

Briefings

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Managing airside vegetation

Editor's note: The following article is an update from information previously published in the Winter 2015 issue of Briefings.

A Google search of “airside vegetation management” will bring up results that focus mostly on obstructions and tree removal, but managing airside vegetation is about more than visibility issues.

The health of your airport’s ecosystem is important: a healthy turf environment reduces maintenance needs and costs, reduces erosion and runoff, improves water quality and infiltration, and preserves the airfield surface. Effectively managing vegetation also improves safety for airport users and limits liability for the governing agency. Following are several strategies for addressing common vegetation-related issues facing airports.

Remove accumulated sand and soil

Soil next to airfield pavements is often not conducive to plant growth. Snow control actions can result in accumulated salts and deicing chemicals in the soil along pavement edges—an unhealthy condition for any vegetation. Excess soil accumulation also reduces the vertical pavement edge drop-off, which can eventually cause water to pond on the runway edge—affecting safety and contributing to pavement deterioration. One solution is to vacuum the area with the same standard broom vacuum used for sweeping in the summer. This removes the overburden of soil left from winter as well as salt and chemical residue. A light broom with pick-up capabilities could also be used. When sweeping the pavement, broom soil onto the runway or taxiway edge, then remove it with a sweeper and dispose of it properly. This maintains the edge drop and reduces build-up on runway edges. A poor environment can also be improved by simply dethatching the soil with a light brooming over the turf area.

Repair winterkill

Storing snow on airfield turf will likely kill the grass. To fix this problem each spring, hire a local seeding contractor or farmer, or work with a local agency (such as the city or county), to disc the dead spots under snow storage areas. Maintenance staff could also perform this task using a simple track backhoe with common skid-steer attachments. A lawn aerator or residential lawn tool could also be rented for hard-packed soil areas.

Rejuvenate stripped soils

Soil testing is available through regional University of Minnesota Extension Offices. Consider testing soil from various locations on an airfield before treating soil with a one-size-fits-all approach. After disking or aerating, broadcast soil amendments as recommended. Most soils are likely missing nitrogen or phosphorus, so replace those nutrients with a standard 10-10-10 fertilizer blend at 100 lbs/acre. Make sure to use slow-release fertilizer that contains a primary nitrogen source in a coated, piled urea form and has at least 70 percent of its nitrogen component as slow-release, water-insoluble nitrogen.

A product called TAZO®-B, which consists of Azospirillum bacteria that feed the soil, is another option. (Similar products are available under other names.) Once the soil is amended, overseed with a commercial turf seed mix at a rate of 220 lbs/acre. MnDOT standard mix 25-131 is a low-maintenance turfgrass with some salt and drought tolerance that will require mowing only once every three weeks.

Mulch after seeding

The goal of a seeding repair is to produce green grass as soon as possible—grass that will hold moisture and



Photo: Shutterstock

lower fire danger. For best results, use a fiber mulch that sticks to the soil. Several appropriate mulch options are available, including stabilized fiber matrix (SFM) included in MnDOT specification 3884.2B3. An erosion control blanket is another alternative that may be less expensive than mulch. Airports should consider partnering with local agencies to share the equipment and labor needed for mulching.

Discourage wildlife

In the last five years, the use of native grasses has become much more common. All grasses are generally attractive to wildlife, and the species of turfgrass doesn’t matter much. However, to help control wildlife in turf areas, eliminate food, water, and sheltering vegetation near pavement edges, and control grass height to improve visibility and reduce refuge and hiding areas. Apply nonselective herbicides in areas that can’t be mowed, such as along fences, ditches, or steep banks with riprap for erosion control.

Reduce woody vegetation

The MnDOT Office of Aeronautics identifies obstructions in runway approaches every three years. But there are also simple surveying techniques to determine tree height and encroachment into approaches.

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An airport's story: Moose Lake–Carlton County

The first thing you may notice at the Moose Lake–Carlton County Airport is the 1967 Cobra helicopter on display near the entrance. A past Carlton County commissioner worked to obtain the army surplus donation, then helped raise the money to have it moved to the airport.

The public airport is near the town of Moose Lake in northwestern Minnesota. Airport manager Quentin Anderson, who has been in that position for 22 years, divides his time between the Moose Lake airport and Carlton County's other airport at Cloquet 30 miles away—a job that has him sometimes wishing he could be in two places at once. Fortunately, the Moose Lake airport also employs a part-time mainte-



nance worker to help with the day-to-day maintenance.

According to Anderson, the airport's primary operations are for tourism and recreational flying, with some additional operations in business, medical, and government use. The airport averages 94 operations a week with 18 based aircraft; 51 percent are transient and 49 percent are local general aviation.

Moose Lake Airport was established as a turf strip in 1951; it was lighted in 1972 and paved in 1992. The airport is home to a six-unit t-hangar purchased from the South St. Paul Airport–Holman Field. It was disassembled for the move, then reassembled at Moose Lake in 2001. A relatively new arrival and departure building was constructed in 2012.

In 2013, the airport completed major reconstruction of the main runway and taxiway—a project that received a Merit Award for Outstanding Performance from MnDOT. The airport installed LED runway lighting in 2015, which has proven more efficient than the previous halogen lighting and has worked satisfactorily, Anderson

says. “I do have some concerns with how the fixtures are sealed from moisture. We did have one leak and burned out the circuit board. Time will tell if this becomes a larger problem.”

Over the last few years, Anderson says the airport's focus has been crack seal coating pavement maintenance and security camera system installation. Since its facilities and pavements are fairly new, the airport's next priority will be constructing new hangars—something much needed, as the airport currently maintains a waiting list for space.

Anderson counts as a success the fact that the airport is operationally self-sufficient. “County levy dollars are only needed for capital improvement projects,” he says.

Staying up to date on airport, environmental, and other regulations as well as various inspections, is probably the toughest part of his job, Anderson says. And because this is Minnesota, weather can also be difficult. “Weather was a challenge this winter,” Anderson says. “We had several snowstorms back to back.”

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Begin by staking your approach area using lath and surveyor ribbon. Conduct one survey and tie ribbon on trees that are nearing the critical height, then monitor the tree heights with GIS or with a simple database. Most important, develop an annual maintenance plan that includes monitoring tree height and encroachment.

Develop a mowing policy

A mowing policy will enable better use of maintenance staff time and help with prioritizing areas to be mowed while identifying those that can remain unmowed. Mowing at the wrong time can be harmful to wildlife and mowing when soils are saturated can damage soil structure and function. Remember to communicate the mowing plan, like the snow removal plan, to airport tenants and users. Ensure your mowing policy addresses safe operating practices, staff training on airport safety and

radio communications, FAA safety requirements, noxious weed control, and expected or required cost reductions.

In addition, an airport owner should clearly identify and communicate to maintenance staff:

- The objective of mowing
- The impacts if mowing is reduced
- Areas that could be left unmowed with little negative effect
- Ways to blend areas that are left unmowed with areas that are mowed
- Treatment of those areas left unmowed
- Mower operator training needs
- The person or persons who will determine the areas to mow and not mow
- The best time to mow certain vegetation types, based on growth, time of year, or height
- Alternative vegetation that could be planted that does not have to be mowed

- Nesting times for local wildlife
- Location of saturated soils

Getting input from all mowing staff will result in a policy that addresses safety concerns, identifies communication issues and procedures, and establishes the criteria for which areas are to be mowed and to what extent. Agreement on these issues and inclusion in a written plan will result in all staff working toward the same goal.

More information

- MnDOT's mowing policy: *MnDOT Maintenance Manual*, ch. 5, dot.state.mn.us/maintenance/manual.html
- Tree trimming guidance: *Roadside Vegetation Management Handbook*, lrrb.org/media/reports/200019.pdf

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Longtime figure at MnDOT Aeronautics embarks on next chapter

On the wall of Kathy Vesely's office is an oversized map of the world with dozens of tiny pushpins inserted at various locations—clusters in Australia, Europe, South America, and tiny islands in the Pacific Ocean. The pins denote places Vesely has visited, sometimes standing in the basin of a volcano, wading into drifts of desert sand, or cruising through fjords.

On March 3, Vesely packed up her map, ending a 40-year career with MnDOT, 19 of which were spent in the Office of Aeronautics. Her retirement plans include adding more pins through the travel she has come to relish.

"Traveling is my vice," she says. "People might spend their money on smoking, drinking, golf, boats—whatever their vice of choice is... Well that's how I am with traveling. I will spend money on a trip before anything else."

For more than six years, Vesely has served as assistant director of the Office of Aeronautics—an office she joined "so her job and her hobby would match," she says. She and her husband own a meticulously restored 1968 Cessna Cardinal airplane. While her husband, Mikey, is the pilot, Vesely has been content so far to serve as the navigator—or occasionally, "nag-avator,"

she says. Another retirement goal she harbors is earning her pilot license; she and her husband completed ground school years ago, but for practical and financial reasons, only he continued on.

Throughout her life, Vesely has shown an aptitude for adventure and independence. "I'm a North Woods girl...who was raised more like a boy," she says of her childhood in Turtle River, Minnesota, near Bemidji. She was outdoors a lot, helping cut timber and fixing her own snowmobile. "I wasn't a girly-girl type," she says.

Vesely graduated from Bemidji State University with a major in earth science and a minor in geography—with concentrations in land-use planning and environmental studies. She and a high school classmate were the first women to earn geology degrees from the school.

Her first job out of college was for a surveying company as a drafting technician. She was there just under a year when she was laid off. With time suddenly on her hands, she planned an extended backcountry skiing and camping trip with a friend in Montana. With her Chevy Vega packed up, she stopped on her way out of town to follow up on a job lead at the MnDOT district office in Bemidji. To her surprise, she was



offered a job on the spot—a job that started the next day.

"I was on the horns of an ethical dilemma," she says. Resigned, she turned the car around and headed back home, thus beginning her MnDOT career. Over the years, Vesely has worked with surveys and detail design, eventually transferring to the metro area.

"Whenever I got bored [at MnDOT], there was always something else to do. It's kept me challenged," she says.

When Vesely joined the Aeronautics Office development group in 2000, she thought she'd be there for a short time before she retired. Nineteen years later, the office is busier now than ever.

When Aeronautics' current director, Cassandra Isackson, joined MnDOT in 2012, the agency realized there was a work

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Getting to the root of airfield vegetation problems

Managing vegetation on an airfield is critical for safety, cost-effective operations, and efficiency. Vegetation management can solve issues at their root cause, multiplying the impact of each dollar spent. Read on for a few options to manage turf grasses as well as unwanted weeds.

Bare ground. Federal regulations require certain areas of the airfield such as runways and taxiways, fences, lights, delineators, and signs to be kept free of vegetation. Mowing or string trimming is time consuming and expensive. One application of a bareground herbicide tank-mix will keep grass and weeds away all season—and can improve safety by eliminating the number of times crews need to be working on the airfield.

Mowing vs. plant growth regulators. The most common form of vegetation management is mowing. However, mowers provide only a short-term fix. Mowing cool-season grasses in the spring typically controls height growth for only two weeks, so mowing must continue all summer. Using a plant growth regulation (PGR) pro-

gram can slow grass growth and suppress seed heads for 60 to 90 days. Mowing can continue in mid-summer when grass is growing slower, resulting in height growth control from 4 to 6 weeks. PGR applications in the late spring followed by mowing later in the summer are most effective.

Broadleaf weed control. Broadleaf weeds grow faster than cool-season grasses and attract insect pollinators. Birds feed on insects and seeds, and the proximity of birds to runways can lead to an increase in bird strikes. By controlling broadleaf weeds near the runway as part of a PGR program, you eliminate the food source for birds, thereby improving safety.

Grass seed. The seed heads of tall fescue and other cool-season grass are attractive to birds. However, some varieties of tall fescue grass seed have a high endophyte fungus count, making it unpalatable to birds, deer, and other wildlife. The high-endophyte tall fescue is also drought and salt tolerant. Converting turf to endophyte fescue or using it for turf renovations will reduce the

number of birds and wildlife incursions on the airfield.

Invasive weeds. Minnesota has a variety of invasive weeds to control at the airfield. In turf areas, this control can be built into a PGR program, limiting the number of herbicide applications. A PGR program's time and dollar savings will allow staff time to control invasive weeds on other parts of the airfield, such as retention ponds and drainage ditches. A list of Minnesota invasive weeds is at mda.state.mn.us/plants-insects/minnesota-noxious-weed-list.

Vegetation management at airport facilities is necessary for public safety and infrastructure reliability. A carefully planned science-based vegetation management strategy can provide operations and maintenance departments with an economical and effective program that minimizes environmental impacts.

—Mike Maine, Nutrien Ag Solutions, nutrienagolutions.com/

Resources and training opportunities

Economic Impact Study and Training

Online training for the Minnesota Statewide Airport Economic Impact Study methodology and calculator is now available at airtap.umn.edu/events/workshops/economic/index.html.

Human Trafficking

Airports can play a key role in raising public awareness, identifying human trafficking situations, and helping victims traveling through the airport. AirTAP is conducting a brief online survey to determine the state airport community's interest in training on human trafficking. Take the survey at z.umn.edu/traffickingsurvey. To learn more, see govinfo.gov/app/details/USCODE-2010-title22/USCODE-2010-title22-chap78-sec7104.

Wildlife Hazard Control Workshop

Learn about wildlife control strategies with experts from USDA Wildlife Services and the Metropolitan Airports Commission/MSP. This free workshop is open to all airport staff interested in hearing best practices and sharing ideas. The course will be delivered May 28 remotely via Skype. To register or for more details, visit airtap.umn.edu/events/wildlife/2020/index.html.

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backlog and posted for an assistant director.

"At first I had no interest in applying," Vesely says, who was working in planning at the time. She was, once again, about to embark on a major trip—three weeks in Italy. In addition, she liked her current job and expected the new position would be too political for her taste. At the last minute, she changed her mind and applied while waiting for her flight. When she returned from Italy, she had an interview and subsequent job offer. She started the position in November 2013.

Vesely admits to some anxiety at the time about being one of two women leading the state's airport office. "I asked my husband, 'What are all those old white guys at the airports going to think about two women being in charge of aeronautics?'. . . And he said many of them were probably thinking, 'Whew. Thank God, now something's really gonna get done.'"

None of her fears ever materialized, Vesely says. "People in aviation are the nicest people in the world. . . Everyone in this office works hard. And people see that and respect that."

She's proud of the work she and Isackson accomplished, particularly developing a spend plan for the \$15 million returned to the State Airports Trust Fund in 2013.

Vesely's husband has been retired for more than three years and has been waiting for her to join him. "We need to spend more time flying," she says. "What really tipped the scale for me is that in the last couple of years, all the good weather [for flying] has been occurring during the middle of the week."

But she'll miss the state's small airports and the work of the Aeronautics Office. "I know when I come to work I have an impact on the aviation system," she says. "And I *use* the aviation system. It's hard to leave."

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