



Program Endorsement Brief

WATERSHED MANAGEMENT IN THE GREATER SACRAMENTO
REGION

North (Greater Sacramento) Center of Excellence
APRIL 2021

Table of Contents

- Summary..... 2
- Introduction 3
- Occupational Demand..... 4
- Wages 7
- Job Postings..... 7
 - Occupations and Job Titles 8
 - Employers 9
 - Skills and Certifications..... 9
- Education and Training Requirements..... 10
- Educational Supply 12
 - Community College Supply 12
 - Four-Year Degree Supply 13
- Supply Gap Analysis 14
- Findings 14
- Recommendations..... 15
- Appendix A. Occupation Definitions 16
- Appendix B. North (Greater Sacramento) Environmental Programs 18
- Appendix C. Methodology and Sources..... 19

COVID-19 Statement: This report includes employment projection data by EMSI. EMSI’s projections are modeled on recorded (historical) employment figures and incorporate several underlying assumptions, including the assumption that the economy during the projection period will be at approximately full employment or potential output. To the extent that a recession or labor shock, such as the economic effects of COVID-19, can cause long-term structural change, they may impact the projections. At this time, it is not possible to quantify the impact of COVID-19 on projections of industry and occupational employment. Other measures such as unemployment rates and monthly industry employment estimates will reflect the most recent information on employment and jobs in the state and, in combination with input from local employers, may help validate current and future employment needs as depicted here.

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Summary

The North/Far North Center of Excellence for Labor Market Research prepared this report to provide a labor market analysis of educational supply and occupational demand for middle-skilled career pathways in the North (Greater Sacramento) subregion. This report aims to determine if demand in the local labor market is not being met by the supply from existing community college programs and other postsecondary training providers. This report primarily focuses on training that leads to jobs in middle-skilled occupations - that is, occupations that typically require education beyond a high school diploma but less than a Bachelor's degree - but may include higher-skilled occupations for training pathways that lead to a bachelor's degree. Lowered skilled occupations are rarely considered in this type of analysis due to the lessened barriers for entry-level work, such as no formal education requirements and no requirements for on-the-job training.

Key findings include:

- The North (Greater Sacramento) region held 4,808 watershed management jobs in 2019. Jobs are projected to increase by 3% over the next five years, adding about 160 new jobs to the subregion.
- Over the next five years, watershed management occupations are projected to have 455 annual openings in the North (Greater Sacramento) region.
- Wage data shows that watershed management occupations earn \$3 to \$40 above the subregion's living wage of \$13.18 per hour.
- Employment and online job postings are heavily concentrated at the above middle-skill occupation level. These jobs typically require a four-year degree for entry-level work.
- Awards data analysis shows that community colleges conferred an average of 68 awards (certificates and associate degrees) in related watershed management programs over the last three academic years. Local four-year institutions granted an average of 255 bachelor degrees per year between 2016-17 and 2018-19.

Introduction

The North (Greater Sacramento) Center of Excellence was asked to provide labor market information for a proposed program at a regional community college. This report focuses on the following Standard Occupational Classification (SOC) occupations and codes:

- Middle-Skill Occupations
 - Environmental Engineering Technologists and Technicians (17-3025)
 - Environmental Science and Protection Technicians, Including Health (19-4042)
 - Hydrologic Technicians (19-4044)
- Above Middle-Skill Occupations
 - Natural Sciences Managers (11-9121)
 - Conservation Scientists (19-1031)
 - Environmental Scientists and Specialists, Including Health (19-2041)
 - Hydrologists (19-2043)

A review of related programs revealed the following program(s) and Taxonomy of Programs (TOP) code(s) are appropriate for inclusion in this report:

- Environmental Studies (0302.00)
- Environmental Technology (0303.00)
- Natural Resources (0115.00)

The corresponding Classification of Instructional Programs (CIP) code(s) are:

- Natural Resources (03.0101)
- Environmental Science (03.0103)
- Environmental Studies (03.0104)
- Environmental Engineering Technology/Environmental Technology (15.0507)

Occupational Demand

Exhibits 1 and 2 summarize the five-year projected job growth for middle-skill and above middle-skill occupations in the North (Greater Sacramento) selected occupations, North/Far North, and California.

Exhibit 1. Middle skill employment and projected demand, 2019-2024¹

Occupation	2019 Jobs	2024 Jobs	2019-2024 Jobs Change	2019-2024 Jobs % Change	2019-2024 Annual Openings
Environmental Engineering Technologists and Technicians	159	172	13	8%	16
Environmental Science and Protection Technicians, Including Health	587	612	25	4%	71
Geological and Hydrologic Technicians	104	109	5	5%	10
North (Greater Sacramento)	850	893	42	5%	97
Environmental Engineering Technologists and Technicians	271	284	13	5%	26
Environmental Science and Protection Technicians, Including Health	722	748	26	4%	87
Geological and Hydrologic Technicians	107	112	5	5%	10
North/Far North	1,100	1,144	44	4%	123
Environmental Engineering Technologists and Technicians	3,474	3,583	109	3%	320
Environmental Science and Protection Technicians, Including Health	5,787	6,014	227	4%	697
Geological and Hydrologic Technicians	1,594	1,630	36	2%	138
California	10,855	11,227	372	3%	1,155

Exhibit 2. Above middle skill employment and projected demand, 2019-2024²

Occupation	2019 Jobs	2024 Jobs	2019-2024 Jobs Change	2019-2024 Jobs % Change	2019-2024 Annual Openings
Natural Sciences Managers	537	558	21	4%	38
Conservation Scientists	285	296	11	4%	27

¹ EMSI 2021.1; QCEW, Non-QCEW, and Self-employed.

² EMSI 2021.1; QCEW, Non-QCEW, and Self-employed.

Occupation	2019 Jobs	2024 Jobs	2019-2024 Jobs Change	2019-2024 Jobs % Change	2019-2024 Annual Openings
Environmental Scientists and Specialists, Including Health	2,957	3,036	79	3%	276
Hydrologists	179	182	4	2%	17
North (Greater Sacramento)	3,958	4,072	114	3%	358
Natural Sciences Managers	752	781	29	4%	54
Conservation Scientists	504	528	24	5%	50
Environmental Scientists and Specialists, Including Health	3,372	3,457	85	3%	316
Hydrologists	256	261	5	2%	24
North/Far North	4,884	5,027	143	3%	444
Natural Sciences Managers	10,583	11,260	677	6%	812
Conservation Scientists	2,061	2,214	153	7%	214
Environmental Scientists and Specialists, Including Health	14,090	14,693	603	4%	1,375
Hydrologists	990	1,022	32	3%	95
California	27,724	29,189	1,465	5%	2,496

Exhibits 3 and 4 compare the percent change in the number of jobs between 2014 through 2019 and the projected changes through 2024. The rate of change is indexed to the total number of jobs in 2014.

Exhibit 3. Changes in middle-skill employment, 2014-2024³

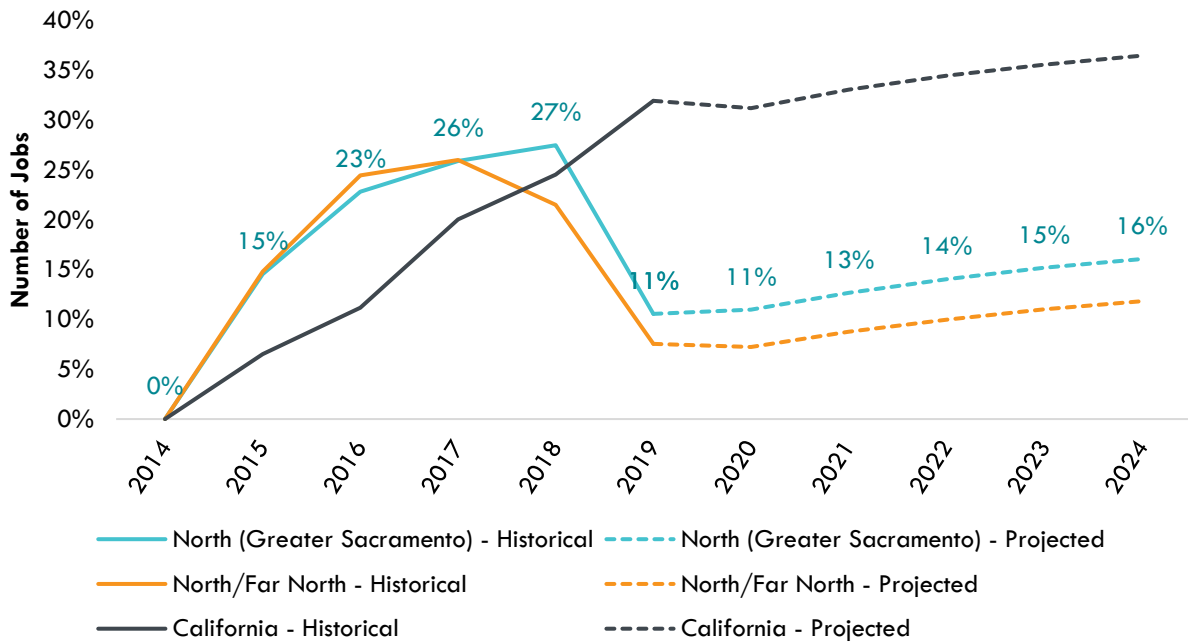
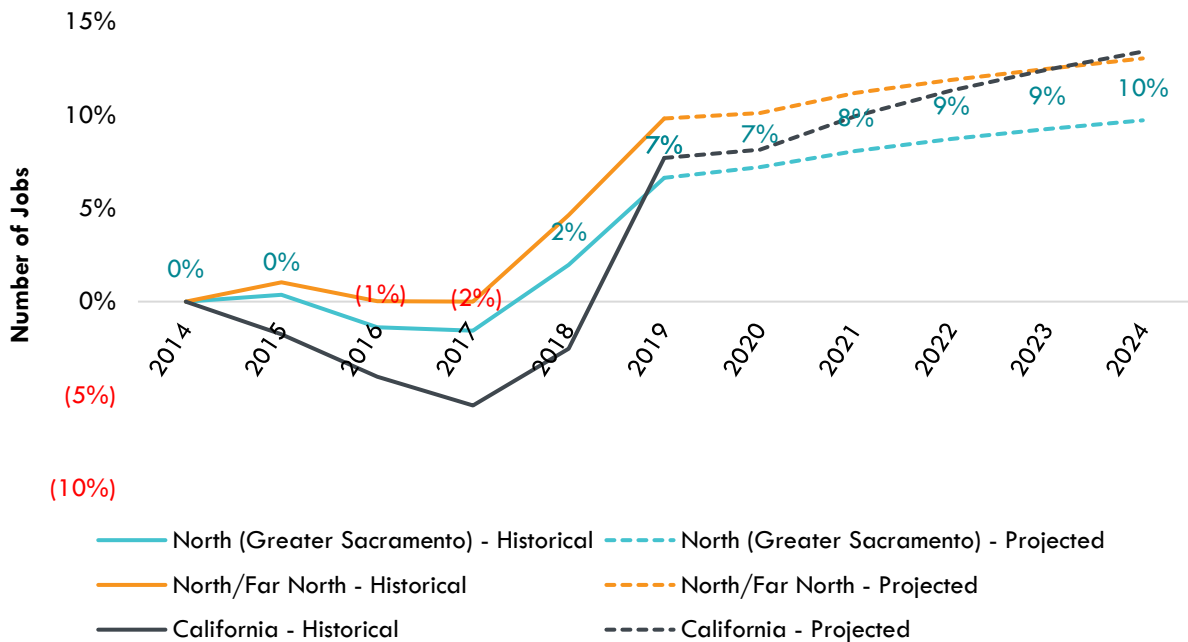


Exhibit 4. Changes in above middle-skill employment, 2014-2024⁴



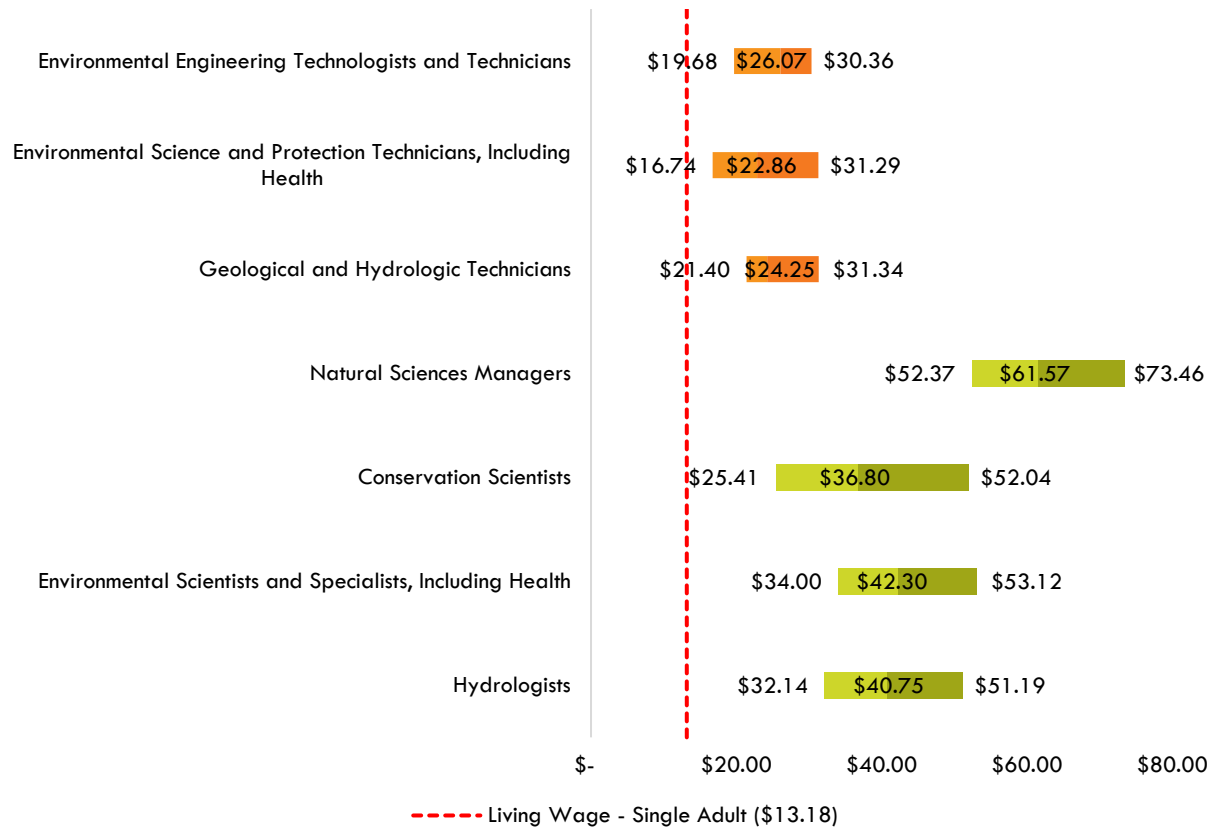
³ Ibid.

⁴ Ibid.

Wages

Exhibit 5 compares the entry-level, median, and experienced wages for the selected occupations to the North (Greater Sacramento) living wage for a single adult - \$13.18 per hour.⁵ Orange represents the middle-skill occupations, while green represents the above middle-skill occupations.

Exhibit 5. Comparison of wages by occupation, 2019⁶



Job Postings

This section of the report analyzes recent data from online job postings (real-time LMI). Online job postings may provide additional insight into recent changes in the labor market that are not captured by historical trends.

The NFN COE identified 457 new online job postings for the selected occupations in the North (Greater Sacramento) region. Job postings data comes from Burning Glass Labor Insights and represents new listings posted online within the last year, from April 1, 2020, to March 31, 2021.

⁵ Living wage is defined as the level of income a single adult with no children must earn to meet basic needs, including food, housing, transportation, healthcare, taxes, and other miscellaneous basic needs. The 25th-percentile and 75th-percentile hourly wages are used as proxy for entry-level and experienced-level wages.

⁶ Ibid.

Occupations and Job Titles

Exhibit 6 details the number of online job postings for the selected occupations. Job postings for hydrologic technicians are not included because it is an emerging occupation, and job posting data is not yet available.

Exhibit 6. Number of job postings by occupation

Occupation	Skill Level	Job Postings	Share of Job Postings
Environmental Scientists and Specialists, Including Health	Above	263	58%
Environmental Science and Protection Technicians, Including Health	Middle	71	16%
Conservation Scientists	Above	51	11%
Hydrologists	Above	43	9%
Natural Sciences Managers	Above	21	5%
Environmental Engineering Technicians	Middle	8	2%
Total Job Postings	--	457	100%

Exhibit 7 shows the top 10 job titles with the most job postings and the share of job postings. All job postings included a job title.

Exhibit 7. Top jobs titles for selected occupations in North (Greater Sacramento)

Job Title	Job Postings	Share of Job Postings
Environmental Scientist	55	12%
Environmental Planner	24	5%
Environmental Planner/Regulatory Specialist	18	4%
Environmental Consulting Industry GIS Specialist	16	4%
Environmental Technician	15	3%
Principal Hydrogeologist	13	3%
Senior Environmental Planner	10	2%
Environmental Planner/CEQA Analyst	10	2%
Hydrologist, Gs	9	2%
Environmental Planner - NEPA/CEQA/Regulatory Compliance	9	2%

Employers

Exhibit 8 shows the top 10 employers with the most job postings for the selected occupations. Twenty-nine percent (n = 131) of job postings did not include an employer.

Exhibit 8. Employers with the most job postings for selected occupations in North (Greater Sacramento)

Employer	Job Postings	Share of Job Postings
Johnson Environmental Services	19	4%
State of California	14	3%
West Yost Associates	11	2%
U.S. Department of the Interior	10	2%
Pacific Gas and Electric Company	10	2%
Stantec Inc.	9	2%
County of Sacramento	9	2%
U.S. Department of Agriculture	7	2%
University Of California	6	1%
Ponder Environmental Services	6	1%

Skills and Certifications

Exhibit 9 shows the specialized skills most requested by employers for the selected occupations.

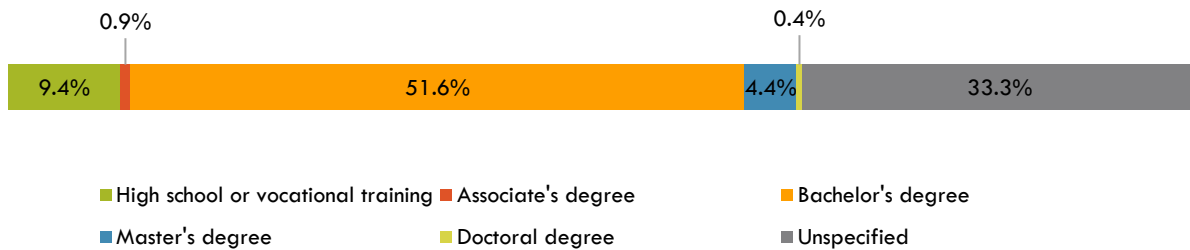
Exhibit 9. Top skills for selected occupations in North (Greater Sacramento)

Specialized Skill	Skill Postings	Share of Job Postings
Environmental Science	165	36%
California Environmental Quality Act (CEQA)	125	27%
Budgeting	105	23%
Project Management	101	22%
Natural Resources	96	21%
National Environmental Policy Act (NEPA)	86	19%

Specialized Skill	Skill Postings	Share of Job Postings
Environmental Planning	85	19%
Environmental Consulting	77	17%
Scheduling	77	17%
Environmental Laws and Regulations	75	16%
Water Quality	66	14%

Exhibit 11 shows the minimum level of education required by employers for job postings for the selected occupations. Thirty-three percent of job postings did not include a preferred education level.

Exhibit 11. Employer-preferred minimum education levels for selected occupations



Education and Training Requirements

The U.S. Census Bureau and Bureau of Labor Statistics collected data on education achieved by workers employed in occupations. Exhibits 12 and 13 show the national-level educational attainment of the current workforce in the selected occupations.

Exhibit 12. Educational attainment for middle-skill occupations, 2019

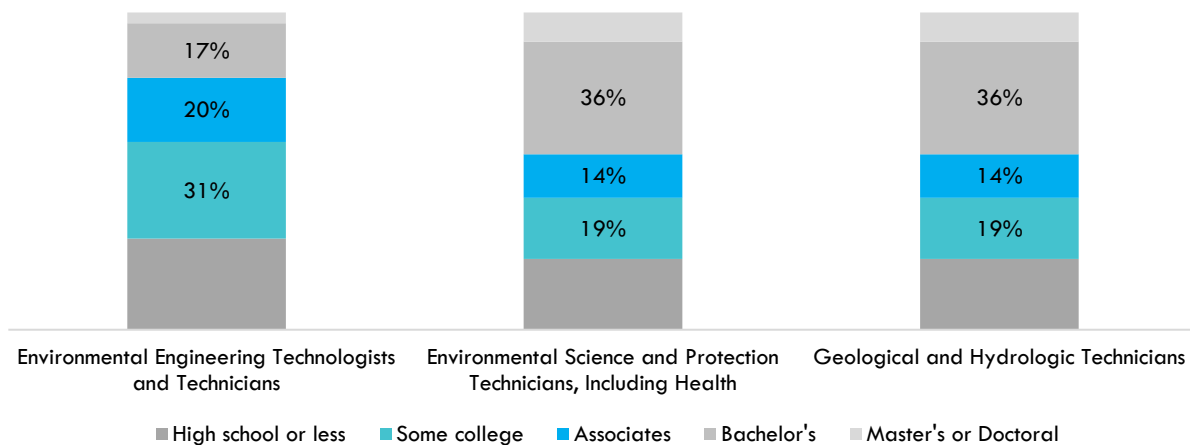
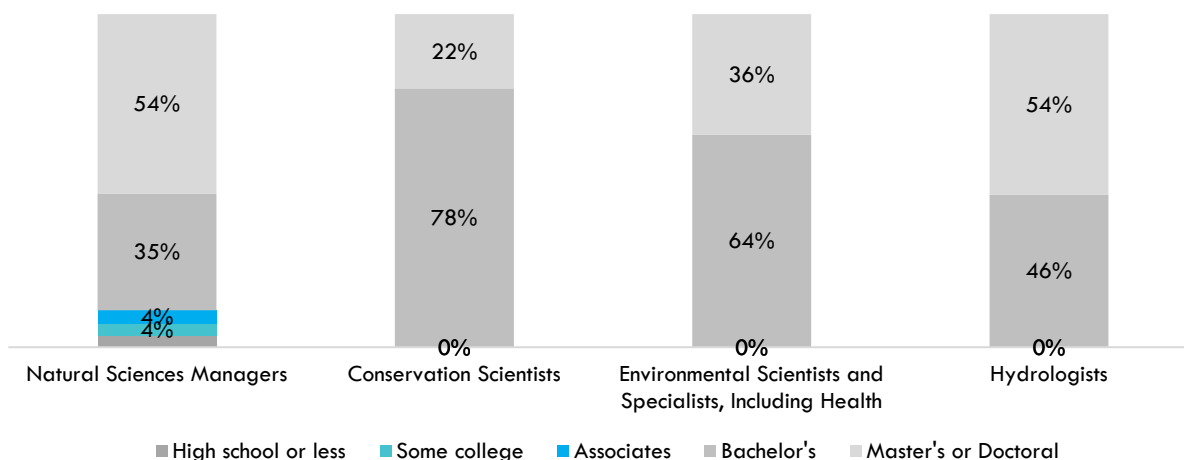


Exhibit 12. Educational attainment for above middle-skill occupations, 2019



The Bureau of Labor Statistics (BLS) uses a system to assign categories for entry-level education, work experience in a related occupation, and typical on-the-job training to each occupation for which the BLS publishes projections data. Exhibit 13 shows the skill level and entry-level job requirements for the selected occupations.

Exhibit 13. Typical education, training, and work experience for selected occupations

Occupation	Skill Level	Typical Entry-Level Education Required	Work Experience Required	Typical On-the-job Training Required
Environmental Engineering Technologists and Technicians	Middle-Skill	Associate's degree	None	None
Environmental Science and Protection Technicians, Including Health	Middle-Skill	Associate's degree	None	None
Geological and Hydrologic Technicians	Middle-Skill	Associate's degree	None	Moderate-term on-the-job training
Natural Sciences Managers	Above Middle Skill	Bachelor's degree	Five years or more	None
Conservation Scientists	Above Middle Skill	Bachelor's degree	None	None
Environmental Scientists and Specialists, Including Health	Above Middle Skill	Bachelor's degree	None	None
Hydrologists	Above Middle Skill	Bachelor's degree	None	None

Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of awards issued in related Taxonomy of Programs (TOP) or Classification of Instructional Programs (CIP) codes. Exhibit 14 shows the TOP and CIP codes related to the selected occupations.

Exhibit 14. Related TOP and CIP programs and codes for the selected occupations

TOP Programs and Codes	Aligned CIP Programs and Codes
Environmental Studies (0302.00)	Environmental Studies (03.0104)
Environmental Technology (0303.00)	Environmental Engineering Technology/Environmental Technology (15.0507)
Natural Resources (0115.00)	Natural Resources (03.0101)
N/A	Environmental Science (03.0103)

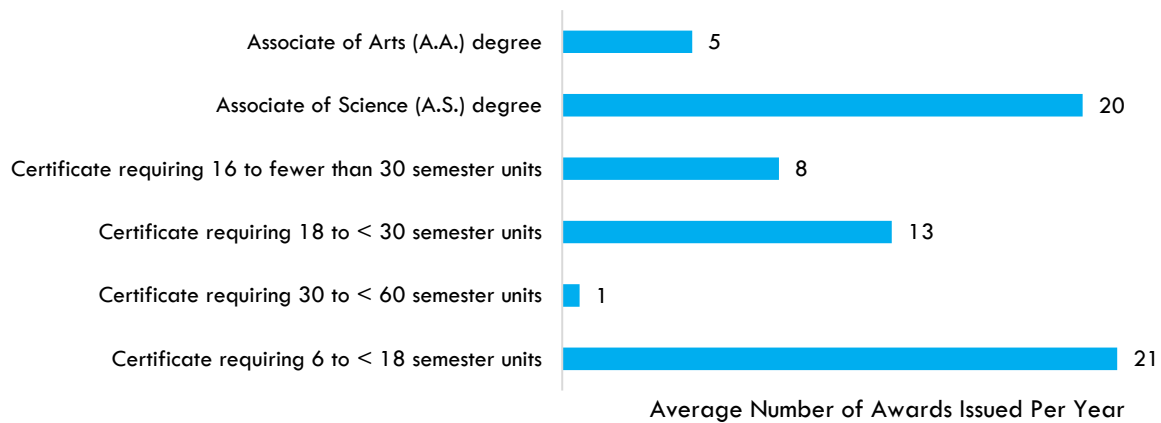
Community College Supply

Exhibits 15 and 16 compare the average number of degrees conferred in human service programs by North (Greater Sacramento) postsecondary training providers over the last three academic years.

Exhibit 15. Community college awards (certificates and degrees), 2017-18 through 2019-20

Program - TOP Code	College	Annual Awards 2017-18	Annual Awards 2018-19	Annual Awards 2019-20	3-Yr Annual Awards Average
Environmental Studies - 0302.00 (not a career education TOP code)	Cosumnes River	2	1	1	1
	Sacramento City	-	-	3	1
	Sierra	4	8	7	6
	<i>Subtotal</i>	6	9	11	8
Environmental Technology - 0303.00	Lake Tahoe	5	4	5	5
	Sacramento City	8	10	-	6
	Sierra	-	4	2	2
	Woodland	12	9	14	12
	<i>Subtotal</i>	25	27	21	25
Natural Resources - 0115.00	American River	44	33	28	35
	<i>Subtotal</i>	44	33	28	35
	Grand Total	75	69	60	68

Exhibit 16. Annual average awards by type, 2017-18 through 2019-20



Four-Year Degree Supply

Exhibit 17 compares the average number of degrees conferred by non-community college training providers in the North (Greater Sacramento) area over the last three academic years. Please note that non-community college data lags by one year.

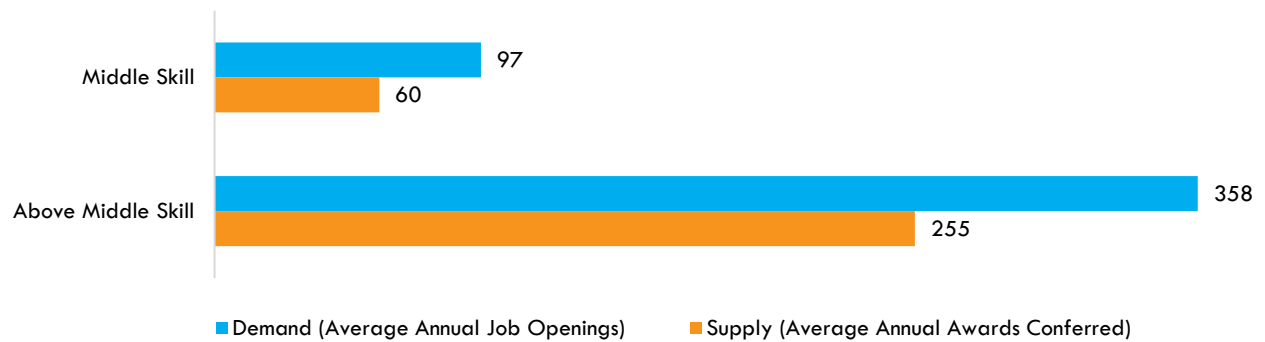
Exhibit 17. North (Greater Sacramento) Bachelor awards, 2016-17 through 2018-19

Program - TOP Code	College	Annual Awards 2016-17	Annual Awards 2017-18	Annual Awards 2018-19	3-Yr Annual Awards Average
Natural Resources - 03.0101	University of California, Davis	46	71	60	59
	<i>Subtotal</i>	46	71	60	59
Environmental Studies - 03.0103	University of California, Davis	0	54	64	39
	<i>Subtotal</i>	0	54	64	39
Environmental Science - 03.0104	California State University, Sacramento	53	57	76	62
	University of California, Davis	96	89	93	93
	William Jessup University	1	1	3	2
	<i>Subtotal</i>	150	147	172	157
Grand Total		196	272	296	255

Supply Gap Analysis

Exhibit 18 compares the average annual job openings to average annual awards conferred in watershed management training programs across the North (Greater Sacramento). Please note that non-career education programs (i.e., environmental studies (TOP 0302.00) were excluded from the supply gap analysis due to the assumption that this program's goal is for transfer to a four-year institution.

Exhibit 18. North (Greater Sacramento) supply gap for watershed management occupations



Findings

- The North (Greater Sacramento) region held 4,808 watershed management jobs in 2019. About 18% (n = 850) of these jobs were in middle-skilled technician-related roles, while the remaining 82% (n = 3,958) were held in above middle-skilled manager and scientist jobs.
- Greater Sacramento watershed management jobs are projected to increase by 3% over the next five years, adding about 160 new jobs to the subregion. Middle-skilled technician positions are projected to add 42 new jobs by 2024, while the above middle-skilled manager and scientist jobs will have 114 new openings.
- Over the next five years, watershed management occupations are projected to have 455 annual openings in the North (Greater Sacramento) region. Nearly 80% of the projected openings are for above middle-skill jobs - that is, jobs that require at least a four-year degree.
- Wage data shows that watershed management occupations earn \$3 to \$40 above the subregion's living wage of \$13.18 per hour. Entry-level wages for middle-skilled technician roles range from \$17 to \$21 per hour, while above middle-skill manager and scientist roles earn between \$25 to \$52 per hour.
- According to real-time labor market information, there were about 457 online job postings for the studied watershed management occupations between April 1, 2020, and March 31, 2021. Online job postings were concentrated at the above middle-skill level, at more than 80% of job postings. About 17% of online job postings were for watershed management technicians.
- While one-third of the job postings did not specify a minimum educational level, 10% of job postings required, at most, an associate's degree. Fifty-two percent of job postings required a bachelor's degree.

- Between 33% and 51% of incumbent middle-skilled watershed technicians have education levels consistent with community college offerings (some college or associate degrees). Up to 36% of incumbent workers in these roles hold a bachelor's degree.
- Most incumbent workers in above middle-skill watershed management occupations (managers and scientists) have a bachelor's degree or beyond. Up to 78% of workers in these roles have a bachelor's degree, while most remaining workers hold graduate and professional degrees.
- Six North (Greater Sacramento) community colleges offer degrees and certificates in 10 programs related to watershed management. The programs are organized in the following TOP coded program: environmental studies (0302.00), environmental technology (0303.00), and natural resources (0115.00). For a list of programs offered, please see Appendix B.
- Awards data analysis shows that community colleges conferred an average of 68 awards (certificates and associate degrees) in related watershed management programs over the last three academic years.
- Local four-year universities also offer programs related to watershed management. These include CSU Sacramento, UC Davis, and William Jessup University. Together, these institutions conferred an average of 255 bachelor degrees per year between 2016-17 and 2018-19. Please note that non-community college awards data lags by one year.

Recommendations

- Based on a three-year average of annual awards in North (Greater Sacramento) region watershed management programs and projected yearly openings, the supply gap analysis shows that the region seems to have room for new training programs.
 - Community college programs issued an average of 68 awards over the last three years (in career education-focused programs). There are 97 projected annual openings for related middle-skilled occupations (i.e., technician jobs).
 - Programs at four-year universities issued an average of 255 bachelor degrees over the last three years, and there are 358 projected annual openings for above middle-skill manager and scientist jobs.
- The North/Far North Center of Excellence recommends moving forward with the program.

COE Recommendation		
Move forward with the program	Proceed with caution	Program is not recommended
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix A. Occupation Definitions

Middle Skill Occupations (require, at most, an associate degree)

Environmental Engineering Technologists and Technicians (17-3025)

- Apply theory and principles of environmental engineering to modify, test, and operate equipment and devices used in the prevention, control, and remediation of environmental problems, including waste treatment and site remediation, under engineering staff or scientists' direction. May assist in the development of environmental remediation devices.
- Sample of reported job titles: Air Quality Instrument Specialist, Engineer Technician, Environmental Engineering Assistant, Environmental Engineering Technician, Environmental Field Technician, Environmental Technician, Haz Tech (Hazardous Technician), Senior Environmental Technician
- Incumbent workers with community college awards or some postsecondary work: 51%

Environmental Science and Protection Technicians, Including Health (19-4042)

- Perform laboratory and field tests to monitor the environment and investigate pollution sources, including those that affect health, under the direction of an environmental scientist, engineer, or other specialists. May collect samples of gases, soil, water, and other materials for testing.
- Sample of reported job titles: Environmental Technician, Laboratory Technician, Public Health Sanitarian, Sanitarian, Water Quality Analyst, Water Quality Specialist
- Incumbent workers with community college awards or some postsecondary work: 33%

Hydrologic Technicians (19-4044)

- Collect and organize data concerning the distribution and circulation of ground and surface water and its physical, chemical, and biological properties. Measure and report on flow rates and groundwater levels, maintain field equipment, collect water samples, install and collect sampling equipment, and process samples for shipment to testing laboratories. May collect data on behalf of hydrologists, engineers, developers, government agencies, or agriculture.
- Sample job titles are in the process of being collected
- Incumbent workers with community college awards or some postsecondary work: 33%

Above Middle Skill Occupations (typically require a four-year degree)

Natural Sciences Managers (11-9121)

- Includes Water Resource Specialists
- Plan, direct, or coordinate activities in life sciences, physical sciences, mathematics, statistics, and research and development in these fields.
- Sample of reported job titles: Environmental Program Manager, Laboratory Manager, Natural Science Manager, Research and Development Director, Research Manager, Water Team Leader
- Incumbent workers with community college awards or some postsecondary work: 8%
- Incumbent workers with a Bachelor's degree: 35%

Conservation Scientists (19-1031)

- Includes Ranger Managers and Park Naturalists

- Manage, improve, and protect natural resources to maximize their use without damaging the environment. May conduct soil surveys and develop plans to eliminate soil erosion or to protect rangelands. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.
- Sample of reported job titles: Conservationist, Environmental Analyst, Erosion Control Specialist, Land Manager, Land Reclamation Specialist, Land Resource Specialist, Resource Conservation Specialist, Resource Conservationist, Soil Conservationist
- Incumbent workers with community college awards or some postsecondary work: 0%
- Incumbent workers with a Bachelor's degree: 78%

Environmental Scientists and Specialists, Including Health (19-2041)

- Includes Climate Change Policy Analysts, Environmental Restoration Planners, and Industrial Ecologists
- Conduct research or perform an investigation to identify, abate, or eliminate sources of pollutants or hazards that affect either the environment or public health. Using knowledge of various scientific disciplines, collect, synthesize, study, report, and recommend action based on data derived from measurements or observations of air, food, soil, water, and other sources.
- Sample of reported job titles: Environmental Analyst, Environmental Health and Safety Specialist, Environmental Programs Specialist, Environmental Protection Specialist, Environmental Scientist, Environmental Specialist, Hazardous Substances Scientist, Registered Environmental Health Specialist (REHS), Research Environmental Scientist, Senior Environmental Scientist
- Incumbent workers with community college awards or some postsecondary work: 0%
- Incumbent workers with a Bachelor's degree: 64%

Hydrologists (19-2043)

- Research the distribution, circulation, and physical properties of underground and surface waters; and study the form and intensity of precipitation and its infiltration rate into the soil, movement through the earth, and return to the ocean and atmosphere.
- Sample of reported job titles: Groundwater Consultant, Hydrogeologist, Hydrologist, Physical Scientist, Research Hydrologist, Scientist, Source Water Protection Specialist
- Incumbent workers with community college awards or some postsecondary work: 0%
- Incumbent workers with a Bachelor's degree: 46%

Appendix B. North (Greater Sacramento) Environmental Programs

The following table provides detailed information about existing active environmental programs that align with this study's occupations.

Table B. North (Greater Sacramento) inventory of programs related to watershed management⁷

TOP Program (Code)	College	Program Title	Awards Offered	Goal
Environmental Studies (0302.00)	Cosumnes River	Environmental Studies & Sustainability	<ul style="list-style-type: none"> • A.S. Degree 	Transfer
	Lake Tahoe	Environmental Studies	<ul style="list-style-type: none"> • A.A. Degree 	Local
	Sacramento City	Environmental Literacy	<ul style="list-style-type: none"> • A.A. Degree 	Local
	Sierra	Environmental Studies and Sustainability	<ul style="list-style-type: none"> • A.S. Degree 	Transfer
	Sierra	Environmental Studies	<ul style="list-style-type: none"> • A.A. Degree 	Local
Environmental Technology (0303.00)	Lake Tahoe	Environmental Technology and Sustainability (with multiple emphases)	<ul style="list-style-type: none"> • A.A. Degree • Certificate (18+ units) 	CTE
	Sacramento City	Field Ecology	<ul style="list-style-type: none"> • Certificate (18+ units) 	CTE
	Sierra	Watershed Ecology	<ul style="list-style-type: none"> • A.S. Degree • Certificate (16-30 units) 	CTE
	Woodland	Drinking Water & Wastewater Technology	<ul style="list-style-type: none"> • Certificate (18+ units) 	CTE
Natural Resources (0115.00)	American River	Environmental Conservation	<ul style="list-style-type: none"> • A.S. Degree ** • Certificate *** 	Local ** CTE ***

⁷ California Community Colleges Chancellor's Office, The Chancellor's Office Curriculum Inventory (COCI) System 2.0, Accessed April 12, 2021, <https://coci2.ccctechcenter.org/>

Appendix C. Methodology and Sources

Occupations in this report were identified using O*Net. This report's findings were determined using labor market data from the Bureau of Labor Statistics (BLS), U.S. Census Bureau data from Emsi, and jobs posting data from Burning Glass.

Sources used for data analysis purposes in this report include:

Cal-PASS Plus LaunchBoard. California Community Colleges Chancellor's Office.
<https://www.calpassplus.org/LaunchBoard/Home.aspx>.

Emsi. <https://www.economicmodeling.com/>. EMSI occupational employment data are based on final EMSI industry data and final EMSI staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors).

Educational Attainment for Workers 25 Years and Older by Detailed Occupation, 2016-2017. Bureau of Labor Statistics. <https://www.bls.gov/emp/tables/educational-attainment.htm#>.

Integrated Postsecondary Education Data System (IPEDS). National Center for Education Statistics. U.S. Department of Education. <https://nces.ed.gov/ipeds/>.

"Labor Insight Real-Time Labor Market Information Tool." Burning Glass Technologies. <http://www.burning-glass.com>.

Labor Market Information Division. California Employment Development Department.
<https://labormarketinfo.edd.ca.gov/>.

Management Information Systems (MIS) Data Mart. California Community Colleges Chancellor's Office.
<https://datamart.cccco.edu/>.

Occupational Employment Statistics (OES). Bureau of Labor Statistics. <https://www.bls.gov/oes/home.htm>.

O*NET OnLine. U.S. Department of Labor/Employment and Training Administration (DOL ETA).
<https://www.onetonline.org/>.

Self-Sufficiency Standard Tool for California. The University of Washington.
<http://www.selfsufficiencystandard.org/>

"Taxonomy of Programs." California Community Colleges Chancellor's Office. June 2012, 6th Edition.
<https://www.cccco.edu/-/media/CCCCO-Website/About-Us/Divisions/Educational-Services-and-Support/Academic-Affairs/What-we-do/Curriculum-and-Instruction-Unit/Files/TOPmanual6200909corrected12513pdf.ashx>.

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