

# Appendix



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# Nutrient Management Planning Software

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## Software Programs

This appendix describes the types of software available to develop nutrient management plans (NMPs) and which programs are used in specific states. Permit writers should be familiar with the program(s) commonly used in their state to ensure they are familiar with the format and content of NMPs they will be reviewing. Table L-1 below describes which software is being used in each state, and Table L-2 provides a brief description of each software program along with contacts and websites to refer to for more information. EPA has supported the development of Manure Management Planner (MMP), and this appendix briefly outlines how MMP works and who can and should use it.

**Table L-1. Specific software programs available in each state**

State	NMP software available	Description number in Table 2
Alabama	Manure Management Planner (MMP)	4
Alaska		
Arizona		
Arkansas	MMP	4
California	California Central Valley NMP	1
	MMP	4
Colorado	MMP	4
Connecticut		
Delaware	NuMan MD Pro 3.0	10
	MMP	4
Florida	MMP	4
Georgia	MMP	4
Hawaii		
Idaho	Idaho OnePlan	3
Illinois	MMP	4
Indiana	MMP	4
Iowa	MMP	4
Kansas	Nutrient Utilization Plan Worksheet	13
	MMP	4
Kentucky	MMP	4

**Table L-1.** Specific software programs available in each state *(continued)*

State	NMP software available	Description number in Table 2
Louisiana		
Maine		
Maryland	NuMan MD Pro 3.0	10
	NuMan Reporter 2.0	12
	MMP	4
Massachusetts	MMP	4
Michigan	MMP	4
Minnesota	MPCA MMP	5
	NMP for Minnesota	11
	MMP	4
Mississippi	MMP	5
Missouri	MMP	5
Montana	MMP	5
Nebraska	MMP	5
Nevada		
New Hampshire		
New Jersey	MMP	5
New Mexico	NMSU Soil Test Interpretation Report Software	7
	NMSU Dairy Annual Nutrient Manager Software	6
	MMP	4
New York	Cropware	2
North Carolina	North Carolina Nutrient Management Software	8
North Dakota	MMP	4
Ohio	Crop Nutrient Management Software	14
	MMP	4
Oklahoma	MMP	4

**Table L-1.** Specific software programs available in each state *(continued)*

State	NMP software available	Description number in Table 2
Oregon	Oregon OnePlan	15
	MMP	4
Pennsylvania	Penn State NMP Spreadsheet	16
	MMP	4
Puerto Rico		
Rhode Island	MMP	4
South Carolina		
South Dakota	NRCS Tool in South Dakota	9
	MMP	4
Tennessee	MMP	4
Texas	Texas Waste Utilization and Nutrient Management Plan Worksheet	18
Utah	Utah's Manure Actual Nutrient Content spreadsheet	19
	MMP	4
Vermont	MMP	4
Virgin Islands		
Virginia	NuMan Reporter 2.0	12
Washington	MMP	4
West Virginia	NuMan Reporter 2.0	12
Wisconsin	SNAP Plus	17
	MMP	4
Wyoming		

**Table L-2. Description of software programs**

Number	Software	Description	For more information
1	California Central Valley Dairy Waste and Nutrient Management Software	Designed for existing milk cow dairies as mandated by the Waste Discharge Requirements General Order No. R5-2007-0035. The software is applicable to owners and operators of existing milk cow dairies that were operating as of October 17, 2005, filed a complete Report of Waste Discharge in response to the 2005 Report of Waste Discharge Request Letter, and have not expanded since October 17, 2005. The software was developed with a grant from the California State Water Resources Control Board and was designed to minimize leaching of nutrients and salts to groundwater and transport of those constituents to surface water.	See the California EPA website. Adobe PDF Reader software is needed.  <a href="http://www.waterboards.ca.gov/centralvalley/water_issues/dairies/complying_with_general_order/software/index.shtml">http://www.waterboards.ca.gov/centralvalley/water_issues/dairies/complying_with_general_order/software/index.shtml</a>
2	Cropware	Supported by the NYS NRCS, the NYS Department of Agriculture and Markets, and the NYS Department of Environmental Conservation. It is a key component of Comprehensive NMPs (CNMPs) as it can develop plans in accordance with the NRCS Nutrient Management Standard (Standard 590). For effective nutrient management planning, Cropware integrates Cornell crop nutrient guidelines for a full range of agronomic and vegetable crops, nutrient credits from various sources including manure, soil, sod, and fertilizer, and environmental risk indices, including the New York State Phosphorus Runoff Index and the Nitrate Leaching Index.	Cropware Version 2.0.34 operates on Microsoft Windows operating systems and is available to any New York user at no charge. For a Cropware training session, questions about the software, or to order a Cropware CD, contact Patty Ristow at <a href="mailto:plr27@cornell.edu">plr27@cornell.edu</a>  <a href="http://nmisp.cals.cornell.edu/software/cropware.html">http://nmisp.cals.cornell.edu/software/cropware.html</a>
3	Idaho OnePlan	Combines government regulations and current best management practices (BMPs) for agriculture into a single plan. This software is designed to include nutrient, pest and waste management, water quality and wetlands, air quality, financial assistance, endangered species, and petroleum storage tanks.  The OnePlan software questionnaire along with data access to aerial photos, soil data, hydrology maps, roads, and GIS maps is used to generate a report and plan of action with effective area-specific BMPs.	Information on how to become certified to use the Nutrient Management Planner is at <a href="http://oneplan.org/NMPlan.asp">http://oneplan.org/NMPlan.asp</a>  For information regarding NMP software training, contact Hillary Simpson, State Nutrient Management Coordinator at the Idaho State Department of Agriculture at (208) 736-3049 or <a href="mailto:hsimpson@agri.idaho.gov">hsimpson@agri.idaho.gov</a>

**Table L-2. Description of software programs** *(continued)*

Number	Software	Description	For more information
3	Idaho OnePlan <i>(continued)</i>	The Idaho OnePlan Nutrient Management Planner is the only officially recognized planning tool for creating certified NMPs in Idaho. The software and training to become Certified Nutrient Management Planners in Idaho is offered by the state and the USDA.	
4	Manure Management Planner (MMP)	See the description below.	<a href="http://www.agry.purdue.edu/mmp/">http://www.agry.purdue.edu/mmp/</a>  For agronomic questions, contact Brad Joern at (765) 494-9767 or <a href="mailto:bjjoern@purdue.edu">bjjoern@purdue.edu</a>  For software questions, contact Phil Hess at (765) 494-8050 or <a href="mailto:pjhess@purdue.edu">pjhess@purdue.edu</a>
5	MPCA Manure Management Planner	Developed by the Minnesota Pollution Control Agency (MPCA), the MMP is a spreadsheet that is designed to meet Minnesota 7020 feedlot rule requirements. This MMP is required for operations with 100 or more animal units (AU) after October 23, 2000, or when manure from a feedlot capable of holding 300 or more AU is applied by someone other than a certified animal waste technician. Because records of actual manure application practices are required at all facilities with 100 or more AU, this program also has a record-keeping tab.	<a href="http://www.pca.state.mn.us/hot/feedlot-management.html">www.pca.state.mn.us/hot/feedlot-management.html</a>  George Schwint, MPCA Feedlot Engineer, at (303) 214-3793 or <a href="mailto:George.schwint@pca.state.mn.us">George.schwint@pca.state.mn.us</a>
6	NMSU Dairy Annual Nutrient Manager Software	Developed by New Mexico State University and USDA, it balances nutrients according to user-defined crops planted, soil analyses, effluent irrigated, dry manure applied, and chemical fertilizers used.	<a href="http://aces.nmsu.edu/ces/dairy/tools.html">http://aces.nmsu.edu/ces/dairy/tools.html</a>  Victor E. Cabrera, Extension Dairy Specialist, at (505) 985-2292 x107 or at <a href="mailto:vcabrera@nmsu.edu">vcabrera@nmsu.edu</a>
7	NMSU Soil Test Interpretation Report Software	Microsoft Excel spreadsheet developed by New Mexico State University and NRCS to recommend nutrient application for crop production. This software is a requirement for both organic manure applications and inorganic fertilizer applications to apply the 590 Nutrient Management practice. This software requires soil values including salinity, pH, phosphorous, and potassium obtained from proper soil testing.	<a href="http://www.nm.nrcs.usda.gov/technical/water/nmafo.html">http://www.nm.nrcs.usda.gov/technical/water/nmafo.html</a>

**Table L-2. Description of software programs** *(continued)*

<b>Number</b>	<b>Software</b>	<b>Description</b>	<b>For more information</b>
8	North Carolina Nutrient Management Software	The North Carolina Nutrient Management Software is useful in writing commercial fertilizer and animal waste plans. It produces NMPs in the required format to meet state requirements for Waste Management Plans for animal operations.	Can be downloaded at <a href="http://www.soil.ncsu.edu/programs/nmp/ncnmwg/nmp/software.htm">http://www.soil.ncsu.edu/programs/nmp/ncnmwg/nmp/software.htm</a>  Vernon Cox at (919) 715-6109
9	NRCS Tool in South Dakota	South Dakota uses the NRCS Tool for developing an initial NMP, the NRCS Tool for annual NMP using the phosphorus assessment tool, and the DENR Tool for calculating manure application rates.	<a href="http://denr.sd.gov/des/sw/ManureNutrientManagementTools.aspx">http://denr.sd.gov/des/sw/ManureNutrientManagementTools.aspx</a>  Kent Woodmansey at (605) 773-3351
10	Nutrient Management for Maryland Version 3.0 (NuMan Pro 3.0)	NuMan Pro 3.0 is the most advanced Windows software available to complete Maryland NMPs. It is derived from the NuMan Reporter 2.0.	<a href="http://www.anmp.umd.edu/Software/index.cfm">http://www.anmp.umd.edu/Software/index.cfm</a>  Direct questions to <a href="http://www.anmp.umd.edu/About_NM/Staff.cfm">http://www.anmp.umd.edu/About_NM/Staff.cfm</a>
11	Nutrient Management Planner for Minnesota	Nutrient Management Planner Version 3.0 was developed by the University of Minnesota Extension Service and the USDA-NRCS. This planning aid will produce an MMP to meet MPCA requirements for most feedlots and NRCS requirements. It is designed to assist producers and agronomists plan and keep records of field-specific fertilizer and manure applications.  Specifically, it can develop annual field-specific NMPs for crop and livestock farms, create long-range strategic NMPs including CNMPs, and provide crop recommendations. The crop recommendations are consistent with the USDA-NRCS-Minnesota 590 Standard for nutrient management and are based on published information from the University of Minnesota Extension Service.	Requires Microsoft Access 2003 or Access 2007 and can be ordered from the University of Minnesota Extension at <a href="http://shop.extension.umn.edu">http://shop.extension.umn.edu</a>  Ann Lewandowski at UM Water Resources Center at <a href="mailto:alewand@umn.edu">alewand@umn.edu</a> or (612) 624-6765.
12	Nutrient Management Reporter Version 2.0 (NuMan Reporter 2.0)	NuMan Reporter 2.0 is a software program designed to help prepare the Maryland Department of Agriculture's Annual Implementation Report (AIR). The AIR describes the nutrient management activities that have been applied over the past year. NuMan Reporter 2.0 is not required to complete this report but facilitates the	<a href="http://www.anmp.umd.edu/Software/numanreporter_features.cfm">http://www.anmp.umd.edu/Software/numanreporter_features.cfm</a>  Contact the Agricultural Nutrient Management Program at (301) 405-1318.



**Table L-2. Description of software programs (continued)**

Number	Software	Description	For more information
12	Nutrient Management Reporter Version 2.0 (NuMan Reporter 2.0) <i>(continued)</i>	reporting process. NuMan Reporter 2.0 can also be used to generate other NMPs. This program is designed to summarize the number of acres, total amount of nutrients recommended as fertilizer, and the total amounts of organic material recommended on a crop code basis.	
13	Nutrient Utilization Plan Worksheet	Form with spreadsheets specific to swine and non-swine facilities to calculate elements required for the NMP.	<a href="http://www.kdheks.gov/feedlots/">http://www.kdheks.gov/feedlots/</a>
14	Ohio Crop Nutrient Management Software	<p>The Crop Nutrient Management software is a tool to help Ohio farmers develop a manure NMP. After soil and manure testing is performed to analyze nutrient availability, the software is used to determine the appropriate nutrient application for each field. The final development of a manure NMP can be done with the assistance of the local Soil and Water Conservation District and the soil conservationist.</p> <p>The software was developed by the Ohio State University Extension and is available at Ohio county Extension offices for a nominal charge.</p>	<p><a href="http://ohioline.osu.edu/agfact/0207.html">http://ohioline.osu.edu/agfact/0207.html</a></p> <p>For assistance, contact an Ohio county Extension agent or Soil and Water Conservation District technician</p>
15	Oregon OnePlan	<p>The Oregon OnePlan is nutrient management software developed jointly by the Idaho Department of Agriculture, the NRCS, EPA, USDA Agricultural Research Service, University of Idaho College of Agriculture and Marshall and Associates. The software is a modification of Idaho's OnePlan for use in Oregon. It is designed for developing CNMPs and for preparing Field Annual Nutrient Budgets.</p>	<p>At the time of publication, an active link to Oregon OnePlan was not available.</p> <p>Jennifer Zwicke, NRCS Oregon Environmental Engineer at (503) 414-3231 or <a href="mailto:Jennifer.Zwicke@or.usda.gov">Jennifer.Zwicke@or.usda.gov</a></p>
16	Penn State Nutrient Management Plan Spreadsheet	<p>The Penn State Nutrient Management Plan Spreadsheet is a tool designed to produce the necessary components of an NMP as required by Pennsylvania's Nutrient Management Act (Act 38, 2005) Program.</p>	<p><a href="http://panutrientmgmt.cas.psu.edu/main_planning_tools.htm">http://panutrientmgmt.cas.psu.edu/main_planning_tools.htm</a></p> <p>Jennifer Weld, Project Associate at Penn State University, at (570) 366-1558 or <a href="mailto:jlm23@psu.edu">jlm23@psu.edu</a></p>

**Table L-2. Description of software programs** *(continued)*

Number	Software	Description	For more information
17	SNAP-Plus Nutrient Management Software	SNAP-Plus is a Microsoft Windows-based program designed for preparing NMPs in accordance with Wisconsin's Nutrient Management Standard Code 590. It is a simple software program consisting of several models including nutrient management (SNAP), conservation assessment (RUSLE2), and the Wisconsin Phosphorus Index (PI) that is designed to make multiyear nutrient and conservation planning easier.	<a href="http://www.snapplus.net/">http://www.snapplus.net/</a> Sue Porter at (608) 224-4605 or <a href="mailto:Sue.Porter@wisconsin.gov">Sue.Porter@wisconsin.gov</a>
18	Texas Waste Utilization and Nutrient Management Plan Worksheet	The Texas Waste Utilization and Nutrient Management Plan Worksheet develops a plan that will meet the USDA-NRCS Nutrient Management (590) Standard and Waste Utilization (633) Standard for all types of livestock. The worksheet incorporates the animal waste spreadsheet for liquids, solids, biosolids, as well as both poultry-producer and non-producer spreadsheets. It also contains the Phosphorus Index spreadsheet used in Texas.	<a href="http://nmp.tamu.edu/">http://nmp.tamu.edu/</a>
19	Utah's Manure Actual Nutrient Content spreadsheet	No information found	

## Manure Management Planner (MMP)

The U.S. Environmental Protection Agency (EPA), in coordination with the U.S. Department of Agriculture (USDA), has worked on developing a planning tool that would generate a single document that meets the objectives of both agencies. The one document would include the required elements of an NMP and the elements of a voluntary comprehensive nutrient management plan (CNMP) developed in accordance with USDA technical guidance. A CNMP is a plan much like the NMP required by EPA's CAFO regulations. There are some minor differences between the scope of the two documents, such as a CNMP option to include feed management plans (which are not required for the NMP) and an NMP requirement to address chemical disposal (which is not part of a CNMP). However, the EPA and USDA agree that there is no reason why one document could not suffice for both the CNMP and NMP by accommodating both agencies' requirements. To that end, EPA and USDA have partnered to develop MMP, software that integrates both sets of planning requirements. Even though both agencies promote the use of a single tool, it remains the CAFO operator's responsibility to provide that information to the director to meet the requirements of the CAFO rule, because USDA does not make facility-specific information available to other agencies or the public. EPA encourages the use of MMP to facilitate the development and review of NMPs under the NPDES permit program.

The MMP software, developed under a grant from EPA and USDA to Purdue University, is a computer program that provides permitting authorities and producers with a mix of programs, not available elsewhere, to assist in CNMP and NMP development. The objective of the effort was to accelerate the CNMP and NMP development process by integrating other software used to calculate manure application rates. Among those tools are the revised universal soil loss equation (RUSLE2), the Phosphorus Index (PI), and other state-specific risk assessment tools used in CNMP and NMP development. MMP incorporates field-specific data tables that allow the producer to list the type of crops planned, crop rotation by planting season, nutrients available for each crop on the basis of previous manure applications and the rate of application per crop. MMP helps the user allocate manure (where, when, and how much) on a monthly basis for the length of the plan (1–10 years). That allocation process helps determine if the operation has sufficient crop acreage, seasonal land availability, manure storage capacity, and application equipment to manage the manure produced in an environmentally responsible manner. MMP is also useful for identifying changes that may be needed for a non-sustainable operation to become sustainable and determine what changes might be needed to keep an operation sustainable if the operation expands. MMP's data tables provide permitting authorities with specific information that can be extracted as terms of the NMP to be inserted into a permit.

Version 0.3.0.1 (October 11, 2010) of MMP supports 34 states (Alabama, Arkansas, California, Colorado, Delaware, Florida, Georgia, Iowa, Illinois, Indiana, Kansas, Kentucky, Massachusetts, Maryland, Michigan, Minnesota, Missouri, Mississippi, Montana, North Dakota, Nebraska, New Jersey, New Mexico, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Utah, Vermont, Washington, and Wisconsin) and generates fertilizer recommendations based on each state's extension guidelines. The MMP software is available without charge. It is strictly a voluntary tool. There might be some situations at a livestock operation, such as varying terrains and unusual cropping sequences, that MMP cannot accommodate; thus the program might not be a good fit for all operators. Permitting authorities and producers can still choose to use established state NMP software to develop and implement their NMP. More information on MMP is at the Purdue University Web site, <http://www.agry.purdue.edu/mmp/>.