (Narrative) SE pages 592-595 (Narrative) Lab 17 pages L237-L246 (Instructional/Assessment)
(ii) explore resources in order to investigate STEM careers	SE page 6 (Narrative) SE pages 595 (Narrative) Lab 17 pages L237-L238 (Narrative) Lab 17 pages L246-L248 (Instructional/Assessment)
(5) The student understands how the properties of water build the foundation of aquatic ecosystems. The student is expected to:	
(A) describe how the shape and polarity of the water molecule make it a "universal solvent" in aquatic systems;	SE pages 179-180 (Narrative) SE page 209 (Instructional/Assessment) SE pages 212-214 (Narrative)
(i) describe how the shape of the water molecule make it a "universal solvent" in aquatic systems	SE pages 179-180 (Narrative) SE page 209 (Instructional/Assessment) SE pages 212-214 (Narrative)
(ii) describe how the polarity of the water molecule make it a "universal solvent" in aquatic systems	SE pages 179-180 (Narrative) SE page 209 (Instructional/Assessment) SE pages 212-214 (Narrative)
(B) identify how aquatic ecosystems are affected by water's properties of adhesion, cohesion, surface tension, heat capacity, and thermal conductivity; and	SE pages 180-187 (Narrative) SE page 209 (Instructional/Assessment) SE page 259 (Narrative)
(i) identify how aquatic ecosystems are affected by water's properties of adhesion	SE pages 180-181 (Narrative) SE page 181 (Narrative; Figure 6.4) SE page 209 (Instructional/Assessment)
(ii) identify how aquatic ecosystems are affected by water's properties of cohesion	SE page 180 (Narrative) SE page 180 (Instructional/Assessment; Concept Check) SE page 181 (Narrative; Figure 6.4) SE page 209 (Instructional/Assessment) SE page 300 (Narrative)
(iii) identify how aquatic ecosystems are affected by water's properties of surface tension	SE page 180 (Narrative) SE page 181 (Narrative; Figure 6.4) SE page 187 (Narrative; Table 6.1)

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	SE page 209 (Instructional/Assessment)
(iv) identify how aquatic ecosystems are affected by water's properties of heat capacity	SE pages 181-182 (Narrative) SE page 187 (Narrative; Table 6.1) SE page 188 (Instructional/Assessment; Concept Check) SE page 209 (Instructional/Assessment) SE page 259 (Narrative)
(v) identify how aquatic ecosystems are affected by water's properties of thermal conductivity	SE pages 181-187 (Narrative) SE page 187 (Narrative; Table 6.1) SE page 209 (Instructional/Assessment) SE page 259 (Narrative)
(C) explain how the density of water is critical for organisms in cold environments.	SE pages 182-184 (Narrative) SE page 188 (Instructional/Assessment; Concept Check) SE pages 194-197 (Narrative) SE page 209 (Instructional/Assessment) SE pages 577-579 (Narrative)
(i) explain how the density of water is critical for organisms in cold environments	SE pages 182-184 (Narrative) SE page 188 (Instructional/Assessment; Concept Check) SE pages 194-197 (Narrative) SE page 209 (Instructional/Assessment) SE pages 577-579 (Narrative)
(6) Students know that aquatic environments are the product of interactions among Earth systems. The student is expected to:	
(A) identify key features and characteristics of atmospheric, geological, hydrological, and biological systems as they relate to aquatic environments;	SE pages 113-139 (Narrative) SE pages 212-222 (Narrative) SE page 215 (Instructional/Assessment) SE pages 264-277 (Narrative) SE pages 401-404 (Narrative)
(i) identify key features of atmospheric systems as they relate to aquatic environments	SE pages 264-281 (Narrative) SE page 277 (Instructional/Assessment; Concept Check) SE pages 277-281 (Narrative) SE page 281 (Instructional/Assessment; Concept Check) SE page 579 (Narrative)
(ii) identify key features of geological systems as they relate to aquatic environments	SE pages 113-139 (Narrative) SE page 146 (Instructional/Assessment) SE pages 352-371 (Narrative) SE page 386 (Instructional/Assessment)
(iii) identify key features of hydrological systems as they relate to aquatic environments	SE pages 212-222 (Narrative) SE page 215 (Instructional/Assessment; Concept Check) SE page 230 (Instructional/Assessment) SE page 576 (Narrative)
(iv) identify key features of biological systems as they relate to aquatic environments	SE pages 371-378 (Narrative) SE page 378 (Instructional/Assessment; Concept Check) SE pages 401-404 (Narrative) SE page 404 (Instructional/Assessment; Concept Check)

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(v) identify key characteristics of atmospheric systems as they relate to aquatic environments	SE pages 264-277 (Narrative) SE page 277 (Instructional/Assessment; Concept Check) SE pages 277-281 (Narrative) SE page 281 (Instructional/Assessment; Concept Check) SE page 579 (Narrative)
(vi) identify key characteristics of geological systems as they relate to aquatic environments	SE pages 113-139 (Narrative) SE page 146 (Instructional/Assessment) SE pages 352-371 (Narrative) SE page 386 (Instructional/Assessment)
(vii) identify key characteristics of hydrological systems as they relate to aquatic environments	SE pages 212-222 (Narrative) SE page 215 (Instructional/Assessment; Concept Check) SE page 230 (Instructional/Assessment) SE page 576 (Narrative)
(viii) identify key characteristics of biological systems as they relate to aquatic environments	SE pages 371-378 (Narrative) SE page 378 (Instructional/Assessment; Concept Check) SE pages 401-404 (Narrative) SE page 404 (Instructional/Assessment; Concept Check)
(B) describe the interrelatedness of atmospheric, geological, hydrological, and biological systems in aquatic ecosystems, including positive and negative feedback loops; and	SE page 234 (Instructional/Assessment; Concept Check) SE pages 234-259 (Narrative) SE page 261 (Instructional/Assessment) SE pages 560-561 (Narrative) SE page 573 (Instructional/Assessment)
(i) describe the interrelatedness of atmospheric, geological, hydrological, and biological systems in aquatic ecosystems, including positive feedback loops	SE page 234 (Instructional/Assessment; Concept Check) SE pages 234-258 (Narrative) SE page 259 (Narrative) SE page 261 (Instructional/Assessment) SE pages 560-561 (Narrative) SE page 573 (Instructional/Assessment)
(ii) describe the interrelatedness of atmospheric, geological, hydrological, and biological systems in aquatic ecosystems, including negative feedback loops	SE page 234 (Instructional/Assessment; Concept Check) SE pages 234-258 (Narrative) SE page 259 (Narrative) SE page 261 (Instructional/Assessment) SE pages 560-561 (Narrative) SE page 573 (Instructional/Assessment)
(C) evaluate environmental data using technology such as maps, visualizations, satellite data, Global Positioning System (GPS), Geographic Information System (GIS), weather balloons, and buoys to model the interactions that affect aquatic ecosystems.	Lab 3 pages L46-L53 (Instructional/Assessment) SE pages 290-292 (Narrative) SE page 354 (Narrative)
(i) evaluate environmental data using technology to model the interactions that affect aquatic ecosystems	Lab 3 pages L46-L53 (Instructional/Assessment) SE pages 290-292 (Narrative) SE page 354 (Narrative)
(7) The student knows about the interdependence and interactions that occur in aquatic environments. The student is expected to:	

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(A) identify how energy flows and matter cycles through both freshwater and marine aquatic systems, including food webs, chains, and pyramids;	SE pages 396-404 (Narrative) SE page 400 (Instructional/Assessment) SE pages 416-419 (Narrative)
(i) identify how energy flows through freshwater aquatic systems, including food webs	SE pages 396-400 (Narrative) SE page 400 (Instructional/Assessment; Concept Check) SE page 482 (Narrative)
(ii) identify how energy flows through freshwater aquatic systems, including chains	SE pages 396-400 (Narrative) SE page 400 (Instructional/Assessment; Concept Check)
(iii) identify how energy flows through freshwater aquatic systems, including pyramids	SE pages 396-400 (Narrative) SE page 400 (Narrative; Figure 13.13) SE page 400 (Instructional/Assessment; Concept Check)
(iv) identify how energy flows through marine aquatic systems, including food webs	SE pages 396-400 (Narrative) SE page 400 (Instructional/Assessment; Concept Check) SE page 401 (Narrative; Figure 13.14) SE page 417 (Instructional/Assessment; Concept Check) SE page 436 (Narrative)
(v) identify how energy flows through marine aquatic systems, including chains	SE pages 396-400 (Narrative) SE page 400 (Instructional/Assessment; Concept Check) SE pages 416-419 (Narrative)
(vi) identify how energy flows through marine aquatic systems, including pyramids	SE pages 396-400 (Narrative) SE page 400 (Narrative; Figure 13.13) SE page 400 (Instructional/Assessment; Concept Check)
(vii) identify how matter cycles through freshwater aquatic systems, including food webs	SE pages 401-404 (Narrative) SE page 404 (Instructional/Assessment; Concept Check) SE page 482 (Narrative)
(viii) identify how matter cycles through freshwater aquatic systems, including chains	SE pages 401-404 (Narrative) SE page 404 (Instructional/Assessment; Concept Check)
(ix) identify how matter cycles through freshwater aquatic systems, including pyramids	SE page 400 (Narrative; Figure 13.13) SE pages 401-404 (Narrative) SE page 404 (Instructional/Assessment; Concept Check)
(x) identify how matter cycles through marine aquatic systems, including food webs	SE page 401 (Narrative; Figure 13.14) SE pages 401-404 (Narrative) SE page 404 (Instructional/Assessment; Concept Check) SE page 417 (Instructional/Assessment) SE page 436 (Narrative)
(xi) identify how matter cycles through marine aquatic systems, including chains	SE pages 401-404 (Narrative) SE page 404 (Instructional/Assessment; Concept Check) SE pages 416-419 (Narrative)

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(xii) identify how matter cycles through marine aquatic systems, including pyramids	SE page 400 (Narrative; Figure 13.13) SE pages 401-404 (Narrative) SE page 404 (Instructional/Assessment; Concept Check)
(B) identify biological, chemical, geological, and physical components of an aquatic life zone as they relate to the organisms in it;	Lab 13 pages L180-L191 (Instructional/Assessment) SE pages 404-410 (Narrative) SE pages 482-502 (Narrative)
(i) identify biological components of an aquatic life zone as they relate to the organisms in it;	Lab 2 pages L35-L36 (Narrative) Lab 2 pages L35-L44 (Instructional/Assessment) Lab 13 pages L180-L181 (Narrative) Lab 13 pages L180-L191 (Instructional/Assessment) SE pages 482-502 (Narrative) SE page 485 (Instructional/Assessment; Concept Check)
(ii) identify chemical components of an aquatic life zone as they relate to the organisms in it;	Lab 13 pages L180-L182 (Narrative) Lab 13 pages L180-L191 (Instructional/Assessment) SE pages 404-410 (Narrative) SE page 410 (Instructional/Assessment; Concept Check)
(iii) identify geological components of an aquatic life zone as they relate to the organisms in it;	Lab 13 pages L180-L182 (Narrative) Lab 13 pages L180-L191 (Instructional/Assessment) SE pages 486-502 (Narrative)
(iv) identify physical components of an aquatic life zone as they relate to the organisms in it;	Lab 13 pages L180-L182 (Narrative) Lab 13 pages L180-L191 (Instructional/Assessment) SE pages 404-410 (Narrative) SE page 410 (Instructional/Assessment; Concept Check) SE pages 483-488 (Narrative) SE page 485 (Instructional/Assessment; Concept Check)
(C) identify variables that affect the solubility of carbon dioxide and oxygen in water;	SE pages 222-223 (Narrative) SE page 223 (Instructional/Assessment; Concept Check) SE pages 407-408 (Narrative) SE page 410 (Instructional/Assessment; Concept Check)
(i) identify variables that affect the solubility of carbon dioxide in water;	SE pages 222-223 (Narrative) SE page 223 (Instructional/Assessment; Concept Check) SE pages 407-408 (Narrative) SE page 410 (Instructional/Assessment; Concept Check)
(ii) identify variables that affect the solubility of oxygen in water;	SE pages 222-223 (Narrative) SE page 223 (Instructional/Assessment; Concept Check) SE pages 407-408 (Narrative) SE page 410 (Instructional/Assessment; Concept Check)
(D) evaluate factors affecting aquatic population cycles such as lunar cycles, temperature variations, hours of daylight, and predator-prey relationships; and	SE pages 404-410 (Narrative) SE pages 483-491 (Narrative) SE page 507 (Instructional/Assessment)

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(i) evaluate factors affecting aquatic population cycles	SE pages 404-410 (Narrative) SE pages 483-491 (Narrative) SE page 507 (Instructional/Assessment)
(E) identify the interdependence of organisms in an aquatic environment such as in a pond, a river, a lake, an ocean, or an aquifer and the biosphere.	SE pages 482-483 (Narrative) SE pages 503-504 (Narrative) SE page 507 (Instructional/Assessment)
(i) identify the interdependence of organisms in an aquatic environment	SE pages 482-483 (Narrative) SE pages 503-504 (Narrative) SE page 507 (Instructional/Assessment)
(8) The student conducts short-term and long-term studies on local aquatic environments. Local natural environments are to be preferred over artificial or virtual environments. The student is expected to:	
(A) evaluate data over a period of time from an established aquatic environment documenting seasonal changes and the behavior of organisms;	Lab 10 pages L133-L135 (Narrative) Lab 10 pages L136-L141 (Instructional/Assessment) Lab 11 pages L145-L157 (Instructional/Assessment) Lab 12 pages L160-L162 (Narrative) Lab 12 pages L163-L175 (Instructional/Assessment)
(i) evaluate data over a period of time from an established aquatic environment documenting seasonal changes	Lab 12 pages L160-L162 (Narrative) Lab 12 pages L163-L175 (Instructional/Assessment) SE pages 362-365 (Narrative)
(ii) evaluate data over a period of time from an established aquatic environment documenting the behavior of organisms	Lab 10 pages L133-L135 (Narrative) Lab 10 pages L136-L141 (Instructional/Assessment) Lab 11 pages L143-L145 (Narrative) Lab 11 pages L145-L157 (Instructional/Assessment)
(B) collect and analyze pH, salinity, temperature, mineral content, nitrogen compounds, dissolved oxygen, and turbidity data periodically, starting with baseline measurements; and	Lab 4 pages L55-L59 (Narrative) Lab 4 pages L59-L67 (Instructional/Assessment) Lab 14 pages L194-L196 (Narrative) Lab 14 pages L196-L199 (Instructional/Assessment) Lab 16 pages L229-L234 (Instructional/Assessment)
(i) collect pH data periodically, starting with baseline measurements	Lab 4 pages L55-L59 (Narrative) Lab 4 pages L59-L67 (Instructional/Assessment) Lab 5 pages L70-L71 (Narrative) Lab 5 pages L75-L76 (Instructional/Assessment)
(ii) collect salinity data periodically, starting with baseline measurements	Lab 4 pages L55-L59 (Narrative) Lab 4 pages L59-L67 (Instructional/Assessment) Lab 14 pages L194-L196 (Narrative) Lab 14 pages L196-L199 (Instructional/Assessment)
(iii) collect temperature data periodically, starting with baseline measurements	Lab 4 pages L55-L59 (Narrative) Lab 4 pages L59-L67 (Instructional/Assessment) Lab 14 pages L194-L196 (Narrative) Lab 14 pages L196-L199 (Instructional/Assessment)
(iv) collect mineral content data periodically, starting with baseline measurements	Lab 14 pages L194-L196 (Narrative) Lab 16 pages L225-L228 (Narrative) Lab 16 pages L229-L234 (Instructional/Assessment)
(v) collect nitrogen compounds data periodically, starting with baseline measurements	SE page 222 (Narrative) Lab 16 pages L225-L228 (Narrative) Lab 16 pages L229-L234 (Instructional/Assessment)
(vi) collect dissolved oxygen data periodically, starting with baseline measurements	SE page 222 (Narrative) Lab 16 pages L225-L228 (Narrative) Lab 16 pages L229-L234 (Instructional/Assessment)

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(vii) collect turbidity data periodically, starting with baseline measurements	SE pages 124-125 (Narrative) SE page 145 (Narrative) SE page 160 (Narrative) Lab 16 pages L229-L234 (Instructional/Assessment)
(viii) analyze pH data periodically, starting with baseline measurements	Lab 4 pages L55-L59 (Narrative) Lab 4 pages L59-L67 (Instructional/Assessment) Lab 5 pages L70-L71 (Narrative) Lab 5 pages L75-L76 (Instructional/Assessment)
(ix) analyze salinity data periodically, starting with baseline measurements	Lab 4 pages L55-L59 (Narrative) Lab 4 pages L59-L67 (Instructional/Assessment) Lab 14 pages L194-L196 (Narrative) Lab 14 pages L196-L199 (Instructional/Assessment)
(x) analyze temperature data periodically, starting with baseline measurements	Lab 4 pages L55-L59 (Narrative) Lab 4 pages L59-L67 (Instructional/Assessment) Lab 14 pages L194-L196 (Narrative) Lab 14 pages L196-L199 (Instructional/Assessment)
(xi) analyze mineral content data periodically, starting with baseline measurements	Lab 14 pages L194-L196 (Narrative) Lab 16 pages L225-L228 (Narrative) Lab 16 pages L229-L234 (Instructional/Assessment)
(xii) analyze nitrogen compounds data periodically, starting with baseline measurements	SE page 222 (Narrative) Lab 16 pages L225-L228 (Narrative) Lab 16 pages L229-L234 (Instructional/Assessment)
(xiii) analyze dissolved oxygen data periodically, starting with baseline measurements	SE page 222 (Narrative) Lab 16 pages L225-L228 (Narrative) Lab 16 pages L229-L234 (Instructional/Assessment)
(xiv) analyze turbidity data periodically, starting with baseline measurements	SE pages 124-125 (Narrative) SE page 145 (Narrative) SE page 160 (Narrative) Lab 16 pages L229-L234 (Instructional/Assessment)
(C) use data from short-term or long-term studies to analyze interrelationships between producers, consumers, and decomposers in aquatic ecosystems.	Lab 10 pages L133-L141 (Instructional/Assessment) Lab 15 pages L208-L222 (Instructional/Assessment) SE pages 398-400 (Narrative) SE pages 482-504 (Narrative)
(i) use data from short-term or long-term studies to analyze interrelationships between producers, consumers, and decomposers in aquatic ecosystems	Lab 10 pages L133-L141 (Instructional/Assessment) Lab 15 pages L208-L222 (Instructional/Assessment) SE pages 398-400 (Narrative) SE pages 482-504 (Narrative)
(9) The student knows the role of cycles in an aquatic environment. The student is expected to:	
(A) identify the role of carbon, nitrogen, water, and nutrient cycles in an aquatic environment, including upwellings and turnovers;	SE pages 274-287 (Narrative) SE pages 401-404 (Narrative) SE page 404 (Instructional/Assessment; Concept Check)
(i) identify the role of carbon cycles in an aquatic environment, including upwellings	SE pages 274-277 (Narrative; upwelling) SE pages 401-402 (Narrative; carbon cycle) SE page 404 (Instructional/Assessment; Concept Check)
(ii) identify the role of carbon cycles in an aquatic environment, including turnovers	SE pages 401-402 (Narrative; carbon cycle) SE page 404 (Instructional/Assessment; Concept Check) SE pages 576-579 (Narrative; turnovers)

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(iii) identify the role of nitrogen cycles in an aquatic environment, including upwellings	SE pages 274-277 (Narrative; upwelling) SE pages 403-404 (Narrative; nitrogen cycle) SE page 404 (Instructional/Assessment; Concept Check)
(iv) identify the role of nitrogen cycles in an aquatic environment, including turnovers	SE pages 403-404 (Narrative; nitrogen cycle) SE page 404 (Instructional/Assessment; Concept Check) SE pages 576-579 (Narrative; turnovers)
(v) identify the role of water cycles in an aquatic environment, including upwellings	SE page 213 (Narrative; Figure 7.2 – water cycle) SE pages 274-277 (Narrative; upwelling) SE pages 401-402 (Narrative; carbon cycle) SE page 404 (Instructional/Assessment; Concept Check)
(vi) identify the role of water cycles in an aquatic environment, including turnovers	SE page 404 (Instructional/Assessment; Concept Check) SE page 576 (Narrative; water cycle) SE pages 576-579 (Narrative; turnovers)
(vii) identify the role of nutrient cycles in an aquatic environment, including upwellings	SE pages 274-277 (Narrative; upwelling) SE pages 401-404 (Narrative) SE page 404 (Instructional/Assessment; Concept Check)
(viii) identify the role of nutrient cycles in an aquatic environment, including turnovers	SE page 404 (Instructional/Assessment; Concept Check) SE page 491 (Narrative) SE pages 576-579 (Narrative; turnovers)
(B) examine the interrelationships between aquatic systems and climate and weather, including El Niño and La Niña, currents, and hurricanes; and	SE pages 248-255 (Narrative) SE pages 274-281 (Narrative) SE page 295 (Instructional/Assessment)
(i) examine the interrelationships between aquatic systems and climate and weather, including El Niño	SE page 248 (Narrative) SE pages 277-281 (Narrative) SE page 295 (Instructional/Assessment)
(ii) examine the interrelationships between aquatic systems and climate and weather, including La Niña	SE page 248 (Narrative) SE pages 277-281 (Narrative) SE page 295 (Instructional/Assessment)
(iii) examine the interrelationships between aquatic systems and climate and weather, including currents	SE page 274 (Narrative) SE page 277 (Narrative) SE page 295 (Instructional/Assessment)
(iv) examine the interrelationships between aquatic systems and climate and weather, including hurricanes	SE pages 249-257 (Narrative) SE page 257 (Instructional/Assessment; Concept Check) SE page 318 (Narrative)
(C) explain how tidal cycles influence intertidal ecology.	Lab 2 pages L35-L44 (Instructional/Assessment) SE pages 344-345 (Narrative) SE pages 486-491 (Narrative)
(i) explain how tidal cycles influence intertidal ecology	Lab 2 pages L35-L44 (Instructional/Assessment) SE pages 344-345 (Narrative)

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	SE pages 486-491 (Narrative)
(10) The student knows the origin and potential uses of fresh water. The student is expected to:	
(A) identify sources of water in a watershed, including rainfall, groundwater, and surface water;	SE pages 576-577 (Narrative) SE page 589 (Narrative) SE page 594 (Instructional/Assessment)
(i) identify sources of water in a watershed, including rainfall	SE pages 576-577 (Narrative) SE page 589 (Narrative) SE page 594 (Instructional/Assessment)
(ii) identify sources of water in a watershed, including groundwater	SE pages 576-577 (Narrative) SE page 589 (Narrative) SE page 594 (Instructional/Assessment)
(iii) identify sources of water in a watershed, including surface water	SE pages 576-577 (Narrative) SE page 589 (Narrative) SE page 594 (Instructional/Assessment)
(B) identify factors that contribute to how water flows through a watershed;	SE page 576 (Narrative) SE page 576 (Instructional/Assessment; Concept Check) SE page 577 (Narrative; Figure 19.1)
(i) identify factors that contribute to how water flows through a watershed	SE page 576 (Narrative) SE page 576 (Instructional/Assessment; Concept Check) SE page 577 (Narrative; Figure 19.1)
(C) analyze water quantity and quality in a local watershed or aquifer; and	Lab 16 pages L211-L216 (Instructional/Assessment) Lab 16 pages L225-L228 (Narrative) SE pages 580-581 (Narrative)
(i) analyze water quantity in a local watershed or aquifer	Lab 16 pages L225-L228 (Narrative) Lab 16 pages L229-L234 (Instructional/Assessment) SE pages 580-581 (Narrative) SE page 594 (Instructional/Assessment)
(ii) analyze water quality in a local watershed or aquifer	Lab 16 pages L225-L228 (Narrative) Lab 16 pages L229-L234 (Instructional/Assessment) SE pages 580-581 (Narrative) SE page 594 (Instructional/Assessment)
(D) describe human uses of fresh water and how human freshwater use competes with that of other organisms.	SE page 515 (Narrative) SE page 578 (Instructional/Assessment; <i>Thinking Beyond the Figure</i>) SE page 578 (Narrative; Figure 19.3) SE page 588 (Instructional/Assessment; Concept Check) SE pages 589-590 (Narrative)
(i) describe human uses of fresh water	SE page 515 (Narrative) SE page 578 (Instructional/Assessment; <i>Thinking Beyond the Figure</i>) SE page 578 (Narrative; Figure 19.3) SE page 583 (Narrative)
(ii) describe how human freshwater use competes with that of other organisms	SE pages 583-586 (Narrative) SE page 588 (Narrative)

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	SE page 588 (Instructional/Assessment; Concept Check)
(11) The student knows that geological phenomena and fluid dynamics affect aquatic systems. The student is expected to:	
(A) examine basic principles of fluid dynamics, including hydrostatic pressure, density as a result of salinity, and buoyancy;	SE page 74 (Narrative) SE page 194 (Narrative) SE page 209 (Instructional/Assessment) SE page 410 (Narrative)
(i) examine basic principles of fluid dynamics, including hydrostatic pressure	SE page 404 (Narrative) SE page 410 (Narrative) SE page 410 (Instructional/Assessment; Concept Check)
(ii) examine basic principles of fluid dynamics, including density as a result of salinity	Lab 4 page L56 (Narrative) SE page 194 (Narrative) SE page 209 (Instructional/Assessment)
(iii) examine basic principles of fluid dynamics, including buoyancy	Lab 4 page L56 (Narrative) SE page 74 (Narrative) SE page 74 (Instructional/Assessment; <i>Thinking Beyond the Figure</i>)
(B) identify interrelationships between ocean currents, climates, and geologic features such as continental margins, active and passive margins, abyssal plains, island atolls, peninsulas, barrier islands, and hydrothermal vents;	SE pages 113-138 (Narrative) SE page 146 (Instructional/Assessment) SE pages 368-375 (Narrative)
(i) identify interrelationships between ocean currents, climates, and geologic features	SE pages 113-138 (Narrative) SE page 146 (Instructional/Assessment) SE pages 368-375 (Narrative)
(C) explain how fluid dynamics causes upwelling and lake turnover; and	SE pages 195-197 (Narrative) SE pages 274-287 (Narrative) SE page 287 (Instructional/Assessment) SE page 579 (Narrative)
(i) explain how fluid dynamics causes upwelling	SE pages 195-197 (Narrative) SE pages 274-287 (Narrative) SE page 287 (Instructional/Assessment)
(ii) explain how fluid dynamics causes lake turnover	SE page 195 (Narrative) SE page 579 (Narrative) SE page 582 (Instructional/Assessment; Concept Check)
(D) describe how erosion and deposition in river systems lead to formation of geologic features.	SE page 8 (Narrative) SE pages 114-125 (Narrative) SE pages 352-361 (Narrative) SE page 386 (Instructional/Assessment)
(i) describe how erosion in river systems lead[s] to formation of geologic features	SE page 8 (Narrative) SE pages 114-125 (Narrative) SE pages 352-361 (Narrative) SE page 386 (Instructional/Assessment)
(ii) describe how deposition in river systems lead[s] to formation of geologic features	SE page 8 (Narrative) SE pages 114-125 (Narrative) SE pages 352-361 (Narrative) SE page 386 (Instructional/Assessment)

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(12) The student understands the types of aquatic ecosystems. The student is expected to:	
(A) differentiate among freshwater, brackish, and marine ecosystems; and	SE pages 3-5 (Narrative) Lab 14 pages L194-L206 (Instructional/Assessment) SE pages 371-378 (Narrative) SE pages 482-503 (Narrative)
(i) differentiate among freshwater, brackish, and marine ecosystems	SE pages 3-5 (Narrative) Lab 14 pages L194-L206 (Instructional/Assessment) SE pages 371-378 (Narrative) SE pages 482-503 (Narrative)
(B) identify the major properties and components of different marine and freshwater life zones.	SE pages 3-5 (Narrative) SE pages 7-8 (Narrative) Lab 13 pages L180-L191 (Instructional/Assessment) SE pages 486-502 (Narrative) SE page 505 (Narrative) SE page 582 (Instructional/Assessment; Concept Check)
(i) identify the major properties of different marine life zones	Lab 13 pages L180-L191 (Instructional/Assessment) SE pages 486-502 (Narrative) SE page 505 (Narrative)
(ii) identify the major properties of different freshwater life zones	SE pages 3-5 (Narrative) SE pages 7-8 (Narrative) SE page 582 (Instructional/Assessment; Concept Check)
(iii) identify the major components of different mariner life zones	SE pages 486-502 (Narrative) SE page 505 (Narrative) Lab 13 pages L180-L191 (Instructional/Assessment)
(iv) identify the major components of different freshwater life zones	SE pages 3-5 (Narrative) SE pages 7-8 (Narrative) SE page 582 (Instructional/Assessment; Concept Check)
(13) The student knows environmental adaptations of aquatic organisms. The student is expected to:	
(A) compare different traits in aquatic organisms using tools such as dichotomous keys;	Lab 12 page L176 (Narrative; Exercise #4) Lab 12 page L176 (Instructional/Assessment; Exercise #4) SE pages 395-397 (Narrative) SE pages 442-469 (Narrative) SE page 478 (Instructional/Assessment)
(i) compare different traits in aquatic organisms using tools	Lab 12 page L176 (Narrative; Exercise #4) Lab 12 page L176 (Instructional/Assessment; Exercise #4) SE pages 395-397 (Narrative) SE pages 442-469 (Narrative) SE page 478 (Instructional/Assessment)
(B) describe how adaptations allow an organism to exist within an aquatic environment; and	Lab 13 pages L180-L191 (Instructional/Assessment) SE pages 391-393 (Narrative) SE pages 459-469 (Narrative) SE page 469 (Instructional/Assessment)
(i) describe how adaptations allow an organism to exist within an aquatic environment	Lab 13 pages L180-L191 (Instructional/Assessment) SE pages 391-393 (Narrative) SE pages 459-469 (Narrative)

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	SE page 469 (Instructional/Assessment)
(C) compare adaptations of freshwater and marine organisms.	Lab 13 pages L180-L191 (Instructional/Assessment) Lab 14 pages L194-L196 (Narrative) SE pages 391-393 (Narrative) SE pages 459-469 (Narrative)
(i) compare adaptations of freshwater and marine organisms	Lab 13 pages L180-L191 (Instructional/Assessment) Lab 14 pages L194-L196 (Narrative) SE pages 391-393 (Narrative) SE pages 459-469 (Narrative)
(14) The student understands how human activities impact aquatic environments. The student is expected to:	
(A) analyze the cumulative impact of human population growth on an aquatic ecosystem;	Lab 15 pages L208-L222 (Instructional/Assessment) SE pages 510-527 (Narrative) SE pages 568-569 (Narrative) SE pages 583-588 (Narrative)
(i) analyze the cumulative impact of human population growth on an aquatic ecosystem	Lab 15 pages L208-L222 (Instructional/Assessment) SE pages 510-527 (Narrative) SE pages 568-569 (Narrative) SE pages 583-588 (Narrative)
(B) predict effects of chemical, organic, physical, and thermal changes due to humans on the living and nonliving components of an aquatic ecosystem;	Lab 16 pages L225-L234 (Instructional/Assessment) SE page 534 (Narrative) SE pages 540-566 (Narrative)
(i) predict effects of chemical changes due to humans on the living components of an aquatic ecosystem	Lab 16 pages L225-L234 (Instructional/Assessment) SE page 534 (Narrative) SE pages 540-548 (Narrative) SE page 573 (Instructional/Assessment) SE page 580 (Narrative)
(ii) predict effects of organic changes due to humans on the living components of an aquatic ecosystem	SE page 557 (Narrative) SE pages 586-587 (Narrative) SE page 588 (Instructional/Assessment; Concept Check)
(iii) predict effects of physical changes due to humans on the living components of an aquatic ecosystem	SE pages 557-559 (Narrative) SE pages 586-586 (Narrative) SE page 588 (Instructional/Assessment; Concept Check)
(iv) predict effects of thermal changes due to humans on the living components of an aquatic ecosystem	SE page 259 (Narrative) SE pages 560-566 (Narrative) SE page 573 (Instructional/Assessment)
(v) predict effects of chemical changes due to humans on the nonliving components of an aquatic ecosystem	Lab 16 pages L225-L234 (Instructional/Assessment) SE page 534 (Narrative) SE pages 540-548 (Narrative) SE page 573 (Instructional/Assessment) SE page 580 (Narrative)
(vi) predict effects of organic changes due to humans on the nonliving components of an aquatic ecosystem	SE page 557 (Narrative) SE pages 586-587 (Narrative) SE page 588 (Instructional/Assessment; Concept Check)

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(vii) predict effects of physical changes due to humans on the nonliving components of an aquatic ecosystem	SE pages 557-559 (Narrative) SE pages 583-586 (Narrative) SE page 588 (Instructional/Assessment; Concept Check)
(viii) predict effects of thermal changes due to humans on the nonliving components of an aquatic ecosystem	SE page 259 (Narrative) SE pages 560-566 (Narrative) SE page 573 (Instructional/Assessment)
(C) investigate the role of humans in unbalanced systems involving phenomena such as invasive species, fish farming, cultural eutrophication, or red tides;	Lab 16 pages L225-L234 (Instructional/Assessment) SE pages 523-524 (Narrative) SE pages 548-557 (Narrative)
(i) investigate the role of humans in unbalanced systems involving phenomena	Lab 16 pages L225-L234 (Instructional/Assessment) SE pages 523-524 (Narrative) SE pages 548-557 (Narrative)
(D) analyze and discuss how human activities such as fishing, transportation, dams, and recreation influence aquatic environments;	Lab 15 pages L208-L222 (Instructional/Assessment) SE pages 380-381 (Narrative) SE pages 517-527 (Narrative) SE pages 583-586 (Narrative) SE page 588 (Instructional/Assessment; Concept Check)
(i) analyze how human activities influence aquatic environments	Lab 15 pages L208-L222 (Instructional/Assessment) SE pages 380-381 (Narrative) SE pages 517-527 (Narrative) SE pages 583-586 (Narrative) SE page 588 (Instructional/Assessment; Concept Check)
(ii) discuss how human activities influence aquatic environments	Lab 15 pages L208-L222 (Instructional/Assessment) SE pages 380-381 (Narrative) SE pages 517-527 (Narrative) SE pages 583-586 (Narrative) SE page 588 (Instructional/Assessment; Concept Check)
(E) describe the impact such as costs and benefits of various laws and policies such as The Endangered Species Act, right of capture laws, or Clean Water Act on aquatic systems; and	SE page 531 (Narrative) SE pages 562-569 (Narrative) SE pages 592-593 (Narrative) SE page 593 (Instructional/Assessment; Concept Check)
(i) describe the impact of various laws and policies	SE page 531 (Narrative) SE pages 562-569 (Narrative) SE pages 592-593 (Narrative) SE page 593 (Instructional/Assessment; Concept Check)
(F) analyze the purpose and effectiveness of human efforts to restore aquatic ecosystems affected by human activities.	SE pages 567-569 (Narrative) SE page 573 (Instructional/Assessment) SE pages 592-593 (Narrative) SE page 593 (Instructional/Assessment; Concept Check)
(i) analyze the purpose of human efforts to restore aquatic ecosystems affected by human activities	SE pages 567-569 (Narrative) SE page 573 (Instructional/Assessment) SE pages 592-593 (Narrative)

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	SE page 593 (Instructional/Assessment; Concept Check)
(ii) analyze the effectiveness of human efforts to restore aquatic ecosystems affected by human activities	SE pages 567-569 (Narrative) SE page 573 (Instructional/Assessment) SE pages 592-593 (Narrative) SE page 593 (Instructional/Assessment; Concept Check)