RATIONALE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT #7
PESTICIDE GENERAL PERMIT (PGP) FOR POINT SOURCE DISCHARGES
TO WATERS OF THE UNITED STATES FROM THE APPLICATION OF PESTICIDES

This general permit authorizes discharges of pesticide residues to waters of the United States. Iowa's General NPDES Permit #7 (GP7) contains many of the same requirements as the draft permit proposed by the U.S. Environmental Protection Agency (EPA) on June 2, 2010. Therefore, this fact sheet will only detail the justifications for the substantive changes that Iowa DNR (IDNR) proposes from EPA's draft permit. EPA has released their draft Pesticides General Permit (PGP) and fact sheet to the public and both are available at: http://cfpub.epa.gov/npdes/home.cfm?program_id=410.

Proposed changes to EPA's Draft Pesticides General Permit (Part numbers match GP7)

Part 1.1.1, Weed, Algae, Bacteria, Fungi and Fish Parasite Control - IDNR has added bacteria and fish parasite control to the weed and algae use category. IDNR Fisheries staff occasionally use copper sulfate or Diquat for bacteria and fish parasite control in their hatcheries. Many of Iowa's fish hatcheries are flow-through systems, so the pesticide residue would likely be deposited in the hatchery's receiving stream.

IDNR also proposes to remove the term "aquatic" from this use category. EPA has suggested in conference calls that they will be making the same change, as the term "aquatic weed" implies a plant that fits the definition of a wetland species. It is not our intent to limit the use category to only wetland weed species; thus, the term has been removed.

Part 1.1.2.4, Endangered and Threatened Species and Critical Habitat Protection - Iowa's draft GP7 will not cover pesticide residue discharges to waters that are critical habitat for the Topeka Shiner. Critical habitat maps are available on IDNR's website at: http://www.iowadnr.gov/water/npdes/pesticides.html. Applicators may request individual NPDES permits for pesticide applications to these waters. If approved, these individual NPDES permits will likely include specific monitoring requirements and IDNR approval of the pesticide prior to use. IDNR cannot propose additional Topeka Shiner protections for GP7, as states must wait until February 2011 to see EPA's (with U.S. Fish and Wildlife Service consultation) requirements for endangered and threatened species. This will likely not allow Iowa enough time to add these requirements to GP7, as we will be past the public notice stage of rulemaking. Therefore, individual permits for the Topeka Shiner habitat area will be required for the first issuance of GP7.

Part 1.1.2.6, Discharges to Waters Designated as Class C - Specific requirements for pesticide applications to waters used as sources of drinking water (Class C) were not included in EPA's draft PGP. However, Iowa has historically required applicators to obtain prior approval from IDNR's Water Supply Section for use of specific pesticides to Class C waters. While rare, IDNR has disapproved certain types of pesticide applications in the past because they posed an undue risk on the public water supply. In order to continue to protect public safety, IDNR wishes to continue the practice of approving pesticides prior to use in Class C waters. As such, pesticide applications to Class C waters will be required to submit a form to IDNR 90 days prior to pesticide application, in addition to following all other conditions of GP7. Maps and lists of Iowa Class C waters are available on Iowa DNR's website at: http://www.iowadnr.gov/water/npdes/pesticides.html.

Part 1.2.2, Operators Required to Submit a Notice of Intent (NOI) – External stakeholders asked IDNR for clarification on how to handle situations where multiple operators would be part of the same pesticide application. For example, if a city hires a private pesticide applicator, and the city controls the financing and larger decision making while the private applicator has day-to-day operational control, who would be liable if a hazardous condition should occur? While EPA's draft PGP does not directly address this situation, the accompanying fact sheet states, "EPA is requiring, however, that in instances where multiple operators are responsible for the discharge from larger pesticide application activities, some form of written explanation of the division of responsibilities by documented." IDNR is proposing a requirement in GP7 that in multiple operator situations all operators involved will be required to maintain some sort of written explanation of the division of duties. After determining the cause of a hazardous condition, IDNR enforcement staff could then use the written division of duty document to locate the responsible party.

Part 1, Table 1, Annual Pesticide Application Thresholds - Iowa has opted to use a higher treatment area threshold than EPA's draft permit for one use pattern. EPA received comments during their PGP public notice period that indicate the thresholds will result in more small applicators submitting Notices of Intent (NOI) than EPA originally sought to cover. The NOI thresholds in EPAs' initial draft permit were proposed because the large majority of the applicators to be covered under EPA's draft PGP are performing small pesticide treatments that EPA considers to have very low impact. Thus, requiring an NOI from all dischargers would be a large burden of little value for the permitting authorities and permittees alike (re-stated from EPA's fact sheet). As a result of the comments, EPA decided to revise the annual thresholds for their final permit. Iowa will use all but one of the thresholds proposed for EPA's final permit.

Historically, Iowa has had very few enforcement actions for pesticide applications to water (about one per year). Therefore, pesticide applications historically have produced little risk to Iowa surface waters. Furthermore, the State of Iowa requires many pesticide applicators to be certified, which requires a test that includes proper pesticide use, equipment calibration, etc.

External stakeholders have informed IDNR that the thresholds in EPA's draft permit would result in hundreds of NOIs in the state of Iowa, primarily for mosquito control and drainage ditch herbicide applications (including all 99 counties, many private applicators, and mid to large-sized towns). Feedback from stakeholders has suggested that the requirements for NOI permittees are not too burdensome to large cities, counties, and pesticide companies, as many are already implementing some kind of Integrated Pest Management (IPM) strategy and documenting many of their activities in a manner similar to the NOI permit requirements. However, smaller communities, businesses, and counties see the NOI requirements as a large administrative burden that will have a significant fiscal impact because they do not currently have IPM strategies/documentation or detailed record keeping. Therefore, choosing the correct thresholds, particularly for mosquito and drainage ditch weed control in Iowa, will be crucial to managing the fiscal and administrative burden to small and mid-sized applicators along with capturing the largest applicators that have the greatest potential to impact aquatic life.

Stakeholders also mentioned that a consequence of the thresholds would likely be that applicators would switch to pesticides with longer residence times in the environment in order to avoid multiple applications that would result in exceedance of the threshold. The use of longer residence time pesticides could be detrimental to the environment and IDNR does not want the thresholds to promote these types of actions.

For these reasons, IDNR is proposing a higher threshold at water's edge for the weed, algae, bacteria, fungi, and fish parasite control use pattern. IDNR does not have historical records of acres of pesticides applied for these use patterns and stakeholders provided little more information. Comments received during the public notice caused IDNR to revise the water's edge threshold to 75 linear miles. Commentors agreed that many of Iowa's 99 counties were probably close to the 60 linear mile draft threshold, and raising it to 75 miles would better separate the larger applicator counties from the smaller applicators. The in water threshold under the weed, algae, bacteria, fungi, and fish parasite control use pattern is the same as EPA's threshold.

Pesticide Use	Annual Threshold
Weed, Algae, Bacteria, or Fish Parasite Control:	
- In Water	80 acres of treatment area
- At Water's Edge	75 linear miles of treatment area at water's edge

We have also changed the wording of Footnote 1 slightly to help clarify what area is to be calculated when determining the annual threshold. We want to ensure that permittees understand that they are only to calculate the number of acres of water treated when determining the acres of treatment area.

Part 1.2.5.2, When to Submit a Notice of Discontinuation for Operators who Submitted an NOI - External stakeholders expressed concern that during a very wet year they might exceed a threshold (e.g. mosquito pesticide application often increases greatly during very wet years) but would not anticipate exceeding any of the thresholds for the remaining years of the permit. IDNR has added language that would allow NOI permittees to submit a Notice of Discontinuation (NOD) if they anticipated falling below the thresholds for the remaining years of permit issuance.

Part 1.2.6, Transfer of Coverage Under This Permit for Operators Submitting an NOI - Rather than requiring a NOD and then re-application of the NOI, GP7 simply requires that notice of a transfer in responsible party be submitted in writing to IDNR within 30 days of the change. This change from the EPA draft PGP was made to reduce the paperwork burden and to have the transfer of responsibility requirements be identical to the other NPDES general permits issued by Iowa. If the new responsible party wishes to terminate an NOI and re-apply they can still do so, but it will not be required.

Part 2.1.1, Pesticide Application Rate for All Operators - EPA's draft PGP requires all operators to "use the lowest effective amount of pesticide product per application and optimum frequency of pesticide applications necessary to control the target pest." Upon consultation with pesticide regulators for the State of Iowa and external stakeholders, this requirement appears to be unquantifiable. The "lowest effective amount of pesticide" is not a quantity that applicators can determine without extensive testing. Furthermore, if EPA takes a more general interpretation of this requirement, it is not standard practice to apply more pesticide than required without good reason. These products so are expensive that intentional over-application of pesticides without good reason is not practiced. Instead, GP7 requires that operators follow the label instructions and apply pesticides at no more than the recommended application rate. The recommended label application rates are calculated using extensive laboratory and field studies and are approved by EPA. Thus, if operators follow the suggested application rates on the label, the residue resulting from proper application should be safe for aquatic life.

Part 2.2.1, For mosquito and other flying or aquatic nuisance insect control - EPA's draft PGP requires operators to establish population densities for larval and adult mosquitoes or other flying insects that will serve as an action threshold for implementing pest management. Numerous comments were received from internal and external stakeholders claiming that often their action thresholds for beginning mosquito control are based not on mosquito traps but instead on numbers of complaints received, public health concerns (such as large public outdoor events or the presence of mosquito borne disease in a neighboring area) or weather conditions (such as heavy rainfall over an extended period of time). IDNR understands that action thresholds can be based on triggers other than population densities, and that those triggers may be just as applicable as mosquito trap counts. Therefore, IDNR has added biological or public health indicators and weather conditions as other possible action thresholds to GP7.

Part 6.3, Hazardous Condition Documentation and Reporting for All Operators - IDNR has combined EPA's draft PGP requirements for "adverse incidents" and "spill, leak, or other unpermitted discharge" into one set of requirements under the existing State or Iowa definition for "hazardous condition". Iowa's existing definitions for "hazardous condition" and "hazardous substance" cover both adverse incidents resulting from pesticide applications and spills and leaks. By State regulation, hazardous conditions must be reported orally to IDNR within six hours and followed-up written report within 30 days. As IDNR does not wish to deviate from existing State rules, we are proposing to follow the hazardous condition requirements in 567 Iowa Administrative Code Chapter 131.

Antidegradation

The State adopted Iowa Antidegradation Implementation Procedure, dated February 17, 2010 states that "A regulated activity shall not be considered to result in degradation, if the activity will result in only temporary and limited degradation of water quality as defined in the glossary and as further described in Sections 1.2 and 2.4."

> **Section 2.4 of Iowa Antidegradation Implementation Procedure - Temporary and Limited Degradation**:
> Degradation that is not permanent. The effects can be regarded as temporary and limited following a review of all of the following factors, if applicable:
> a) length of time during which water quality will be lowered
> b) percent change in ambient conditions
> c) pollutants affected
> d) likelihood for long term water quality benefits to the water body
> e) degree to which achieving the applicable Water Quality Standards during the proposed activity will be at risk
> f) potential for any residual long term effects on existing uses

As required by the Iowa Antidegradation Implementation Procedure, we will review each of the six factors shown above for determining whether the effects from pesticide residue discharges covered under GP7 are temporary and limited.

A. Length of time during which water quality will be lowered
The Iowa Department of Transportation (IDOT) applies pesticides to an extensive network of road ditches throughout the entire state and is likely one of the largest appliers of pesticides in Iowa. IDOT has provided IDNR with a summary of the extensive library research they have conducted on the residence times of the pesticides they use. The pesticide half-lives in water ranged from 2 days to 30 days. An online literature review of common aquatic registered pesticides (such as Glyphosate, Imazapyr, Methoprene, Permethrin, Resmethrin, Sumithrin, Naled, and Diflubenzuron) by IDNR shows similar half-lives in water. While pesticide degradation rates in aquatic systems vary with environmental conditions, such as the amount of organic matter present, temperature or pH, the reported half-lives in the literature mirror the several days to one month timeframe found by IDOT. The majority of aquatic registered pesticides researched had half-lives in water of several days. Because pesticide residue should only be present in the water for short periods of time, any degradation would be temporary.

Unlike many types of regular applications of chemicals, such as a biocide applied once per week to a cooling tower or continuous feeding of sodium bisulfite for dechlorination, pesticides are not applied in a constant manner. Instead, they are usually one-time only applications or rare in nature, such as larvacide applied two to three times during the summer when conditions warrant, or spot treatment to road ditch thistles that appear in the spring.

B. Percent change in ambient conditions
Pesticide residue from the types of applications covered by GP7 should not change the visual aspects of the water, as aquatic registered pesticides are highly soluble in water. However, there may be a temporary change in biological or chemical oxygen demand as the pesticide decays and the targeted pest species dies off, such as when aquatic weeds are sprayed. The percent change is unknown and will be different for every application.

C. Pollutants affected
The pollutant discharges covered under this permit include all biological pesticides (such as bacteria applied to target mosquito larva) and all chemical pesticide residues that result from any of the four covered use patterns described in Part 1.1.1 of GP7. The pesticides covered under this permit are also regulated by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), which gives EPA the authority to register pesticides for use as long as the pesticide meets specific criteria. Part of the registration process involves a lengthy evaluation by EPA of all available published data in order to determine whether the pesticide will have any unreasonable effects on humans, the environment, or non-target species. If the pesticide is deemed to have an unreasonable effect, the pesticide is not registered or not registered for a particular use that poses high risk. The pollutants (pesticide residues) covered under GP7 have undergone more regulatory review than would be common under the average NPDES permit, and therefore, should pose only a limited amount of degradation to any waterbody.

D. Likelihood for long-term water quality benefits to the water body
Pesticides are typically applied to waterbodies for two reasons: protection of public health or improvement of the waterbody. Many of the pesticide applications covered under this permit will be used to remove nuisance plants or animals, exotic species, aquatic weeds that “choke” out waters or fish diseases. Thus, while the pesticide residue may cause a temporary and limited degradation of the waterbody, the long-term benefit to the waterbody is potentially quite large. In fact, IDNR often uses pesticides to remove evasive plant and animal species as part of their process to restore lakes.

E. Degree to which achieving the applicable Water Quality Standards during the proposed activity will be at risk
IDNR has numeric water quality standards (WQS) for approximately two dozen pesticides. Of those pesticides, most are no longer registered or are registered for agricultural uses. The five pesticides currently registered for aquatic uses with Iowa WQS are: Diquat, 2,4-D, Endothall, Glyphosate, and Dalapan. Of these five pesticides, Iowa’s numeric standards only apply to Class C (drinking water sources) streams for Diquat, Endothall, Glyphosate, and Dalapan. Any application of a pesticide to a Class C stream will be required to go through a review and approval process with IDNR prior to use. This additional application process should ensure that no WQS for Class C streams are put at risk. The WQS for 2,4-D (0.1 mg/L) applies only to waterbodies classified

as HH (human health). These HH waters are the largest rivers in the state of Iowa with high flow volumes that aid in quick dilution. If the applicator follows the FIFRA regulations, label instructions, and GP7, the risk of causing an HH stream to violate the 2,4-D WQS should be minimal.

The only narrative WQS at risk during pesticide applications involves the potential to cause acutely toxic conditions for non-target species (567 IAC Ch. 61.3(2)). However, if the applicator follows GP7 and all FIFRA requirements the risk should be very low. In fact, Iowa has experienced very few incidents (approximately one per year) of aquatic life die-off during pesticide applications. The recent cases of aquatic toxicity have involved the application of pesticides above the rate allowed or spills. Therefore, we believe there should be almost no risk of acute toxicity to non-target animals when the applicator is in compliance with GP7 and FIFRA.

F. Potential for any residual long term effects on existing uses

As described previously, pesticides registered for aquatic use have rather short half-lives in water. All will eventually degrade completely. If applied in compliance with the requirements of GP7 and FIFRA, pesticide residues will not have any long-term effects on existing uses. More likely, the application of pesticides will have a beneficial effect on existing uses, while the remaining residue will degrade over a short period of time.

In conclusion, the effects of the pesticide residue will be temporary and limited in nature. The water quality necessary for existing uses will be maintained and protected. Therefore, the limited degradation caused by pesticide residues will not be permanent and no Tier 2 antidegradation review is necessary.