Opportunity Strikes: Taking Advantage of a Geothermal Project to Help Realize Smith College's Landscape Master Plan

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Smith College's recent adoption of a Landscape Master Plan (LMP, 2022) and commitment to a campus-wide geothermal heating and cooling system by 2030 presents a unique case study in green infrastructure and landscape transformation. This ambitious project, which involves significant excavation across the campus, aligns with Smith's goal of achieving carbon neutrality by 2030 and represents the largest green-infrastructure undertaking in the college's history.

Project Overview: The geothermal system necessitates extensive land excavation ~1 acre per well-field, and there are three well-fields) and complex horizontal piping infrastructure. This undertaking, the largest landscape disruption in the campus landscape to date, provides a rare opportunity to align geothermal infrastructure development with the goals of the new LMP. This strategic approach is accelerating the realization of LMP objectives, facilitating rapid and impactful landscape transformation.

Innovative Landscape Solutions: One of the first completed projects took place in the area of Davis Lawn, which has transitioned from a turf grass area to a vibrant space with pollinator-friendly plants and social seating areas. This renovation not only enhances ecological value, but also improves accessibility, including creating on-grade sidewalks leading to the Davis Center's main entrance. This project exemplifies how integrating infrastructure and landscape planning can enhance both environmental and social outcomes.

Critical Root Zone Mapping and Protection: An additional critical component is the mapping and protection of the Critical Root Zones (CRZ) of trees within Smith's Level IV Arboretum. By employing GIS technology to determine CRZ based on tree Diameter at Breast Height (DBH), this initiative ensures that tree root systems are treated as essential infrastructure, akin to utilities. This collaborative effort among the Landscape Studies Program, Facilities Management, the Botanic Garden, and Campus Planning & Sustainability will guide future construction projects and contribute to the preservation of the campus arboretum.

Impact and Future Directions: These projects collectively illustrate how strategic landscape planning and infrastructure development can advance sustainability goals and enhance campus environments. The integration of geothermal systems with the LMP, alongside critical tree protection efforts, demonstrates a holistic approach to landscape and greenway planning that is both innovative and practical.

Authors Biography:

Reid Bertone-Johnson is a senior lecturer in the Landscape Studies Program at Smith College. He teaches a range of courses including design studios, GIS, Visual Storytelling, and landscape seminars. He also directs Smith's annual Landscape Studies Lecture Series. Reid's scholarship includes broad-scale landscape design, regional planning, and community engagement. He pursues his work in collaboration with his students in Smith's Greenway Lab, which he co-directs with Gaby Immerman, Senior Lecturer in Biology. Reid also runs his own team of students who design, make, and deploy a mobile park-making kit – a ParKit, for use in community-engaged public design and planning initiatives.

Beth Hooker provides leadership to bridge campus operations with education and research at Smith College, as the Director of Sustainability and Administrative Director of the Center for the Environment, Ecological Design and Sustainability (CEEDS). Beth Hooker has extensive experience in education, providing institutional sustainability leadership at Smith, Mount Holyoke and Hampshire Colleges. She has led numerous projects to promote regional resiliency, sustainable practices and clean energy technologies. Prior to joining Smith, Beth worked to advance corporate goals and practices to steward freshwater resources at the environmental nonprofit, Ceres.

Nermine Mokdad is a senior at Smith College, majoring in Architecture & Urbanism with a minor in Landscape Studies and a concentration in Collaborative Innovation. After Smith, she's hoping to either pursue a career in architecture, landscape architecture or urban planning or go to graduate school for this field. In summer 2023, she participated in the SURF program at Smith College, collaborating with the Landscape Studies department and the Botanic Garden to develop a map of Critical Root Zones of campus trees aimed at protecting trees during construction activities on campus.

Molly Neu is a senior at Smith College pursuing a double major in Architecture & Urbanism and Computer Science, with an environmental concentration in sustainable design. She has worked as an intern for C&H Architects in Amherst, MA developing a carbon study of Washburn House, one of Smith College's dorm buildings. Molly also interns at Smith College’s Center for the Environment, Ecological Design & Sustainability (CEEDS). Her projects include helping to design signage for the newly renovated Davis Lawn, developing institution recommendations on embodied carbon reduction and offset procurement, and helping to organize SmithCycle, the College's back-to-school secondhand sale