



Labor Market Analysis for Program Recommendation Land Stewardship and Sustainability Occupations West Valley College

Prepared by the San Francisco Bay Center of Excellence for Labor Market Research

July 2023

Recommendation

Based on all available data, there appears to be an “undersupply” of Land Stewardship and Sustainability workers compared to the demand for this cluster of occupations in California, the Bay region and the Silicon Valley sub-region (Santa Clara county). The undersupply is based on data that projects over 1,660 annual openings in California and over 400 annual openings in the Bay region for Land Stewardship and Sustainability workers, but with no Bachelor’s degree awards for this specific program of study.

West Valley College has researched programs at four-year colleges in California and has determined that none are focused on Land Stewardship and Sustainability, indicating the following: “we have closely reviewed programs throughout the State of California at the community college level, UC, and CSU systems and have determined that we cannot find programs like this designed in this way. We have constructed our classes and courses of study specifically to avoid duplication with four-year colleges in California.”

In addition there is expected to be demand for these workers that will be created over the next 10 years based on recently passed federal and state legislation. Funding will come to California and the Bay region that will likely create thousands of new jobs in the Land Stewardship and Sustainable Agriculture sector in California and hundreds of new jobs in the Bay region over the next 10 years.

Introduction

This report profiles Land Stewardship and Sustainability Occupations that require a Bachelor’s degree in the 12 county Bay region and the Silicon Valley sub-region for a proposed Bachelor of Science program West Valley College.

This report also provides student outcomes data on employment and earnings for TOP 0199.00 - Other Agriculture and Natural Resources programs in the state and region. It is recommended that these data be reviewed to better understand how outcomes for students taking courses on this TOP code compare to potentially similar programs at colleges in the state and region, as well as to outcomes across all CTE programs at West Valley College and in the region.

Occupations

Five (5) occupations that require a Bachelor’s degree were selected by West Valley College for this labor market analysis, because the proposed Land Stewardship and Sustainability Bachelor of Science program will prepare students for these occupations. The description and entry-level educational requirements for these five occupations are listed below.

- **Conservation Scientists (19-1031):** 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. Excludes “Zoologists and Wildlife Biologists” (19-1023) and “Foresters” (19-1032).

Entry-Level Educational Requirement: Bachelor’s degree

Training Requirement: None

Percentage of Community College Award Holders or Some Postsecondary Coursework: 0%

- **Foresters (19-1032):** Manage public and private forested lands for economic, recreational, and conservation purposes. May inventory the type, amount, and location of standing timber, appraise the timber’s worth, negotiate the purchase, and draw up contracts for procurement. May determine how to conserve wildlife habitats, creek beds, water quality, and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitor trees for healthy growth, and determine optimal harvesting schedules.

Entry-Level Educational Requirement: Bachelor’s degree

Training Requirement: None

Percentage of Community College Award Holders or Some Postsecondary Coursework: 0%

- **Environmental Scientists and Specialists, Including Health (19-2041):** Conduct research or perform investigation for the purpose of identifying, abating, or eliminating sources of pollutants or hazards that affect either the environment or the health of the population. Using knowledge of various scientific disciplines, may collect, synthesize, study, report, and recommend action based on data derived from measurements or observations of air, food, soil, water, and other sources. Excludes “Zoologists and Wildlife Biologists” (19-1023), “Conservation Scientists” (19-1031), “Forest and Conservation Technicians” (19-4093), “Fish and Game Wardens” (33-3031), and “Forest and Conservation Workers” (45-4011).

Entry-Level Educational Requirement: Bachelor’s degree

Training Requirement: None

Percentage of Community College Award Holders or Some Postsecondary Coursework: 0%

There are two occupations listed as “eight-digit code” occupations under Conservation Scientists: Park Naturalists (19-1031.03) and Range Managers (19-1031.02). Although traditional EDD/EMSI occupational data, which projects future demand for occupations, is not available for these eight-digit occupations in Tables 1, 2 and 3 below, there are job postings data that documents demand for these occupations in Table 4.

- **Park Naturalists:** Plan, develop, and conduct programs to inform public of historical, natural, and scientific features of national, state, or local park.
- **Range Managers:** Research or study range land management practices to provide sustained production of forage, livestock, and wildlife.

Occupational Demand

Table 1. Employment Outlook for Land Stewardship and Sustainability Occupations in California

Occupation	2021 Jobs	2026 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Earning	Median Hourly Wage
Conservation Scientists	1,687	1,928	241	14%	1,065	213	\$24	\$31
Foresters	909	998	89	10%	533	107	\$28	\$36
Environmental Scientists and Specialists, Including Health	12,090	13,087	997	8%	6,733	1,347	\$33	\$44
Total	14,685	16,013	1,328	9%	8,331	1,667		

Source: Lightcast 2022.3

Table 2. Employment Outlook for Land Stewardship and Sustainability Occupations in Bay Region

Occupation	2021 Jobs	2026 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Earning	Median Hourly Wage
Conservation Scientists	465	527	62	13%	284	57	\$26	\$30
Foresters	361	376	14	4%	180	36	\$31	\$38
Environmental Scientists and Specialists, Including Health	2,852	3,089	238	8%	1,588	318	\$36	\$46
Total	3,678	3,992	314	9%	2,052	411		

Source: Lightcast 2022.3

Bay Region includes: Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma Counties

Table 3. Employment Outlook for Land Stewardship and Sustainability Occupations in Silicon Valley Sub-region

Occupation	2021 Jobs	2026 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Earning	Median Hourly Wage
Conservation Scientists	101	112	11	11%	58	12	\$26	\$26
Foresters	21	22	1	7%	11	2	\$29	\$38
Environmental Scientists and Specialists, Including Health	376	416	40	11%	219	44	\$37	\$50
Total	497	550	53	11%	289	58		

Source: Lightcast 2022.3

Silicon Valley Sub-Region includes: Santa Clara County

Job Postings in California, Bay Region and Silicon Valley Sub-Region**Table 4. Number of Job Postings by Occupation for latest 12 months (July 2022 - June 2023)**

Occupation	California	Bay Region	Silicon Valley
Environmental Scientists and Specialists, Including Health	2,883	765	19
Conservation Scientists	857	198	8
Foresters	285	41	1
Range Managers	119	3	0
Park Naturalists	14	2	0

Source: Lightcast

Table 5a. Top Job Titles for Land Stewardship and Sustainability Occupations for latest 12 months (July 2022 - June 2023) - Bay Region

Title	Bay	Title	Bay
Environmental Scientists	171	Environmental Consultants	12
Environmental Planners	135	Climate Change Specialists	10
Environmental Specialists	129	Natural Resources Specialists	9
Park Rangers	45	Water Conservation Specialists	9

Title	Bay	Title	Bay
Environmental Protection Specialists	37	Environmental Department Managers	8
Conservationists	25	Environmental Monitors	8
Environmental Field Scientists	22	Environmental Scientists/Geologists	8
Environmental Scientist Supervisors	14	Land Survey Managers	8

Source: Lightcast

Table 5b. Top Job Titles for Land Stewardship and Sustainability Occupations for latest 12 months (July 2022 – June 2023) - Silicon Valley Sub-Region

Title	Silicon Valley	Title	Silicon Valley
Environmental Planners	21	System Specialists	3
Environmental Specialists	19	Environmental Reporters	3
Environmental Scientists	12	Test Technicians	3
Park Rangers	9	Environmental Protection Specialists	2
Land Survey Managers	7	Urban Foresters	2
Environmental Field Scientists	6	Utility Foresters	1
Water Conservation Specialists	4	Environmental Services Specialists	1
Environmental Consultants	4	Environmental Permitting Specialists	1

Source: Lightcast

Industry Concentration

Table 6. Industries hiring Land Stewardship and Sustainability Workers in Bay Region

Industry - 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2021)	Jobs in Industry (2026)	% Change (2021-26)	% Occupation Group in Industry (2022)
Local Government, Excluding Education and Hospitals	645	672	4%	17%
State Government, Excluding Education and Hospitals	409	430	5%	11%
Administrative Management and General Management Consulting Services	366	474	29%	11%
Engineering Services	302	325	8%	8%
Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)	204	246	20%	6%
Federal Government, Civilian, Excluding Postal Service	219	211	-4%	6%
Other Scientific and Technical Consulting Services	183	155	-16%	5%

Industry - 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2021)	Jobs in Industry (2026)	% Change (2021-26)	% Occupation Group in Industry (2022)
Research and Development in Biotechnology (except Nanobiotechnology)	143	188	32%	4%
Marketing Consulting Services	138	154	12%	4%
Testing Laboratories	109	120	11%	3%

Source: Lightcast 2022.3

Table 7. Top Employers Posting Land Stewardship and Sustainability Occupations in Bay Region and Silicon Valley Sub-Region (July 2022 – June 2023)

Employer	Bay	Employer	Silicon Valley
State of California	18	AECOM	3
University of California	11	DOCS Health	2
AECOM	8	Stantec	2
California Public Utilities Commission	8	Align Technology	1
DOCS Health	8	Belfor	1
Stantec	6	Bsi Companies	1

Source: Lightcast

Future Job Creation

This section of the report presents data on recently passed federal and state legislation that will bring funding to California and the Bay region, creating new jobs in the Land Stewardship and Sustainable Agriculture sector. These jobs are not reflected in the EMSI and job postings data presented in this report.

The climate portion of the **Inflation Reduction Act** which became federal law in August 2022, makes investments to protect forests, wetlands, and other natural ecosystems. It will help to shield communities from climate impacts and also create more than 600,000 “Natural Resources and Natural Infrastructure” jobs over the next 10 years in the following areas:

- **Coastal communities:** More than 50,000 jobs from investments to help coastal communities build protection from climate-related storms and protect fisheries and other habitats;
- **Forests:** More than 100,000 jobs from grants and investments to protect and restore forests in support of climate resilience and healthy ecosystems;
- **National parks:** More than 20,000 jobs from investments to protect and restore public lands; and
- **Healthy soil:** Nearly 380,000 jobs from investments to support farmers who use regenerative practices to reduce climate pollution, strengthen drought resistance, and boost productivity.

The **California Climate Commitment** will bring California’s multi-year climate investment to \$53.9 billion – more than what most other *countries* are spending – to lead the world in fighting climate change. While there is no specific number of new jobs that will be created as a result of the “nature-based”, farming practices and wildfire/forest investments in this state bill, it is likely that hundreds of new jobs in California and the Bay region will be created that

will increase employment opportunities in the Land Stewardship and Sustainable Agriculture sector. The funding amounts are outlined below:

- Nature-based solutions to fight climate change: Investing \$1.4 billion to restore forests, woodlands, grasslands, rivers and other natural wonders that can help play an important role in combating climate change and sequestering carbon.
- Help farmers: Send \$1.1 billion to farmers who are on the frontlines of extreme weather and invest in farming practices that promote soil health and sustainability.
- Bolster wildfire resilience: A \$2.7 billion investment to reduce the risk of catastrophic wildfires and protect forests. These projects include forest thinning, prescribed burns, grazing, reforestation, and fuel breaks.
- Train and hire a massive clean energy workforce: Invest \$315 million putting California to work, providing the training and education needed for workers to attain new, clean jobs and— clean up orphan oil wells.

Educational Supply

There are no community colleges in the Bay region or California that have been approved to offer a Bachelor's degree program in the area of Land Stewardship and Sustainability. If approved, West Valley College intends to list their Bachelor's degree program under TOP 0199.00 - Other Agriculture and Natural Resources.

There are no community colleges in the Bay region issuing annual (3-year average) awards on TOP 0199.00 - Other Agriculture and Natural Resources. And there are no other CTE Institutions in the Bay region issuing annual (3-year average) awards on CIP 01.0308 - Agroecology and Sustainable Agriculture.

There are three (3) four-year colleges in California with Bachelor's degree programs in fields of study that could potentially overlap with West Valley College's proposed Bachelor's degree program in Land Stewardship and Sustainability. Two programs are listed under CIP code 3.0501 - "Forestry, General" and are offered by California Polytechnic State University-San Luis Obispo and Humboldt State University. One program is listed under CIP code 1.0308 - Agroecology and Sustainable Agriculture and is offered by U.C. Davis.

However, West Valley College has researched the above programs at these four-year colleges and has determined that none are focused on Land Stewardship and Sustainability, indicating the following: "we have closely reviewed programs throughout the State of California at the Community College level, UC, and CSU systems and have determined that we cannot find programs like this designed in this way. We have constructed our classes and courses of study specifically to avoid duplication with four-year colleges in California."

Gap Analysis

Based on the data included in this report, there is a current labor market gap in **California** with 1,667 annual openings for the Land Stewardship and Sustainability occupational cluster and no annual (3-year average) awards for an annual undersupply of 1,667 students. In the **Bay region** there is a gap with 411 annual openings for the occupational cluster and no annual (3-year average) awards for an annual undersupply of 411 students. In the **Silicon Valley Sub-Region**, there is also a gap with 58 annual openings for the occupational cluster and no annual (3-year average) awards for an annual undersupply of 58 students.

In addition, there is anticipated demand for these workers that will be created over the next 10 years based on recently passed federal and state legislation with new funding, which will increase the "undersupply" of graduates, if no Bachelor's degree programs are created. The new funding **will likely create thousands of new jobs in the Land Stewardship and Sustainable Agriculture sector in California and hundreds of new jobs in the Bay region over the next 10 years.**

Student Outcomes

Table 9. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0199.00 - Other Agriculture and Natural Resources

Metric Outcomes	Bay All CTE Programs	West Valley All CTE Programs	State 0199.00	Bay 0199.00	Silicon Valley 0199.00	West Valley 0199.00
Students with a Job Closely Related to Their Field of Study	74%	72%	50%	N/A	N/A	N/A
Median Annual Earnings for SWP Exiting Students	\$48,926	\$42,972	\$26,836	\$44,310	N/A	N/A
Median Change in Earnings for SWP Exiting Students	23%	28%	35%	N/A	N/A	N/A
Exiting Students Who Attained the Living Wage	50%	35%	56%	N/A	N/A	N/A

Source: Launchboard Strong Workforce Program Median of 2018 to 2021.

Skills, Certifications and Education

Table 10. Top Skills for Land Stewardship and Sustainability Occupations in Bay Region (July 2022 - June 2023)

Skill	Posting	Skill	Posting
Environmental Science	99	Environment Health And Safety	24
Project Management	59	Environmental Laws	23
California Environmental Quality Act (CEQA)	47	Data Analysis	22
Biology	45	Environmental Compliance	22
Environmental Planning	39	Environmental Permitting	22
Environmental Studies	33	Geology	22
Geographic Information Systems	31	Soil Science	22
Natural Resource Management	25	Ecology	21
Stormwater Management	25	Field Research	20
Auditing	24	National Environmental Policy Act	20

Source: Lightcast

Table 11. Certifications for Land Stewardship and Sustainability Occupations in Bay Region (July 2022 - June 2023)

Certification	Posting	Certification	Posting
Valid Driver's License	84	Certified Industrial Hygienist (CIH)	3
Basic Life Support (BLS) Certification	8	CDL Class C License	3
HAZWOPER Certification	7	Commercial Driver's License (CDL)	3

Certification	Posting	Certification	Posting
First Aid Certification	6	CDL Class B License	2
Cardiopulmonary Resuscitation (CPR) Certification	5	American Red Cross CPR Certification	2
American Institute of Certified Planners (AICP) Certification	5	Certified Environmental Professional	2
Hazmat Endorsement	4	Certified Planner	2
American Red Cross First Aid Certification	3	Certified Disability Management Specialist	2

Source: Lightcast

Table 12. Education Requirements for Land Stewardship and Sustainability Occupations in Bay Region

Education Level	Job Postings	% of Total
High school or GED	89	9%
Associate degree	51	5%
Bachelor's degree & higher	883	86%

Source: Lightcast

Note: 32% of records have been excluded because they do not include a degree level. As a result, the chart above may not be representative of the full sample.

Methodology

Occupations for this report were identified by use of job descriptions and skills listed in O*Net. Labor demand data is sourced from Lightcast occupation and job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CCCC Data Mart and CTE Launchboard.

Sources

O*Net Online
 Lightcast
 CTE LaunchBoard www.calpassplus.org
 Launchboard
 Statewide CTE Outcomes Survey
 Employment Development Department Unemployment Insurance Dataset
 Living Insight Center for Community Economic Development
 Chancellor's Office MIS system

Contacts

For more information, please contact:

- Leila Jamoosian, Research Analyst, for Bay Area Community College Consortium (BACCC) and Centers of Excellence (COE), leila@baccc.net
- John Carrese, Director, San Francisco Bay Center of Excellence for Labor Market Research, icarrese@ccsf.edu or (415) 267-6544