I. Teacher Preparation

A. Elementary School Licensure Requirements

1. Licensure Grade Levels[1]

a.	Does the state offer an Early Elementary Education credential (Preschool/Kindergarten to Grade 2/3)?	Yes	Early Childhood Education (N-Grade 3)
b.	Does the state offer an Elementary Education credential (Kindergarten/Grade 1 to Grade 5/6)?	Yes	Elementary Education (K-6 or K-8)

2. Early Elementary[2]

a.	Is an educational practice examination required for licensure?	No
b.	Is an examination in reading and writing or language arts required for licensure?	Yes
c.	Is a mathematics examination required for licensure?	Yes
d.	Is a science examination required for licensure?	Yes

3. Elementary Education[2]

a.	Is an educational practice examination required for licensure?	No
b.	Is an examination in reading and writing or language arts required for licensure?	Yes
c.	Is a mathematics examination required for licensure?	Yes
d.	Is a science examination required for licensure?	Yes

4. Licensure Renewal

a.	What is the period of validity for an educator's license?	Less than 5 years	X (3 years)[1]
		5 years	
		Greater than 5 years	

b.	Can in-service teachers receive certification credit for professional development courses or programs in Earth and Space Sciences?	Yes	X	Conditionally. If the educator is not employed, they would recertify under the state's plan. A teacher could obtain credit for Earth and Space Sciences, or any science content course, if they identify how that knowledge would be used in the classroom to improve the learning of their students. If the educator is employed by a district, the teacher would fall under the district's professional development plan. Each district would determine what professional development experience is acceptable for each credential. So the acceptance of an Earth Space science course for continuing education units would depend on the guidelines in the district professional development master plan.[3]
		No		
		Local issue		
		Unknown		

B. Elementary School Curriculum Support

1. Guidelines for Curriculum Development

a.	Does the SEA provide guidelines for curriculum development, beyond the state's science standards?	No

b.	If yes, which of the following does the state provide?	1. Science frameworks		
		2. Curriculum maps		
		3. Learning progressions		
		4. Benchmark maps		
		5. Templates for unit design		
		6. Curriculum development guides		
		7. Model units		
		8. Lesson plan templates/guides		
		9. Web-based lesson plan portals		
		10. Model lesson plans		
		11. Assessment guidelines		

2. Instructional Materials[4]

a.	At what level does adoption of instructional materials occur?	State level	
		Local level	X

b.	If the state is an adoption state, do adopted materials in science include those that address topics specific to the geosciences?	N/A	

3. Support for New Standards

a.	Does that state provide resources to school systems to effectively implement the standards as they change?	Yes		Local School boards are not required to adopt or use the state adopted standards. However, the state assessments, required under state and federal law, must be aligned to state adopted academic standards. Districts may use state provided resources to implement standards or curriculum through a variety of federal and state funded programs that are available as long as the implementation process fits into the overall project being funded. New Hampshire has no general funding provided to districts specifically to develop or implement curriculum. The state does provide guidance and information to districts that seek it.[3]
		No		
		Local issue	X	
		Unknown		

4. Professional Development[5]

a. Does the SEA provide professional development that is, at least in part, specific to the geosciences?	Yes, provided by SEA		District educator professional development programs are developed using the NH model for teacher preparedness.
	Yes, but independent of SEA		
	No		
	Local issue	X	
	Unknown		

II. Curriculum

A. Elementary School State Science Standards

1. Organization[6]

a. What is the name of the state's elementary school science standards?	New Hampshire Frameworks for Science Literacy K-12

b. What is the grade-level arrangement of the standards?	Grade specific	
	Grade-level bands	X (K-2, 3-4, 5-6)
	Benchmark grade levels	

c. How are the standards outlined?	Overarching standard statements (level one)	X	d. What terms are used to identify each level?	Enduring Knowledge Statements
	Sub-standard statements that provide more detail to the overarching standards (level two)	X		Grade Span Expectations

2. Content[6]

a. Are the science standards subdivided according to scientific discipline (Physical Science, Life Science, and Earth and Space Science)?	Yes	Grade band standards are divided into three content domains (Earth Space Science, Life Science, and Physical Science) and one Science Process Skills domain.
b. Are the Earth and Space Science standards identified by core ideas in the geosciences?	Yes	The Earth and Space Science Domain is subdivided by strand and stem (topic): ESS1– The Earth and Earth materials, as we know them today, have developed over long periods of time, through constant change processes: 1. Atmosphere, Climate, and Weather ; 2. Composition and Features ; 3. Fossils ; 4. Observation Of The Earth From Space; 5. Processes and Rates Of Change; 6. Rock Cycle; 7. Water ESS2– The Earth is part of a solar system, made up of distinct parts, which have temporal and spatial interrelationships: 1. Earth, Sun And Moon; 2. Energy; 3. Solar System; 4. View From Earth ESS3– The origin and evolution of galaxies and the universe demonstrate fundamental principles of physical science across vast distances and time: 1. Size And Scale; 2. Stars And Galaxies; 3. Universe ESS4– The growth of scientific knowledge in Earth Space Science has been advanced through the development of

		technology and is used (alone or in combination with other sciences) to identify, understand and solve local and global issues: 1. Design Technology; 2. Tools; 3. Local And Global Environmental Issues; 4. Career and Technical Education
c. Do the state's standards include current issues in the geosciences? Current issues in the geosciences can be described as Earth science processes altered by human activities or Earth science processes that affect human well-being.	Yes	The Earth and Space Science Domain is subdivided according to 4 strands, each of which is further subdivided by stem (topic). The 4th strand states: ESS4– The growth of scientific knowledge in Earth Space Science has been advanced through the development of technology and is used (alone or in combination with other sciences) to identify, understand and solve local and global issues. 1. Design Technology 2. Tools 3. Local And Global Environmental Issues 4. Career and Technical Education The 3rd stem is "Local and Global Environmental Issues" and requires students, within each elementary grade band, to examine natural resources, conservation of resources, environmental impact, and renewable and non-renewable energy sources.
d. Do the state's standards include career exploration in the geosciences?	Yes	The Earth and Space Science Domain is subdivided according to 4 strands, each of which is further subdivided by stem (topic). The 4th strand states: ESS4– The growth of scientific knowledge in Earth Space Science has been advanced through the development of technology and is used (alone or in combination with other sciences) to identify, understand and solve local and global issues. 1. Design Technology 2. Tools 3. Local And Global Environmental Issues 4. Career and Technical Education The last stem is "Career and Technical Education Connections." The expectations for this standard are: - Recognize that some jobs/careers require knowledge and use of Earth science content and/or skills. (K-2) - Identify some jobs/careers that require knowledge and use of Earth science content and/or skills. (3-4)

3. Development

a. When were the standards adopted or last revised?	Within the last two years (2014-2015)		June 2006[6]
	Between 3-6 years ago (2010-2013)		
	Between 7-10 years ago (2006-2009)	X	
	More than 10 years ago (before 2006)		

b. Does the state have plans to	Currently under review		NH is a local control state, so has no required curriculum. The current NH Science Literacy K-12 Curriculum

review/revise its science standards?	Within the next 5 years (2015-2020)		Framework was adopted in 2006. Modern 21st Century Standards are performance based, and while the NH standards are content based, the targets identified for the statewide science assessment included in those standards are performance based. That being said, the state does recognize the need to review the science standards and update them. Currently, the state science assessment is contracted through 2016, so NH cannot change its standards until the science assessment sunsets. Likewise, in the spring of 2014, the NH Governor initiated a statewide STEM Task Force. Once of the tasks of the Task Force was to review the current science standards and make recommendations for changes. The Task Force Final report is due out in Winter 2015. Once the recommendations of the Task Force are released, the Board of Education can consider them and make plans to refresh the NH Frameworks, or adopt a new set of standards.[3]
	Between 5 and 10 years from now (2020-2025)		
	No plan or timeline exists	X	
	Unknown		

B. Middle School State Science Standards

1. Content[6]

a. What is the name of the state's middle school science standards?	New Hampshire Frameworks for Science Literacy K-12
b. Are Earth and Space Science topics included in the standards?	Yes
c. Is Life Science and Physical Science content included in the standards?	Yes

C. High School State Science Standards

1. Content[6]

a. What is the name of the state's high school science standards?	New Hampshire Frameworks for Science Literacy K-12
b. Are Earth and Space Science topics included in the standards?	Yes
c. Is Life Science and Physical Science content included in the standards?	Yes

D. High School Course Requirements

1. Credits Required for Graduation[7]

a. What is the total number of credits required for graduation?	20
b. What is the number of science credits required for graduation?	2

2. Course Content[7]

a. Is Life Science required?	Yes
b. Is Physical Science required?	Yes
c. Is Earth Science required?	No
d. Is Environmental Science required?	No
e. Is Earth Science accepted?	No
f. Does Earth Science have to be lab-based?	N/A

III. Instruction

A. Elementary School Approaches to Instruction

1. State Science Standards[6]

a. Do the state's science standards provide guidelines regarding any specific approach to be used for science teaching?	Yes
b. If so, what is the term used to identify this approach?	Scientific Inquiry

c. Do the state's science standards provide a rationale for this approach?	No

d. If so, what is the rationale?	N/A

2. Guidelines for Curriculum Planning

a. If the state offers guidelines for curriculum planning, do these advocate more specific strategies for science instruction?	No
b. If so, what are the strategies?	N/A

3. Technology[8]

a. Are decisions regarding the use of technology in elementary science classrooms made at the state level or local level?	Local level
b. What kinds of technology are being used by elementary school science teachers in the state?	NH districts have a wide range of technology devices, infrastructure, and connectivity. The NH Minimum Standards for Public School approval require all districts have a K-12 Information and Communication Technology Program that uses an integrated approach to technology use. Districts must use a comprehensive, developmentally appropriate, sequential information and communication technologies (ICT) literacy program be integrated throughout all areas of the k-12 curriculum. Programs must develop knowledge of developmentally appropriate use of digital tools and technologies through competencies that allow students to: a. Demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology; b. Use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others; c. Apply digital tools to gather, evaluate, and use information; d. Use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources; e. Understand human, cultural, and societal issues related to technology and practice legal and ethical behavior; and

	f. Demonstrate a sound understanding of technology concepts, systems, and operations.

IV. Learning Contexts

A. Elementary School Classrooms

1. Class Size[9]

a. What is the average number of students in an elementary classroom?	Grades 1-2 = 17.9 Grades 3-4 = 19.3 Grades 6-8 = 19.7
b. What is the maximum allowable number of students in an elementary classroom?	Unknown

2. Instructional Time[6]

a. At the elementary level, are teachers recommended or required to dedicate a certain amount of instructional time to science?	There is no time requirement		NH is a local control state, so districts set their own schedules for instructional time. However, the minimum standards for school approval require a rigorous science program at all grade levels. The NH Science Assessment tests Grade 4 for science targets covered in K-4 grades.
	Local decision	X	
	Teachers must spend a certain amount of time teaching science.		
	Unknown		

B. Elementary School Support Services

1. Specialized Support[3]

a. Are there specific policies in place regarding English as a Second Language (ESL) and Special Education services that could impact science instruction (e.g. pull-out or push-in models)?	Local level decision	X	NH is a local control state. Districts make the determination on whether they have or use pull out programs for students with IEPs. Likewise, districts make their own determinations on how they develop and implement programs for ESL students.
	Depends on the specifications of a student's IEP or ILP		
	Teachers must follow specific practices regarding science		
	Unknown		

V. Extra-Curricular Programs

A. Elementary School Geosciences Enrichment Opportunities

1. After-School and Informal Education[10],[11],[12]

a. Are opportunities to engage in geoscience-related topics outside of school (e.g. after-school programs and informal education programs) being offered to students in the state?	Yes

b. If so, what are they?	NH is a local control state. Districts can provide opportunities for students to apply knowledge and skills in geosciences if they have the desire and resources. Two ways in which this might happen is through an afterschool program, such as those supported under Title IV, Part B, 21st Century Community Learning Centers; or programs which take advantage of NH state partnerships, such as the NH Education GIS Partnership which takes advantage of the NH Department of Education – Esri partnership. NH Educational GIS Partnership with Esri NH Environmental Literacy Planning and Implementation Group

2. Remedial Education

a. What remedial supports are in place for geosciences topics with which students are struggling?	Local level decision	X	NH is a local control state. Districts are free to use any and all available resources for helping struggling students. There are several professional learning communities established that teachers can use to help students. NH offers districts analytical tools, based on the science assessment scores, that teachers can use to determine where students need the most help.[3]
	Remediation services are being provided to students in science		
	No remediation support in science		
	Unknown		

VI. Monitoring Systems

A. Elementary School Statewide Science Assessment

1. Structure and Content[13]

a. What is the name of the statewide standardized test in science at the elementary level?	New England Common Assessment Program, Science Assessment (NECAP Science Assessment)
b. At what grade(s) is the assessment implemented?	4
c. Does the statewide science assessment measure achievement of the state's standards, i.e. is the assessment aligned with state standards?	Yes
d. Is the content of the statewide science assessment sub-divided by discipline, namely Physical Science, Life Science, Earth and Space Science?	Yes

e. Are there any plans for revising or changing the current elementary level science assessment?	No plans for revision	X	NH is a local control state and does not have state required curricula. The NECAP science assessment is aligned to the NECAP Targets in the current NH Science Curriculum Framework, the targets were developed by a collaboration of the NECAP partner states. Each state then developed its individual state science standards to incorporate the targets for testing, so that alignment was inherent in the assessment and accountability system design.
	Revision is planned, but timeline is unknown		
	Revision is planned with implementation date set		
	Unknown		

2. Results[14]

a. Is student achievement measured by Performance Level Descriptors?	Yes
b. If yes, how many performance levels are there?	4

3. District Level Reporting[15]

a. At the district level, are the percentages of students performing at each PLD reported to the public?	Yes	District Results Reports for the New England Common Assessment Program (NECAP) Science Test are produced for each district in New Hampshire. These reports are available to the public through the New Hampshire Department of Education Assessment and AYP Public Reporting Site. District Results Reports provide achievement level distributions and mean scaled scores for all students tested as well as for subgroups of
b. At the district level, is student achievement reported according to scientific discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)?	Yes	
c. If yes, is this data available to the public?	Yes	

		students classified by demographics or program participation. The District Results Reports also contain comparative information on school and district performance on four specific science domains (Physical Science, Earth Space Science, Life Science, and Inquiry).

4. State Level Reporting[16]

a. At the state level, are the percentages of students performing at each PLD reported to the public?	Yes	A State Results Report for the New England Common Assessment Program (NECAP) Science Test is produced each spring. This report is available to the public through the New Hampshire Department of Education Assessment and AYP Public Reporting Site. In addition to summary scores on the assessment, the report also contains comparative information on the average performance within four specific science domains (Physical Science, Earth Space Science, Life Science, and Inquiry).
b. At the state level, is student achievement reported according to scientific discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)?	Yes	
c. If yes, is this data available to the public?	Yes	

B. Elementary School International Assessments in Science

1. TIMSS[17]

a. Has the state participated in the Trends in International Mathematics and Science Study (TIMSS)?	No

b. If yes, in which years did the state participate?	1995	
	2003	
	2007	
	2011	

C. Middle School Statewide Science Assessment

1. Structure and Content[13]

a. What is the name of the statewide standardized test in science at the middle school level?	New England Common Assessment Program, Science Assessment (NECAP Science Assessment)
b. At what grade(s) is the assessment implemented?	8
c. Does the assessment address Life Science concepts?	Yes
d. Does the assessment address Physical Science concepts?	Yes
e. Does the assessment address Earth Science concepts?	Yes

C. High School Statewide Science Assessment(s)

1. Structure and Content[13]

a. What is the name of the state's standardized science assessment(s)?	New England Common Assessment Program, Science Assessment (NECAP Science Assessment)
b. At what grade level is the assessment implemented?	11
c. Does the assessment address Life Science concepts?	Yes
d. Does the assessment address Physical Science concepts?	Yes
e. Does the assessment address Earth Science concepts?	Yes

VII. Accountability

A. School Level

1. Individual Student[18]

a. Does the state produce an Individual Student Report (ISR) that describes a student's performance on the state's science assessment?	Yes	A NECAP Student Report is generated and distributed to parents/guardians. The report describes an individual student's performance in terms of scaled scores and achievement levels. The NECAP Student Report for grade 4 shows the scaled score earned for science. One section of the NECAP Student Report shows the student's performance in the science domains, including possible points, points earned by the student, and average points earned for the school, district, and state. The science Domains are: Life Science Earth/Space Science Physical Science Inquiry Two copies of the NECAP Student Report are generated. One copy is provided to parents/guardians. The other copy is for school files and can only be accessed by the student, the student's parents/guardians, and authorized school personnel. In addition, school personnel receive the Grade 4 Science NECAP Item Analysis Report. This report provides the summary results for each student in a school in science. In addition, it shows the points earned by each student according to each science domain.
b. Is the ISR made available to a student's parents or guardians?	Yes	
c. Is the ISR made available to a student's teacher?	Yes	
d. Does the ISR report student's performance in terms of scale score and achievement level?	Yes	
e. Does the ISR subdivide results by science discipline (Physical Science, Life Science, Earth and Space Science)?	Yes	

2. Teacher Appraisal

a. Are students' results on the statewide science assessment a component of teacher evaluation?	Yes	All teachers in "tested" grades and subjects will receive a report each year from NHDOE documenting the individual student and aggregate Student Growth Percentiles (SGP) for their class(es). These results, based on NECAP and eventually SBAC tests, using the SGP model, should be incorporated into teachers' evaluations either using a shared or individual attribution framework. The state has provided a model system for districts to use to evaluate its teachers or the district may use the model system as guide for developing its own evaluation system as long as all Title I schools implement the guidelines required in this flexibility waiver including a 20 percent weight on student growth. NH ESEA Flexibility Waiver, http://education.nh.gov/accountability-system/documents/flexibility-waiver-request20130605.pdf

B. District Level

1. District Accreditation

a. Are student outcomes in statewide science assessments at the elementary level part of accreditation of public schools at the district level?	Yes	X	NH does not accredit, but approves schools. School programs have to be approved. Test scores are not used for school approval. NH also has a law to provide an adequate education. For our Adequacy Accountability, test scores are used in one prong of the two pronged system. http://education.nh.gov/instruction/school_improve/account_sys_performance.htm
	No		
	At a future point		
	Local decision		
	Unknown		

C. State Level

1. Statewide Monitoring

a. Are student outcomes in statewide science assessments at the elementary level used in monitoring the adequacy of state educational systems?	Yes	In 2009, the NH Legislature passed RSA 193-E:3-b, that establishes a two pronged approach for accountability: an input based system and a performance-based system. The Science NECAP test is part of the performance-based system. http://education.nh.gov/instruction/school_improve/account_sys_performance.htm http://education.nh.gov/instruction/school_improve/documents/2011-2012-rubric-descrip-elem-ms.pdf

2. Trends in Student Outcomes[16]

a. Does the SEA report to the public performance results on the state science assessment over time?	Yes

b. If yes, how many years of achievement data are available?	3 years (2011-2012 to 2013-2014)	X	(2011-2014)
	4-7 years (2007-2008 to 2013-2014)		
	8 to 10 years (2004-2005 to 2013-2014)		
	11 or more years (before 2004-2005)		

c. Are the results also subdivided by science discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)?	Yes

[1] New Hampshire Department of Education, Certification/Bureau of Credentialing, Educator Certification Procedures: http://www.education.nh.gov/certification/index.htm
[2] Educational Testing Service, New Hampshire Test Requirements, Test Required for All Licensure Areas: http://www.ets.org/praxis/nh
[3] New Hampshire Department of Education (personal communication).
[4] Education Commission of the States, State Textbook Adoption: https://www.ecs.org/clearinghouse/57/75/5775.htm
[5] Redefining Educator Development for 21st Century Learners: http://www.education.nh.gov/innovations/redefining_education.htm
[6] New Hampshire Department of Education, Division of Educational Improvement, Accountability, Curriculum, Science Education, K-12 Curriculum Frameworks for Science, PDF: http://www.education.nh.gov/instruction/curriculum/science/index.htm
[7] New Hampshire Education Administrative Rules (Adopted 7/1/05), Ed 306.7 High School Curriculum, Units of Credit, Graduation Requirements, and Cocurricular Program: http://www.nheon.org/oet/tpguide/Ed306.27.htm
[8] Minimum Standards for Public School Approval, Ed306.4251 Information and Communication Technologies Program: http://education.nh.gov/legislation/documents/ed3062014-min-stands.pdf
[9] Doe website: Data and Reports, Attendance and Enrollment: http://www.education.nh.gov/data/attendance.htm
[10] Title IV Part B, 21st Century Community Learning Centers: http://www.education.nh.gov/instruction/integrated/title_iv_b.htm
[11] NH Educational GIS Partnership with Esri: http://nheon.org/nh_projects/esri.html. www.NHEdGIS.org

[12] NH Environmental Literacy Planning and Implementation Group: www.elnh.org
[13] New Hampshire Department of Education, Division of Educational Improvement, Assessment, New England Common Assessment Program (NECAP), NECAP Test Preparation Support Materials, NH NECAP Science Assessment Information, PDF: http://education.nh.gov/instruction/assessment/necap/science.htm
[14] New Hampshire Department of Education, Assessment and AYP Public Reporting Site, NECAP, Spring 2014 – Grade 4 NECAP Science Test, PDF: http://reporting.measuredprogress.org/nhprofile/reports.aspx?view=45
[15] New Hampshire Department of Education, Assessment and AYP Public Reporting Site, NECAP: http://reporting.measuredprogress.org/nhprofile/reports.aspx?view=45
[16] New Hampshire Department of Education, Assessment and AYP Public Reporting Site, NECAP, Spring 2014 – Grade 4 NECAP Science Test, PDF: http://reporting.measuredprogress.org/nhprofile/reports.aspx?view=45
[17] U.S. Dept. of Education, Institute of Education Sciences, National Center for Education Statistics, Trends in International Mathematics and Science Study (TIMSS), State and District Participation in TIMSS: https://nces.ed.gov/TIMSS/benchmark.asp
[18] New Hampshire Department of Education, Division of Educational Improvement, Accountability/Assessment, NECAP, Results Support Materials, Guide to Using the 2014 Science Reports, PDF: http://education.nh.gov/instruction/assessment/necap/results/science_results14.htm