

FACT SHEET SAND AND GRAVEL GENERAL PERMIT

August 2010

On January 5, 2005, the Department of Ecology (Ecology) reissued the current Sand and Gravel National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge General Permit; it then modified the permit on June 17, 2006. This permit expired February 5, 2010 and Ecology is proposing to reissue the permit with the conditions described in this fact sheet. The general permit provides coverage for discharges of process water, stormwater, and mine dewatering water associated with sand and gravel operations, rock quarries, and similar mining operations, including stockpiles of mined materials. It also provides coverage for concrete batch operations and hot mix asphalt operations. Operations covered under this permit are authorized to discharge wastewater to waters of the State of Washington subject to the conditions contained in the general permit. This fact sheet explains the nature of the discharges covered by the general permit, Ecology's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Public involvement information is contained in Appendix A. Appendix B includes a summary of written comments on this permit, Ecology's response to each comment and any resulting changes to the permit. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of Ecology's response. Ecology will only revise the fact sheet after public comment to correct factual errors.

The proposed general permit provides protection of ground water, surface water, and aquatic sediment in waters of the state by limiting the discharge of pollutants in process water, mine dewatering water, and stormwater. The pollutants limited in this proposed general permit result from the processing of mined material, the manufacture of concrete and asphalt, stormwater runoff, mine dewatering, and from equipment and materials associated with this industry group. Facilities may need to chemically or physically treat their wastewater to comply with the conditions and limits in this permit. All sites must implement Best Management Practices (BMPs) to manage stormwater and prevent pollution. Stormwater may also need treatment before discharge to waters of the state. This proposed general permit limits the discharge of pollutants to surface waters under the authority of the Federal Water Pollution Control Act (U.S.C.S. 1251) and limits the discharge of pollutants to surface and ground water under the authority of Chapter 90.48 RCW.

The significant changes proposed for this reissuance of the permit include:

1. Elimination of the daily maximum limits for those parameters with one sample per quarter.
2. Identification of specific Best Management Practices (BMPs) in the permit. Facilities must incorporate these BMPs into their Stormwater Pollution Plan as appropriate.
3. Addition of specific category and limits for concrete and asphalt recycling.
4. Addition of a special condition for other uses of a permitted site.

5. Formatting changes to group similar conditions. The permit groups planning requirements into one section.
6. Elimination of the temperature receiving water study except for new facilities which are determined to have some potential for pollution.
7. Elimination of the Total Dissolved Solids ground water study and the addition of a 500 mg/L ground water standard as a discharge limit.
8. Removal of the limit “presence of an oil sheen” if corrective actions are instituted.

This fact sheet and permit were prepared by Gary Bailey.

TABLE OF CONTENTS

FACT SHEET 1

SAND AND GRAVEL GENERAL PERMIT 1

 TABLE OF CONTENTS..... 3

I. INTRODUCTION..... 5

 PERMIT COVERAGE 5

II. BACKGROUND INFORMATION..... 7

 DESCRIPTION OF THE INDUSTRY GROUP 7

 MINING ACTIVITIES..... 7

 RECYCLING OF CONCRETE AND ASPHALT 8

 MINE PROCESS WATER..... 8

 MINE DEWATERING WATER 8

 CONCRETE BATCH PLANTS..... 8

 HOT MIX ASPHALT PLANTS 9

 STORMWATER..... 10

 PERMIT STATUS..... 11

 SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT 11

 WASTEWATER CHARACTERIZATION 12

 SEPA COMPLIANCE..... 13

III. PROPOSED PERMIT LIMITS 13

 BACKGROUND 13

 TECHNOLOGY-BASED EFFLUENT LIMITS 13

 COMMON LIMITS ON pH..... 14

 PROCESS WASTEWATER AND MINE DEWATERING..... 14

 STORMWATER DISCHARGE CONDITIONS 15

 RECOMMENDED BEST MANAGEMENT PRACTICES 16

 DESIGN STORM..... 16

 NON-WATER QUALITY ENVIRONMENTAL IMPACTS..... 16

 SURFACE WATER QUALITY-BASED EFFLUENT LIMITS..... 17

 NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE 17

 NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH..... 17

 NARRATIVE CRITERIA 17

 ANTIDEGRADATION 17

 CRITICAL CONDITIONS..... 18

MIXING ZONES.....	19
SURFACE WATER QUALITY CRITERIA.....	19
CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA.....	21
DISCHARGES TO 303(d)-LISTED IMPAIRED WATERBODIES	22
WHOLE EFFLUENT TOXICITY	23
HUMAN HEALTH	23
AQUATIC SEDIMENT QUALITY.....	23
GROUND WATER QUALITY LIMITS	23
IV. COMPARISON OF EFFLUENT LIMITS WITH THE CURRENT PERMIT	24
MONITORING REQUIREMENTS.....	24
REPRESENTATIVE SAMPLING.....	25
LAB ACCREDITATION	25
V. OTHER PERMIT CONDITIONS	26
TRAINING REQUIREMENTS	26
REPORTING AND RECORDKEEPING	26
ADDITIONAL DISCHARGE LIMITS	26
SITE MANAGEMENT PLAN.....	27
SPILL PLAN	29
SOLID WASTE DISPOSAL.....	29
GENERAL CONDITIONS	30
VI. SMALL BUSINESS ECONOMIC IMPACT STATEMENT.....	30
VII. RECOMMENDATION FOR PERMIT ISSUANCE.....	30
VIII. REFERENCES FOR TEXT AND APPENDICES.....	30
BMP REFERENCES	30
GENERAL REFERENCES.....	31
IX. APPENDIX A--PUBLIC INVOLVEMENT INFORMATION.....	33
X. APPENDIX B. COMMENTS RECEIVED ON THE DRAFT SAND AND GRAVEL GENERAL PERMIT WITH ECOLOGY RESPONSES	35

I. INTRODUCTION

The Federal Clean Water Act (FWPCA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the State of Washington on the basis of Chapter 90.48 RCW which defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing general permits (Chapter 173-226 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limits and other requirements which are to be included in the proposed permit. One of the requirements (WAC 173-226-110) for issuing a general permit under the NPDES permit program is the preparation of a proposed permit and an accompanying fact sheet. Public notice of the availability of the proposed permit is required at least thirty days before the proposed permit is issued (WAC 173-226-130). The fact sheet and proposed permit are available for review (see Appendix A--Public Involvement of this fact sheet for more detail on the Public Notice procedures and public involvement).

During the public comment period, Ecology typically receives several substantive public comments on the proposed permit and fact sheet. Appendix B – *Response to Comments*, includes these comments and Ecology's response to each comment, including the revisions of the permit in response to comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of Ecology's response. Ecology will only revise this fact sheet for factual errors.

PERMIT COVERAGE

The sand and gravel general permit provides coverage for discharges of process water, mine dewatering water, and stormwater associated with certain types of mining operations, concrete and asphalt production. A general permit is designed to provide coverage for a group of related facilities or operations of a specific industry type or group of industries. Ecology issues general permits when the discharge characteristics are similar and a standard set of permit requirements can effectively provide environmental protection and comply with water quality standards for discharges to surface water or ground water. Coverage under this general permit for discharges to surface water or discharges to ground water will be appropriate for most facilities with activities designated by the following NAICS (SIC) codes and which are subject to coverage under the sand and gravel general permit:

- 113110 (0811) Timber Tracts (sand and gravel point source activities)
- 212311 (1411) Dimension Stone
- 212312 (1422) Crushed and Broken Limestone
- 212313 (1423) Crushed and Broken Granite
- 212319 (1429) Crushed and Broken Stone, Not Elsewhere Classified
- 212321 (1442) Construction Sand and Gravel

212322 (1446) Industrial Sand
212324 (1455) Kaolin and Ball Clay
212325 (1459) Clay, Ceramic, and Refractory Minerals, Not Otherwise Classified
212399 (1499) Miscellaneous Nonmetallic Minerals, Except Fuels
113310 (2411) Logging (sand and gravel point source activities)
324121 (2951) Asphalt Paving Mixtures and Blocks , including recycle
327320 (3273) Ready-Mixed Concrete
327332 (3272) Concrete Pipe Manufacturing
327390 (3272) Other Concrete Product Manufacturing
327999 Concrete recycle

The types of facilities included are sand and gravel mines, rock quarries, clay mines, silica mines, diatomite mines, olivine mines, dolomite mines, hot mix asphalt plants, and concrete batch plants. Some facilities may require coverage for stormwater only because zero discharge categories for process water apply according to Federal Regulations.

Coverage for timber tracts and logging activities, codes 113110, 113310 (SIC codes 0811 and 2411 respectively), includes mining activities associated with the forestry industry that classify as silvicultural point source. Silvicultural point source activities are limited to rock crushing or gravel washing operations that use a discernible, confined and discrete conveyance (e.g. ditch, pipe) to discharge pollutants to surface waters of the state. The United States Environmental Protection Agency (EPA), pursuant to a court order, excluded most forest management activities from NPDES permit coverage. Additionally, forest practices regulations identify best management practices for gravel pit sites under the Forest Practices Act, RCW 76.09. However, this exclusion only applies to activities that produce materials for use in forest practices. Any commercial mining operation operating on forestland is subject to the same coverage requirements as any other commercial mining operation.

Permit Special Condition S1, *Permit Coverage*, lists the criteria for coverage under the proposed general permit. All facilities identified by the NAICS and SIC Codes listed above and which meet the criteria of the permit Special Condition S1. must apply for and obtain coverage under the proposed general permit, unless the activity is covered under an individual discharge permit or is regulated under the permit requirements of another section of the Federal Clean Water Act. In addition to these activities, Ecology may require facilities with related activities to obtain coverage under this general permit when it determines that discharge characteristics are similar and the permit conditions satisfy applicable state and federal requirements.

Because a general permit is designed to provide environmental protection under conditions typical for the covered industry group as a whole, it will not be appropriate for every situation. Environmental protection cannot always be assured when site specific conditions at a facility are not typical of the industry group or are beyond the scope of the proposed general permit. Special Condition S1.B. identifies specific situations where facilities are excluded from coverage under the proposed general permit and may require coverage under an individual permit.

Special Condition S9 describes how to obtain coverage for the permit as authorized under WAC 173-226-200. This permit condition also describes public notice requirements, SEPA compliance and the effective date of coverage. There are some differences in application requirements for

new facilities versus existing facilities. The definitions for new and existing facilities are in Appendix B. *Glossary* of the permit.

This proposed permit allows portable operations (rock crushers, concrete batch plants, and asphalt batch plants) to obtain coverage under the general permit. Special Condition S9.B. describes how to apply for and maintain general permit coverage for portable facilities. Coverage only applies to the specific portable equipment but will provide coverage at all sites where the portable operates. Portable facilities must operate at each site under the same permit conditions and requirements as a permanent operation. This permit requires a 10-day notice before beginning operations at a new location using an Ecology approved form (“Notice of Intent to Begin Operations”). The form identifies the dates and location of the work and also verifies that the Permittee can operate at the site under compliance with the terms and conditions of permit coverage. Ecology may deny operation at a site where a portable operation cannot adequately assure compliance with the permit. The permit requires that facilities must restore all areas affected upon completion of the portable operation in accordance with the “Notice of Intent to Begin Operations” form submitted to Ecology prior to beginning operations. Site restoration includes: a.) Cleaning up, or otherwise preventing the discharge of, any pollutant to waters of the state, and b.) Stabilizing all areas affected by activities associated with the portable operation with a permanent vegetative cover or equivalent permanent stabilization measure which will prevent erosion. To enable Ecology field staff to inspect areas affected by portable operations in a timely manner, the permit requires Permittees to submit a form to Ecology when the portable operation is completed and the site has been restored (“Portable Facility Notice of Completion of Portable Operations”).

II. BACKGROUND INFORMATION

DESCRIPTION OF THE INDUSTRY GROUP

MINING ACTIVITIES

According to the Washington Division of Geology and Earth Resources Information Circular 87, approximately 1,750 mines, quarries, and borrow pits operated in the state in 1991. The Department of Natural Resources (DNR) permitted approximately 900 of these facilities. There were an estimated 350 state or local government-operated mines that did not have active mining permits, 200 mines less than 3 acres in size, and 300 mines on federal lands. According to DNR data it managed active permits for 778 sand and gravel mines, 345 rock quarries, 11 clay mines, six silica mines, four diatomaceous earth (diatomite) mines, seven dolomite mines, and four limestone mines in 1998.

DNR issues permits for mining to facilities where surface disturbances are greater than 3 acres (Chapter 78.44 RCW). This proposed permit does not restrict coverage based on disturbed acreage. The intent of this proposed general permit is to require effective and enforceable water quality management practices. Potential adverse water quality impacts from these operations are independent of the size of the facility. Thus, this proposed general permit does not exclude sites based on disturbed acreage.

Mining activities typically begin by removal of the overburden to expose the desired material. Removing topsoil and disturbing the land surface increases the potential for adverse consequences to surface and ground water quality. Removing the vegetative cover and disturbing the soil makes the area more susceptible to erosion. Stormwater readily suspends the exposed soil and carries it to nearby surface water. Sediment can harm the health of aquatic life in surface water bodies. Vegetation and soil also serve to protect ground water from pollutants. They provide filtration, chemical and physical reactions, and biological activity that often will remove pollutants before they can enter ground water. As a result, mining activities which remove vegetation and topsoil will typically make underlying ground water more vulnerable to pollution.

RECYCLING OF CONCRETE AND ASPHALT

Recycling of concrete and asphalt is one of the fastest growing segments of the industry. Facilities that recycle concrete and asphalt typically already conduct one or more of the activities described above. Used material is ground to specification for use in new batches of material.

MINE PROCESS WATER

Most mining-related facilities use some water to mine, process, handle or transport mined material. This water is categorized as process wastewater. Most process wastewater results from dust control or washing and screening mined gravel or rock materials. These facilities may also use water to clean truck tires and wheels in order to prevent tracking of mud and dirt onto public paved roads.

In addition to these easily identified sources of wastewater, many other activities at a mining facility can impact ground water and surface water. The activities that may generate wastewater include concrete truck cleanup, asphalt truck release agent application, equipment maintenance, and cleanup of spills or leaks from tanks and equipment. Facilities that conduct many types of activities, from mining through batch plant operations, generate the greatest volume of wastewater and have the most varied sources of potential water contamination.

Facilities often use rock crushers in the mining process to provide material that meets job specifications. Processing the material may also include washing. While rock crushers are often a permanent component of a site, some operators move portable facilities from location to location. There is often very little lead-time before these portables must begin operation at a site and they are typically only at the site for a short period. The short notice and transient nature of these facilities create different permitting considerations for these facilities but they must still comply with permit conditions. Whether permanent or portable, rock crushers may generate process wastewater and must implement best management practices for stormwater management.

MINE DEWATERING WATER

Some facilities generate mine dewatering water which is incidental to the mining operation. It includes ground water that seeps into the mine pit or accumulates due to precipitation into the mine pit. Suspended solids may be the only contaminant requiring treatment in these circumstances. Water entering the mine site; subsequently commingling with process water becomes process water and is subject to process water requirements.

CONCRETE BATCH PLANTS

Concrete batch plant operations (both permanent and portable) are commonly associated with sand and gravel mining. An operator typically controls the batching or mixing process from a

central control room. The operator meters solid components by weight and meters water and chemical admixtures by volume. Operators may add dry materials to a truck from overhead silos and mix with water in the truck or they may premix materials with water at the facility and transfer the mixture to the truck wet. Truck capacities typically range from 5-12 cubic yards.

After loading, the truck may move to a wash area where employees use an overhead spray or a hose to wash down the truck exterior. The truck then delivers the load to the job site. Between loads or at the end of the day, returned concrete is discharged from the truck. The employee must wash out the truck drum to avoid setting of concrete in the drum. Water is added to the drum, the drum is rotated, and then discharged to a wash water collection basin. Settled process water is often reused for drum washout.

The truck washout area must drain to a lined pond for treatment before discharge. Containment and treatment is necessary because untreated process water resulting from concrete batch operations has a high pH, typically in the range of 11 to 12. Ecology also is concerned that admixtures commonly used in concrete production might introduce chemicals of concern such as nitrates into the wastewater.

Many facilities now totally reuse their process water after treating it to settle or separate out solids and reuse the settled gravel and fine solids. Facilities that discharge process water typically must treat it to lower the pH before discharge. Periodic cleaning of lined ponds is necessary. Facilities that deposit the sludge from these ponds on the ground without cover may generate leachate, which may have a high pH and violate Special Condition S7., Solid Waste Disposal.

Batch plants are often located in conjunction with gravel mining operations. This increases the potential for pollutants to affect underlying ground water. Trucks, loaders and other equipment are common on site. Spills and leaks from associated equipment in the manufacturing and delivery process pose a significant potential to contaminate waters of the state. In addition to good housekeeping and best management practices to minimize spills and leaks, facilities often channel wash water and stormwater away from areas prone to spills or leaks to avoid contamination or remove oil from water by skimming it off the surface or through use of oil/water separators.

Portable concrete batch plants pose the same environmental concerns as permanent facilities. However, there is often very little lead-time before they must begin operation at a site and they are typically only at the site for a short period. The short notice and transient nature of these facilities create different permitting considerations for these facilities but they must still comply with permit conditions for concrete batch plants.

HOT MIX ASPHALT PLANTS

The manufacture of asphalt concrete paving mixtures by hot mix asphalt plants (portable plants and central mix plants) are associated with sand and gravel mining. Facilities dry sand and gravel in a rotary drier and then place the material in a hopper to mix it with hot asphalt cement. The asphalt concrete is then usually dumped into a truck for transport to the job site.

Facilities use air pollution control equipment to control particulate emissions from this process. Two basic types of systems remove the dust particles. A baghouse removes the particles in a dry

state and has become the most common removal system in Washington State. Although operators may add minor quantities of water to the collected dry material to make it more manageable, there is no discharge of process water from these systems. Typically, a facility reuses the collected dust, called fines in the manufacture of asphalt. The other type of system, wet scrubbers, uses water to capture the dust. Water sprays remove the air pollutants but transfer them to the resulting wastewater. The amount of water needed in a wet collection system may range from 50 to 200 gallons per minute. The wastewater must be discharged to a lined pond or holding tank. The facility typically reuses the water from the pond/tank in the scrubber after settling the particulate matter. Even after treatment, facilities must not discharge this process water to surface water but may infiltrate it to ground. The settled particulate matter may be returned to the asphalt manufacturing process.

When a facility does not reuse or completely reuse the fines from a baghouse or wet scrubber, it must dispose of the waste. It must test the waste prior to land application to determine if more restrictive disposal options are required.

Except for cleaning within maintenance shop areas, operators do not typically wash delivery trucks on site but do apply a release agent to the bed of the truck before loading with asphalt. An application area is provided with a raised platform and spray nozzles. There are many release agents available but most of those currently in use are not petroleum based. Traditionally, facilities used diesel fuel, and some still do so. Best management practices control and collect spillage of release agents.

Batch plants are often located in conjunction with gravel mining operations. This increases the potential for pollutants to affect underlying ground water. Trucks, loaders and other equipment are common on site. Spills and leaks from associated equipment in the manufacturing and delivery process pose a significant potential to contaminate waters of the state. In addition to good housekeeping and best management practices to minimize spills and leaks, facilities often channel stormwater to avoid contamination or remove oil by skimming it off the surface or through use of oil/water separators.

Portable hot mix asphalt batch plants pose the same environmental concerns as permanent facilities. However, there is often very little lead-time before they must begin operation at a site and they are typically only at the site for a short period. The short notice and transient nature of these facilities create different permitting considerations for these facilities but they must still comply with permit conditions for asphalt batch plants.

STORMWATER

Although stormwater discharges are more common in Western Washington than in Eastern Washington, all parts of the state will occasionally receive significant rainfall events that can result in the discharge of stormwater. The proposed permit requires implementation of best management practices (BMPs) for stormwater management in all locations. The most important BMP that relates to stormwater is that facilities must minimize the amount of stormwater which contacts products and raw materials or flows or falls into an area of active processing or process water storage.

Stormwater falling on a site becomes polluted by dissolving or eroding material it contacts. Ecology has defined three types of stormwater for this general permit. Segregation of stormwater

types is essential to minimizing the quantity of stormwater, which requires treatment before discharge. One type of stormwater does not require treatment, while the other two may require physical or chemical treatment in order to meet the conditions of this permit. BMPs, directly or indirectly, apply to all three types of stormwater.

Type 1 Stormwater: Stormwater falling on undisturbed, natural areas, or completely reclaimed areas should remain clean and require no treatment. Ecology does not consider this type of stormwater as associated with industrial activity so long as this stormwater reaches waters of the state without contacting any machinery, product or raw material piles or other water that has contacted such material. Ecology classified this type of stormwater as Type 1 stormwater for this proposed general permit.

Type 2 Stormwater: Stormwater falling on a portion of a site that has been disturbed, as for example land cleared in preparation for mining or other industrial activity, is classified as Type 2 stormwater until industrial activity such as mining, processing or manufacturing occurs. BMPs addressing erosion and sediment control are required in the proposed permit. Some facilities may need to treat the stormwater to meet turbidity limits.

Type 3 Stormwater: The proposed permit classifies stormwater falling on the part of a site where manufacturing, processing, active storage, or mining takes place as Type 3 stormwater. Type 3 stormwater is virtually the same as the federally defined “stormwater associated with industrial activity.” This type of stormwater has the greatest potential to become contaminated prior to discharge to waters of the state. BMPs to prevent contamination of stormwater by industrial pollutants are required in the proposed permit

PERMIT STATUS

Ecology issued the current sand and gravel general permit on January 5, 2005; it became effective on February 5, 2005 and expired on February 5, 2010. There are currently 940 facilities covered under this general permit and 644 of these are active sites.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

A compliance report covering the period from February 2005 to September 2009 (18 quarterly reporting periods) showed 4992 permit violations for the 644 active reporting facilities. Non-reporting (no submittal of a discharge monitoring report (DMR) or not analyzing for a required parameter) accounted for 4006 (80%) of these violations. Of the 980 other violations, 502 were for pH exceedance, 353 were for turbidity exceedance, 56 were for oil/grease exceedance, 40 were for TDS exceedance and 29 were for TSS exceedance. During this same period, Ecology took 2221 enforcement actions. Most enforcement actions were informal (e.g. warning letters) but Ecology also issued 62 penalties and 55 notices of violation or enforcement orders in this period.

Nearly all of the facilities covered under this general permit have received at least one site visit and have received technical assistance to help them comply with the terms and conditions of the current permit. Because of the large number of Permittees, Ecology has concentrated repeat visits on those facilities with compliance problems.

WASTEWATER CHARACTERIZATION

The wastewater discharges from the facilities covered under this general permit are almost always intermittent or “batch” discharges. The size of facilities covered under this permit ranges from facilities discharging only as a result of precipitation to large integrated sand and gravel mines with associated manufacture of concrete discharging on a daily basis. Wastewater generation varies significantly from site to site. Facilities substantially reduce the total quantity of effluent discharged when they reuse settled water for processing and washing.

Facilities can potentially cause adverse water quality impacts by processes or conditions that result in discharging water containing or characterized by some combination of the following: elevated pH; excessive suspended solids; elevated dissolved solids; petroleum products; or elevated nitrate concentration. Table 1 below summarizes water pollutants that may be present in the water discharged from various on-site sources:

Table 1. Pollutants and sources in sand and gravel operations.

Contaminant	Source
Hydrocarbons (oil and grease, hydraulic fluid, and fuels)	Spills or leaks from equipment and storage tanks Maintenance shop Hot mix asphalt plant wet scrubber Delivery truck and equipment washing, release agent application
Nitrate	Blasting residues
Turbidity Suspended solids Dissolved solids	Processing wastes Seepage from working face Stormwater run-on and runoff from disturbed areas Washing, screening, or crushing rock Stripping and digging operations Runoff from overburden, waste piles, and stockpiles Dust suppression Wet scrubber wastes Vehicle washing and cleanout
Alkalinity/High pH	Concrete truck wash water Concrete batch plant water
Chlorides	Concrete admixtures
Sulfates	Concrete admixtures
Ligninsulfonate	Dust suppression

SEPA COMPLIANCE

The coverage of existing facilities under this proposed general permit is exempt from the procedures mandated under the State Environmental Policy Act (WAC 197-11-855). The exemption does not apply to any *new source* or *new discharger*. A new source or new discharger must complete the SEPA process prior to application for coverage under the proposed general permit.

Any existing facility planning a significant process change must submit a new application for coverage to modify their permit and demonstrate that the proposed change has complied with SEPA review. A significant process change for this industry group includes any modification of the facility that would change the characteristics of the discharge. There are no easily defined thresholds for what constitutes a change in the characteristics of the discharge other than when a facility adds a new activity such as a concrete batch plant to their permitted activities. Other changes are not so easily defined. For instance, a change in the characteristics of the discharge is not necessarily just a change in the volume of the discharge. However, if a modification of the facility resulted in a discharge to surface water where previously no surface water discharge occurred, then a permit modification and SEPA review would likely be required. Facilities should notify their Ecology permit manager of any planned change and the potential to impact their wastewater discharge. The permit manager will determine if a permit modification and SEPA review is required.

III. PROPOSED PERMIT LIMITS

Federal and State regulations require that effluent limits set forth in a NPDES permit must be either technology-based or water quality-based. Technology-based limits are based upon the treatment methods available to control or treat specific pollutants. Technology-based limits are set by regulation or developed on a case-by-case basis (40 CFR 125.3, and Chapter 173-220 WAC). Water quality-based limits are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (40 CFR 131.36). The more stringent of these two limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

BACKGROUND

The sand and gravel general permit provides coverage for discharges to ground water as well as to surface water. About 20% of the Permittees discharge to surface water and about 80% discharge to ground; some Permittees discharge to both surface water and groundwater. Permittees on the west side of the Cascade Mountains are much more likely to have a surface water discharge than those on the east side. Although water quality concerns for the state's ground water and surface water are not truly separate and distinct, there are potential differences in the fate of pollutants traveling to ground water versus direct discharge to surface water. The current permit reflects these differences with additional monitoring parameters for those discharges to surface water (e.g. turbidity). Because of these differences, water quality-based considerations will consider ground water discharges and surface water discharges separately.

TECHNOLOGY-BASED EFFLUENT LIMITS

The federal government evaluated many categories of dischargers as a result of the directives of the CWA. Section 301(b) requires the achievement of effluent limits for point sources, which are

based on the application of the best practicable control technology currently available (BPT) and the best available demonstrated control technology (BCT) which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants. The results of the evaluations for the categories covered by this general permit were published by USEPA as “Final Development Document for Effluent Limitations Guidelines and Standards for the Mineral Mining and Processing Industry” (July, 1979), “Guidance Development Document Effluent Limitations Guidelines and New Source Performance Standards for Concrete Products Point Source Category” (February, 1978), “Development Document for Proposed Effluent Guidelines and New Source Performance Standards for the Paving and Roofing Materials (Tar and Asphalt)” (September, 1974), and a related category “Development Document for Proposed Effluent Limitations Guidelines and New Source Performance Standards for the Cement Manufacturing Point Source Category” (August, 1973). The information contained in these documents, the federal requirements for the Mineral Mining Category and the Asphalt Concrete Subcategory, Suspended Solids Removal in the Crushed Stone Industry (August, 1982), and analyses of the data submitted on recent DMRs from permitted facilities form the basis for the technology-based effluent limits of this proposed general permit. State law requires facilities to treat all wastewater with all known, available and reasonable methods of prevention, control and treatment (AKART). This State technology-based requirement may be more stringent than federal requirements. Ecology based the proposed permit limits for TSS in process water and quarry water on demonstrated performance (AKART) in the previous permit. Ecology believes these still represent AKART using source control, reuse, sedimentation and settling agents for pollutant control.

COMMON LIMITS ON pH

The technology-based limit for pH of discharges is 6 to 9 standard units. Ecology derived this pH range from the federal effluent guidelines (40 CFR Part 436, Mineral Mining and Processing Point Source Category). The costs and benefits of pH adjustment are presented in the “Development Document for Concrete Products.” This technology-based limit represents BPT and AKART for dischargers covered under this proposed general permit.

PROCESS WASTEWATER AND MINE DEWATERING

Ecology derived the limit on discharges of total suspended solids (TSS) from the requirement to recycle wastewater from the federal effluent guidelines 40 CFR Part 436, Mineral Mining and Processing Point Source Category, 40 CFR Part 443, Subpart B, Paving and Roofing Materials Point Source Category, Asphalt Concrete Subcategory, discharge data records, and the report Suspended Solids Removal in the Crushed Stone Industry.

Facilities must direct wastewater to a common area in order to prepare the water for reuse to meet the BPT requirement to recycle wastewater. Treatment removes the solids that would otherwise clog piping, damage pumping equipment, and contaminate the product.

Ecology examined the EPA report Suspended Solids Removal in the Crushed Stone Industry to ascertain the degree of effluent reduction capability within the industry. EPA examined settling and recycle or reuse as the pollutant control technology. The report summarized a variety of conditions and waste streams and the attainable TSS limit for each. The non-rain categories are appropriate for consideration of the process wastewater since the proposed general permit requires facilities to segregate stormwater from process water unless it can treat stormwater to the process wastewater limits. EPA reported the level of effluent quality attainable for non-

rainfall conditions, including all facilities and all wastewater streams (excluding stormwater) as a monthly average TSS of 38 mg/l and a maximum daily TSS of 80 mg/l. The limit for most categories of the current general permit is 40 mg/l average monthly TSS and 80 mg/l maximum daily TSS.

The TSS encountered in the process water rapidly settles resulting in TSS removal efficiencies ranging from 90% with very dilute waste streams to over 99% for the typical process waste streams. Despite the relatively high TSS loadings, the material settles easily, and facilities can meet the limits of 40/80 mg/l TSS so long as they maintain adequate settling time and properly design and operate treatment systems.

The current permit includes monthly average limits and daily maximum limits that serve to alert the facility and Ecology to instances where pollution prevention or treatment has failed. The limits recognize that occasional excursions in excess of the average can occur. Consistent with federal policy and regulation Ecology has chosen to specify limits that define the limit of performance that can reliably be achieved. However, when facilities only collect one sample in a given month or quarter, the monthly average is the only applicable limit. The proposed permit imposes a limit of 40 mg/L as a quarterly average

Hot mix asphalt plants and facilities covered under the industrial sand category must meet more stringent effluent guidelines established as BPT and BAT by the federal government. Asphalt Concrete facilities, in accordance with 40 CFR Part 443, Subpart B, must not discharge any process wastewater pollutants to surface waters of the state.

Industrial sand facilities, in accordance with 40 CFR Part 436, Subpart D, must recycle at least a portion of the wastewater and not exceed the following limits for discharge of process water and mine dewatering: 45 mg/l TSS daily maximum and 25 mg/l TSS for a monthly average. The current permit contains these limits. During the term of the current permit, TSS exceedances accounted for 3% of reported violations. The proposed permit contains a limit of 25 mg/L as a quarterly average.

Based on turbidity data collected during the previous permit cycles, Ecology determined that 50 NTU was economically achievable by dischargers covered by this permit and therefore constituted a valid technology-based limit (AKART, BCT). The current permit contains a turbidity limit of 50 NTU as a monthly average and 50 NTU as a daily maximum. During the term of the current permit, turbidity exceedances accounted for 36% of reported permit violations. The proposed permit continues the 50 NTU as a monthly average limit and 71 as a maximum daily limit.

STORMWATER DISCHARGE CONDITIONS

Facilities must control the TSS in stormwater by BMPs. As with all wastewater discharges, the technology-based requirements and water quality-based requirements must be satisfied. Ecology based the BMPs, such as detention and housekeeping, on the federal determination that such BMPs constitute BAT/BCT for stormwater at this time (FR 40974, August 16, 1991).

If facilities are unable to separate stormwater from process water, the permit defines the commingled water as process water and requires compliance with all limits and requirements for process water. The current general permit requires Permittees to identify and control pollution

sources that may affect stormwater by developing and implementing a Stormwater Pollution Prevention Plan. The pollutant control, inspections, and standard provisions of the current general permit include specific requirements, as well as references to technical guidance. Each discharger can select BMPs best suited for reducing the pollutants in its stormwater on the basis of site-specific conditions. This proposed permit continues the requirement for a SWPPP as a component of an overall Site Management Plan for pollutant control.

RECOMMENDED BEST MANAGEMENT PRACTICES

The proposed permit contains a section with recommended best management practices to be incorporated into the SWPPP. These BMPs are taken from Ecology's *Stormwater Manual for Western/Eastern Washington Vol. 4* and are consistent with the Industrial or Construction Stormwater general permits.

DESIGN STORM

The current permit requires that facilities design all control measures to manage the volume of water associated with the design storm. The design storm means the maximum volume of water resulting from the 10 year 24 hour precipitation event. The term "10 year 24 hour precipitation event" is the maximum 24 hour precipitation event with a probable reoccurrence interval of once in 10 years based on historic precipitation data. The maximum volume of water is the total from all areas contributing runoff to the individual treatment facility. In addition to designing for the volume of water associated with the design storm, facilities may need to use other treatment options, such as settling aides. The intent, however, is for facilities to design control measures so that they are not overwhelmed by the volume of water from a storm event equal to the design storm. Problems that might result from too much water for control measures to handle should be very infrequent; certainly no more frequent than the occurrence of the design storm. The proposed permit continues this design storm.

NON-WATER QUALITY ENVIRONMENTAL IMPACTS

The effects of wastewater treatment and control technologies on air pollution and noise pollution are usually small and not of any significance. Noise generated by water pumping equipment is insignificant when compared to the noise generated by the mining, sorting, and manufacturing processes.

Settling process water and stormwater to remove solids often produces large amounts of solid waste. When the solid waste is composed of silts and soils, it typically classifies as non-hazardous. These solid waste materials are easily disposed of since mineral mining properties are often large and space for land disposal is readily available. Inert materials may also be used for backfill at mines. These "wastes" may in fact be a marketable by-product. Since these industries have sufficient space and earth moving capabilities, they manage it with greater ease than most other industries.

Sludges that form in settling ponds used for pH control, however, may require special attention to disposal options. Reuse of the sludge is the preferred option but where that is not practical, it may be acceptable to spread these solids over a large area. Storing the sludge in a pile that allows leachate to infiltrate to ground or discharge to surface water is unacceptable. Facilities must properly designate these solid wastes to ensure the wastes are not hazardous prior to disposal.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITS

The Washington State Surface Water Quality Standards (chapter 173-201A WAC) were designed to protect existing water quality and preserve the beneficial uses of Washington's surface waters. Waste discharge permits must include conditions that ensure the discharge will meet established surface water quality standards (WAC 173-201A-510). Water quality-based effluent limits may be based on an individual waste load allocation or on a waste load allocation developed during a basin wide total maximum daily loading study (TMDL). In general permits they may be based on state-wide information from Ecology's ambient data system.

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

Numerical water quality criteria are published in the Water Quality Standards for Surface Waters (chapter 173-201A WAC). They specify the levels of pollutants allowed in receiving water to protect aquatic life and recreation in and on the water. Ecology uses numerical criteria along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limits, the discharge must meet the water quality-based limits.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The U.S. EPA has promulgated 91 numeric water quality criteria for the protection of human health that are applicable to Washington State (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-200) and marine (WAC 173-201A-210) waters in the State of Washington.

ANTIDegradation

The purpose of Washington's Antidegradation Policy (WAC 173-201A-300-330) is to:

- a. Restore and maintain the highest possible quality of the surface waters of Washington.
- b. Describe situations under which water quality may be lowered from its current condition.
- c. Apply to human activities that are likely to have an impact on the water quality of surface water.
- d. Ensure that all human activities likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment (AKART).
- e. Apply three Tiers of protection (described below) for surface waters of the state.

Tier I ensures existing and designated uses are maintained and protected and applies to all waters and all sources of pollutions. Tier II ensures that waters of a higher quality than the criteria assigned are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to a specific list of polluting activities. Tier III

prevents the degradation of waters formally listed as "outstanding resource waters," and applies to all sources of pollution.

Ecology applied Tier I and Tier II considerations in this permit. Ecology has determined there are no facilities covered under this permit that discharge to Tier III waters.

Tier I applies water quality-based limits to point source discharges and is discussed below.

Tier II requirements for general permits are given in 173-201A-320(6) as follows:

(a) Individual activities covered under these general permits or programs will not require a Tier II analysis.

(b) The department will describe in writing how the general permit or control program meets the antidegradation requirements of this section.

(c) The department recognizes that many water quality protection programs and their associated control technologies are in a continual state of improvement and development. As a result, information regarding the existence, effectiveness, or costs of control practices for reducing pollution and meeting the water quality standards may be incomplete. In these instances, the antidegradation requirements of this section can be considered met for general permits and programs that have a formal process to select, develop, adopt, and refine control practices for protecting water quality and meeting the intent of this section. This adaptive process must:

(i) Ensure that information is developed and used expeditiously to revise permit or program requirements;

(ii) Review and refine management and control programs in cycles not to exceed five years or the period of permit reissuance; and

(iii) Include a plan that describes how information will be obtained and used to ensure full compliance with this chapter. The plan must be developed and documented in advance of permit or program approval under this section.

(7) All authorizations under this section must still comply with the provisions of Tier I (WAC 173-201A-310).

Ecology previously published a formal process for updating stormwater pollutant control technology in a January 2008 Ecology publication entitled Guidance for Evaluating Emerging Stormwater Treatment Technologies. This Technology Assessment Protocol - Ecology (TAPE) program was lost due to budget cuts. The legislature recently authorized Ecology to form a Cooperative Stormwater Technical Resource Center with private and municipal partners. Ecology assumes that the Resource Center will fulfill the same function as TAPE and adopt the protocols of the former TAPE process. Ecology is also considering mechanisms for timely revision of the Stormwater Management Manual and web-based information systems to inform the regulated community of innovative and economical stormwater BMPs and treatments. These efforts and the benchmarks in this permit, based on water quality criteria, constitute Ecology's antidegradation plan.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste water discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body

uses. Precise determination is very site-specific and not readily accommodated in a general permit and for stormwater discharges. Ecology has revised the definition of critical condition in the permit to explain its objective for critical condition.

MIXING ZONES

The Water Quality Standards allow Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both “acute” and “chronic” mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Ecology may only authorize mixing zones for discharges that receive all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-400.

A mixing zone is typically based on site-specific characteristics such as the type of water body (e.g. river, lake, ocean) and a mixing zone study or the flow, width and depth of the receiving water. A general permit, however, is not intended to address site-specific conditions but provide coverage for an industrial group based on common characteristics.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. Criteria for some parameters consider the type of water body (e.g., lake, stream, or ocean) and the beneficial uses. A general permit must consider the typical discharge conditions and cannot readily accommodate site specific variables. Ecology determined that surface water discharges for this industry group are most likely to freshwater (WAC 173-201A-200). Some of the criteria for temperature, turbidity, and pH for freshwater are summarized below:

Table 2. Temperature Criteria for Aquatic Life in Fresh Water

Category	Highest 7-DADMax
Char Spawning	9°C (48.2°F)
Char Spawning and Rearing	12°C (53.6°F)
Salmon and Trout Spawning	13°C (55.4°F)
Core Summer Salmonid Habitat	16°C (60.8°F)
Salmonid Spawning, Rearing, and Migration	17.5°C (63.5°F)
Salmonid Rearing and Migration Only	17.5°C (63.5°F)
Non-anadromous Interior Redband Trout	18°C (64.4°F)
Indigenous Warm Water Species	20°C (68°F)

Table 3. Turbidity Criteria for Aquatic Life in Fresh Water

Category	Criteria
Char Spawning and Rearing	Turbidity shall not exceed: 5 NTU over background when the background is 50 NTU or less; or a 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
Core Summer Salmonid Habitat	Same as above.
Salmonid Spawning, Rearing, and Migration	Same as above.
Salmonid Rearing and Migration Only	Turbidity shall not exceed: 10 NTU over background when the background is 50 NTU or less; or a 20 percent increase in turbidity when the background turbidity is more than 50 NTU
Non-anadromous Interior Redband Trout	Turbidity shall not exceed: 5 NTU over background when the background is 50 NTU or less; or A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.

Indigenous Warm Water Species	Turbidity shall not exceed: 10 NTU over background when the background is 50 NTU or less; or a 20 percent increase in turbidity when the background turbidity is more than 50 NTU.
-------------------------------	---

Table 4 pH Criteria for Aquatic Life in Fresh Water

Use Category	pH Criteria
Char Spawning and Rearing	pH shall be within the range of 6.5 to 8.5, with a human-caused variation within the above range of less than 0.2 units.
Core Summer Salmonid Habitat	Same as above.
Salmonid Spawning, Rearing, and Migration	pH shall be within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.5 units.
Salmonid Rearing and Migration Only	Same as above.
Non-anadromous Interior Redband Trout	Same as above.
Indigenous Warm Water Species	Same as above.

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

pH - Water quality standards in Chapter 173-201A WAC have established numerical criteria for pH of 6.5 to 8.5 standard units. Since this is more restrictive than the technology-based limit of in the range of 6.0 to 9.0 standard units, the proposed permit assigns a water quality-based limit of 6.5 to 8.5 standard units for discharges to surface water. The compliance rate with these limits during the current permit is 90%. The proposed permit retains the pH limit.

Turbidity - The water quality-based turbidity allowance for discharges to salmonid waters is less than 5 NTU above background. Allowing a dilution factor of 10 and a background level of 0 NTU in the receiving water, a water quality-based limit of 50 NTU was assigned in the current permit. The data collected during the current permit cycle indicates that 93% of samples reported under the permit were less than or equal to the 50 NTU limit. Based on this data, Ecology has determined that 50 NTU is economically achievable by dischargers covered by the current permit and therefore constitutes a valid technology-based limit (AKART, BCT). The proposed

permit continues a turbidity limit of 50 NTU, which will meet water quality standards in most discharge situations.

Temperature – The current general permit required all dischargers to surface water to conduct a receiving water study, including effluent temperature and receiving water flows to help Ecology assess the possible impact of sand and gravel operations on receiving water temperatures. The permit requirement applied to all facilities discharging process wastewater, type 2 or type 3 stormwater.

Ecology mailed reminder letters to 192 facilities which had indicated on application that they were discharging to surface waters. Ecology received 137 responses. Ecology excused many facilities from the study when it determined by inspection or telephone conversation that they did not discharge to surface waters. Of the 137 written responses, an additional 57 (42%) showed they did not discharge to surface water. Another 29 Permittees (21%) indicated they only discharge occasionally during mid-winter. Eighteen Permittees (13%) discharge to ditches, wetlands or intermittent streams that were 400 feet to one mile from a perennial water body. Eighteen (13%) discharge from their facility to a perennial stream. Of these eighteen facilities, 9 (7%) may have some potential to cause a rise in the temperature of the receiving water. Ecology inspectors will make individual assessments on these facilities, however, it's apparent that the industry as a group does not have a large potential to impact the temperature of surface waters. Ecology removed the temperature study from the proposed permit as a requirement for dischargers to surface waters. Ecology may require a study for new dischargers to surface waters if Ecology determines there is a potential for violation of water quality standards.

DISCHARGES TO 303(d)-LISTED IMPAIRED WATERBODIES

The current permit stipulates that Permittees discharging a pollutant named as a pollutant causing a water quality standards violation at a location identified on the current EPA-approved 303(d) list for Washington State are not authorized to discharge that pollutant at a concentration above the surface water quality standards (Chapter 173-201A WAC). Considering the pollutants associated with this industry group, facilities discharging to waterbodies that are listed for turbidity, fine sediment, pH or temperature must comply with the following requirements:

1. Permittees must comply with TMDLs, including applicable wasteload allocations, completed prior to the date permit coverage is issued.
2. Permittees that discharge to an impaired water body that does not have a completed TMDL have an effluent limit that is equal to the applicable Surface Water Quality Standard (WAC 173-201A) at the point of discharge. The proposed permit continues this requirement.

The current permit specifies that Permittees that exceed the effluent limit for a discharge to a 303(d)-listed waterbody constitute a violation of the general permit. However, a compliance schedule (Appendix E of permit) is available to *existing facilities* (defined in Appendix A of permit) that violate the effluent limit for 303(d)-listed waterbodies. Condition S1.B.1 of the current permit states that facilities that discharge to a waterbody listed pursuant to Section 303(d) of the Clean Water Act are excluded from the general permit unless it is not causing or contributing to the impairment of the receiving water. The proposed permit contains this same condition.

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. The commonly available detection methods cannot detect many toxic pollutants. However, one can measure toxicity directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing.

Ecology does not expect toxicity caused by unidentified pollutants in the discharge as determined by the screening criteria given in Chapter 173-205 WAC. Therefore, the proposed permit does not include whole effluent toxicity testing. Ecology may require effluent toxicity testing in the future, if it receives information that toxicity may be present in this effluent. The permit requires that discharges cause no toxicity.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (40 CFR Part 131.36). Ecology has determined that the discharge from this industry group is unlikely to contain chemicals regulated for human health.

AQUATIC SEDIMENT QUALITY

Ecology has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that Ecology may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

Ecology has determined through a review of the discharge characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

GROUND WATER QUALITY LIMITS

Ecology has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect beneficial uses of ground water. Permits issued by Ecology must be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100). In accordance with WAC 173-200-060(1), the point of compliance with ground water standards is in the ground water as near and directly down-gradient from the pollutant source as is feasible. Since the proposed permit does not require ground water monitoring, the point of compliance with ground water quality standards is any point within an unlined impoundment pond or other point of discharge to ground water.

Ground water quality standards have established a pH limit of in the range of 6.5 to 8.5 standard units. As this limit is more restrictive than the technology-based limit of in the range of 6.0 to 9.0 standard units, the water quality-based limit is assigned for discharges to ground water.

The current permit requires concrete batch plants to measure total dissolved solids (TDS) in process water discharged to ground. These discharges have the potential to violate ground water criteria, which is 500 mg/l TDS. The current permit requires concrete batch plant facilities that exceed 500 mg/l TDS to determine the cause of the elevated TDS using a Pollution Prevention Schedule to solve the TDS problem before proceeding directly to the ground water impact study (See Appendix C of the current permit – TDS Pollution Prevention Schedule). However, if the

Pollution Prevention Schedule does not solve the TDS problem, a ground water impact study is required. The industry complained that this creates an uncertain end point, therefore, the proposed permit makes 500 mg/L TDS a limit.

The characteristics that make sand and gravel resources valuable, also makes them productive aquifer systems. Over three-quarters of the population of the state depend on ground water as its principal source of drinking water. The high quality ground water associated with unconsolidated glacial deposits near the surface are as valuable as is the gravel that comprise them. The use of an infiltration basin, dry well, drainfield, unlined settling lagoon, or similar means of disposal is likely to adversely affect ground water when adequate pollution prevention measures (BMPs) are not practiced. Spills and leakage of petroleum products is a significant concern. The current permit requires a visual inspection of points of discharge to ground water and the elimination of any oil sheen at these points of discharge. Facilities must employ an appropriate spill response, best management practices to minimize spills and leaks, and prompt and thorough cleanup to prevent petroleum contamination of ground water. The proposed permit continues this requirement.

IV. COMPARISON OF EFFLUENT LIMITS WITH THE CURRENT PERMIT

The proposed permit contains no changes to the surface water monthly effluent limits for turbidity and total suspended solids from the current permit. Ecology removed the daily maximum value for TSS in recognition that with only one required sample per quarter, the monthly average limit is the lowest applicable limit.

The ground water effluent limits for pH will also remain the same (6.5 – 8.6 standard units) for all categories covered under the permit.

Ecology removed the surface water pH limit for facilities included in the Construction Sand and Gravel category (NAICS 212321, SIC 1442) from the proposed permit. A review of discharge pH data for this category showed 253 violations for this category, which is a 99% compliance rate. Of the 253 violations, 161 were for exceedance of the upper limit. Ecology believes this is due to the fact that some permitted facilities have multiple SIC codes and the high pH includes Construction Sand and redi-mix concrete. For all other categories covered under permit, the pH limit for discharges to surface water remains 6.5 to 8.5 standard units.

The proposed permit continues to prohibit oil sheen, however, Ecology does not consider the presence of an oil sheen as a permit violation if the facility reports the presence of the sheen, explains the cause, remedies the sheen condition when discovered, and has preventive BMPs in place.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that facilities are utilizing BMPs, that any treatment process is functioning correctly and that facilities meet the effluent limit. New Permittees that discharge to surface water may also be required to monitor temperature during the summer or fall months to determine if there is a potential to violate water quality temperature standards. Facilities with discharges associated with concrete batch plant process water must also monitor for total dissolved solids. The monitoring schedule is detailed in the proposed permit under Special Conditions S2 and S4. Specified monitoring frequencies take into account the quantity and variability of the discharge,

the treatment method, past compliance by the industry as a whole, significance of pollutants, and the cost of monitoring.

REPRESENTATIVE SAMPLING

Monitoring is intended to verify how well control measures are working to assure compliance with discharge limits. The proposed permit requires facilities to collect samples that represent the operating conditions at a site and the nature of discharges that occur. Representative sampling of discharges to ground water does not mean that facilities must sample all ponds and puddles onsite. It does mean that the facility must identify the number of samples necessary to accurately represent discharge conditions. If all the ponds and puddles onsite have the same pH, one sample will typically represent site conditions. If pH at ponds and puddles in one area of a site are typically higher or lower than the rest of the site, a facility must collect more than one sample. The proposed permit requires a monitoring plan. The plan should include documentation of the testing conducted by the facility to determine representative sampling for their site. The facility should periodically conduct additional sampling to assure that its monitoring plan provides representative sampling.

Stormwater discharges to surface water pose another problem for representative sampling. Since storm events are not under the control of the facility, discharges may occur at any time of day or night and with varying intensity. The intent of monitoring for turbidity is to determine if control measures are adequate to control discharge turbidity. Therefore, this sampling must be conducted during a major storm event when control measures are most stressed. Since storm events cannot be predicted far in advance, the proposed permit requires two samples a month, increasing the odds that facilities will take some samples during the most significant storm events of a month. It is acceptable for the facility to sample twice during one storm event if the duration of the storm event is sufficient to allow at least 24 hours between sampling.

LAB ACCREDITATION

With the exception of certain parameters noted below, the proposed permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. Measuring pH does not require lab accreditation but does require a pH meter that is accurate to a tenth of a pH standard unit. It may be in the best interest of a facility to obtain accreditation to do some additional testing onsite. Becoming accredited to conduct turbidity tests, for instance, may save costs for a facility and will provide more timely information for improving the quality of their wastewater discharge. However, if a facility does receive accreditation for one or more parameters, then it must also obtain accreditation for pH. You can obtain information on accreditation from the Department of Ecology lab accreditation program at (360) 895-4649 or on-line at: <http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html>. In addition to the steps to become accredited, the accreditation staff can also provide advice on complying with testing requirements and appropriate equipment.

V. OTHER PERMIT CONDITIONS

TRAINING REQUIREMENTS

The proposed permit requires the facility to implement and comply with its terms and conditions. This responsibility includes training staff to ensure that they report and respond appropriately to all spills.

The facility must review all staff duties and responsibilities and identify those functions that require training in permit requirements.

REPORTING AND RECORDKEEPING

Special Condition S6., Reporting and Recordkeeping Requirements, is based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-226-090).

Various permit conditions require facilities to notify Ecology in writing (e.g. notification of change in permit status.) The permit does not specify any special mailing instructions. It is the facility's responsibility to assure that Ecology receives notification in a timely fashion as required by the permit. It may be in the facility's best interest to use certified mail or other documented delivery service whenever notifying Ecology as required by the permit.

ADDITIONAL DISCHARGE LIMITS

Ecology based the permit requirements under S3.E, *Water Management*, on sound engineering practices and pollution prevention practices. Facilities must use lined impoundments where the process water discharge has a significant potential to contaminate ground water and must construct and maintain these impoundments to prevent leakage. Facilities must design and build the impoundments and other devices to control pollutants to contain the statistically derived stormwater event with a probable reoccurrence interval of once in ten years (design storm). This is consistent with federal regulations regarding these industries.

Permit condition S3.F. addresses the use of chemical additives for wastewater treatment or erosion control. Typically facilities use chemicals to enhance solids settling in retention ponds or promote soil stabilization. Many of these chemicals are used in the drinking water industry and therefore are considered "safe." However, some do demonstrate aquatic toxicity and others remain untested. The proposed permit restricts the use of these chemicals to minimize the potential for any harmful effects on water quality from their use. The use of ligninsulfonate is restricted due to the high biochemical oxygen demand (BOD) of the material and the potential for polluting ground water or surface water from road runoff. Otherwise, Ecology would need to impose a BOD limit and require monitoring to restrict its pollution potential in surface water and ground water.

In order to protect drinking water supplies, facilities must not directly discharge wastewater from a hot mix asphalt plant or a concrete batch plant into an aquifer. The proposed permit restricts the discharge of wastewater from maintenance shop and vehicle wheel wash/tire bath reservoirs to protect ground water and surface water standards.

This condition also regulates the discharge to gravel pit ponds. Facilities often extract gravel below the water table and when extraction is completed, a pond remains behind. Some facilities

then use the pond as a settling basin for stormwater and/or process water. However, Ecology considers gravel pit ponds as waters of the state. Untreated stormwater and process water would not likely meet surface water criteria for turbidity. This sets up a potential conflict because the addition of sediment laden wastewater adds fines to the gravel pond which can be a desirable part of reclamation. The fines may help seal the pit and, in more shallow areas, provide a substrate for aquatic plants. As a part of a reclamation plan, using the pond as a settling basin may be desirable. The proposed permit continues to define the period of reclamation as part of the mining process and authorizes solids settling in the pond as long as it is part of an approved reclamation plan.

SITE MANAGEMENT PLAN

Special Condition S5 requires all facilities to have a Site Management Plan (SMP). The SMP is a consolidated plan consisting of an Erosion and Sediment Control Plan (ESCP), a Monitoring Plan, a Stormwater Pollution Prevention Plan (SWPPP), and a Spill Prevention Plan. These requirements remain unchanged from those in the current permit. Facilities must retain the SMP on-site or within reasonable access to the site and available, upon request, to Ecology. The SMP must be developed and implemented to identify and control pollution by industrial activities. The SMP objectives include: elimination of commingling of process water and stormwater, implementation of best management practices (BMPs), and the prevention of water quality standard violations.

Consistent with the Water Quality Program's policy published in the Washington State Register on August 6, 2003, facilities must base their SWPPP upon either the *Presumptive Approach* or the *Demonstration Approach*.

For the *Demonstration Approach*, the facility must document the technical basis for all stormwater BMPs within the SWPPP. The SWPPP must document:

1. How the facility selected the stormwater BMPs.
2. The pollutant removal performance expected from the selected BMP.
3. The technical basis which support the performance claims for the selected BMPs.
4. An assessment of how the selected BMP will comply with state water quality standards, satisfy the state AKART requirements, and the federal technology-based treatment requirements under 40 CFR part 125.3

For the *Presumptive Approach*, facilities which follow the stormwater management practices contained in approved stormwater management manuals (SWMM), including the proper selection, implementation, and maintenance of appropriate best management practices, do not need to document the technical basis for the BMPs being used. However, the SWPPP must clearly state which SWMM was used. The approved SWMMs are:

1. Stormwater Management Manual for Western Washington; if facility is west of the crest of the Cascade Mountains.
2. Stormwater Management Manual for Eastern Washington; if facility is east of the crest of the Cascade Mountains.

3. Other stormwater manuals and technical guidance approved by Ecology; refer to Ecology's website for a complete list.

Facilities choosing the presumptive approach may select BMPs different than, but functionally equivalent to, the BMPs in an approved SWMM but must document their functional equivalency in the SWPPP.

Unless there is site-specific information to indicate otherwise, Ecology presumes that facilities which choose the presumptive approach comply with the discharge limits in S2 and S3.

The permit requires ongoing wet and dry season investigations to determine if stormwater commingles with process water. Best management practices (BMPs) are a very significant part of complying with permit conditions. BMPs include schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices used to control plant site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw material storage. This permit further categorizes BMPs as operational, source control, erosion and sediment control, and treatment.

Operational BMPs include a schedule of activities, prohibition of practices, maintenance procedures, employee training, good housekeeping, and other managerial practices to prevent or reduce the pollution of waters of the state. These activities do not require construction of pollution control devices but are very important to a successful SWPPP. Employee training, for instance, is critical to achieving timely and consistent spill response. Prohibitions might include field repair work on equipment but certainly would include intentional draining of crankcase oil on the ground. Good housekeeping and maintenance schedules help prevent incidents that could result in the release of pollutants. Operational BMPs represent a very cost-effective way to control pollutants and protect the environment.

Source control BMPs include physical, structural, or mechanical devices or facilities intended to prevent pollutants from entering stormwater. A few examples of source control BMPs are erosion control practices, maintenance of stormwater facilities, construction of roofs over storage and working areas, and direction of equipment wash water and similar discharges to the sanitary sewer or a dead end sump. Source control BMPs are likely to include a capital investment but are cost effective compared to cleaning up pollutants after they have entered stormwater.

The BMPs noted above are designed to prevent pollutants from entering stormwater. However, even with a very aggressive and successful program, stormwater may still require treatment to achieve compliance with permit conditions. Treatment BMPs are BMPs intended to remove pollutants from stormwater. A few examples of treatment BMPs are detention ponds, oil/water separators, biofiltration, and *constructed wetlands*. The proposed permit requires BMPs to control and treat stormwater. It also requires BMPs that prevent stormwater contamination.

The proposed permit also requires facilities to store additional information in the SWPPP. The facility must record the results of visually monitoring surface water discharges for impact on turbidity and monitoring visually for oil sheen in the SWPPP and keep storm water inspection reports with the SWPPP. These practices should make the SWPPP a useful document, providing useful information on stormwater control strategy and results.

All facilities must also have completed an Erosion and Sediment Control Plan (ESCP). They must keep the ESCP on-site or within reasonable access to the site and available, upon request, to Ecology. Facilities must select, install, and maintain appropriate BMPs. The BMP Reference section at the end of this fact sheet includes citations for publications that may be useful as guides in selecting appropriate BMPs. Facilities may select or design BMPs not discussed in those references if they are substantially equivalent and appropriate for their situations.

The discharge of stormwater to any sanitary sewer is subject to limits (S3.J). This is necessary to limit both the dilution of sanitary wastewater and maintain the hydraulic loading capacity of sanitary sewers and treatment plants.

SPILL PLAN

It is typical for the industrial activities covered under this permit to include storage of chemicals that have the potential to cause water pollution if accidentally released. Fuel, hydraulic fluid and other petroleum products are commonly stored onsite and heavy equipment and trucks contain significant quantities of these materials. Spills can and do happen at sites covered under this permit. As discussed previously, mining sites are particularly vulnerable to ground water contamination. This permit requires facilities to develop best management plans to prevent accidental release of these substances and to respond quickly to clean up spills that may occur. These requirements are consistent with section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080. Facilities must develop, implement, and maintain a spill plan to prevent the accidental release of pollutants to state waters and to minimize damages if such a spill occurs. This plan must be kept onsite or within reasonable access to the site and made available to Ecology upon request.

SOLID WASTE DISPOSAL

Improper solid waste disposal has a potential to cause water pollution. The proposed permit has three sections dealing with solid waste: Solid Waste Handling, Leachate and Recycle Material.

The facility must properly dispose of solid wastes and comply with the applicable solid and hazardous waste regulations (Chapters 173-303 and 173-304 WAC). The solid waste from the activities covered under this permit will most often contain no hazardous waste materials and generally may be used as soil or fill material. However, it is the facility's responsibility to properly designate, handle and dispose of the solid waste. Solid waste from concrete truck washout for instance, may have a high pH and leachate from stock piles of this material may pollute waters of the state. The small particulate matter (fines) removed from air emissions during the production of asphalt may contain pollutants of concern and should be evaluated for toxic substances to determine appropriate disposal options.

The proposed permit prohibits leachate from solid waste causing violations of surface or groundwater standards.

Sand and gravel facilities sometimes use gravel pits for composting yard debris, storing piles of solid waste, or other activities that can discharge leachate. Discharge from these activities has potential to pollute ground water and the permit does not authorize or regulate these discharges. Chapter 173-350 WAC provides the appropriate regulatory requirements to control these potential discharges. Depending on the activity, that regulation sets requirements for those activities including health department permits, structural, and operational controls. These

activities may require an individual or another general wastewater discharge permit. Preventing ground water pollution depends on compliance with solid waste rules to protect groundwater when these operations are located within a gravel pit.

ACCESSORY USES OF SITE

Ecology has observed activities at permitted sites that are not consistent with activities described above. These activities include composting operations and vehicle storage and recycling. These activities have the potential to discharge pollutants other than those characteristic of this industry. Facilities must obtain the appropriate permit for those additional activities not covered under this general permit.

GENERAL CONDITIONS

Ecology bases the General Conditions on state and federal law and regulations. They are included in all discharge permits issued by Ecology.

VI. SMALL BUSINESS ECONOMIC IMPACT STATEMENT

Since only relatively minor changes exist between the current permit and the proposed permit, the original small business economic impact statement (SBEIS) provides sufficient review of economic impact factors. The SBEIS includes evaluations of the economic impacts to these industries based on cost estimates available from USEPA as well as other sources. The compliance costs associated with Chapter 173-201A (surface water quality standards) and compliance with federal law or regulations are not included in the SBEIS.

VII. RECOMMENDATION FOR PERMIT ISSUANCE

The proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limits and conditions believed necessary to control toxics, protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. Ecology proposes to issue this permit for five (5) years.

VIII. REFERENCES FOR TEXT AND APPENDICES

BMP REFERENCES

Barfield, B.J., R.C. Warner, and C.T. Haan

Applied Hydrology and Sedimentology for Disturbed Areas. Oklahoma Technical Press, Stillwater, Oklahoma.

Environment Canada

Recommended Waste Management Practices for the Ready Mix Concrete Industry in British Columbia. March, 1990

Goldman, S.J.,

Erosion and Sediment Control Handbook. McGraw Hill Publishing Co., New York, New York.

Spokane County

Guidelines for Stormwater Management. Spokane County Engineers Office, North 811 Jefferson St., Spokane, WA 99260

United States Environmental Protection Agency

NPDES Stormwater Sampling Guidance Document. USEPA Document 833-B-92-001, July 1992

Development Document for Effluent Limitations Guidelines and Standards, Mineral Mining and Processing Industry, Point Source Category, USEPA Document 440/1-76/059b, July 1979

Guidance Development Document Effluent Limitations Guidelines and New Source Performance Standards for Concrete Products, Point Source Category. USEPA Document 440/1-78/090, February 1978

Urbonas, Ben and Peter Stahre

Stormwater. Prentice Hall, Des Moines, Iowa

Washington State Department of Natural Resources, Division of Geology and Earth Resources

Best Management Practices for Reclaiming Surface Mines in Washington and Oregon, Revised Edition 1997, Open File Report 96-2.

Washington State Department of Ecology, Stormwater Management Manual for the Puget Sound Basin, Publication 91-75

GENERAL REFERENCES

Environmental Protection Agency (EPA)

1975. Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Paving and Roofing Materials. EPA 440/1-75/049a.

1975. Development Document for Interim Final Effluent Limitations Guidelines and New Source Performance Standards for the Minerals for the Construction Industry Vol. I. EPA 440/1-75/059.

1975. Development Document for Interim Final Effluent Limitations Guidelines and New Source Performance Standards for the Clay, Ceramic, Refractory and Miscellaneous Minerals Vol. III. EPA 440/1-75/059d.

1979. Development Document for Effluent Limitations Guidelines and Standards for the Mineral Mining and Processing Industry. EPA 440/1-76/059b.

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Mead, Robert D. 1995. The Direct and Cumulative Effects of Gravel Mining on Ground Water Within Thurston County, Washington. Thurston County Public Health and Social Services Department.

Tsivoglou, E.C., and J.R. Wallace. 1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology. 1994. Permit Writer's Manual. Publication Number 92-109 . 2008 revision.

Wright, R.M., and A.J. McDonnell. 1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

IX. APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

Ecology has tentatively determined to reissue the sand and gravel general permit to the industries listed under "Permit Coverage" on page 1 of this fact sheet. The proposed permit contains conditions and effluent limits which are described in the rest of this fact sheet.

In June 2009, Ecology mailed a letter to all facilities covered under the current general permit. The letter reminded permittees that the permit was expiring and required them to reapply if they wished to continue coverage. In November 2009, Ecology posted a notice on the sand and gravel website stating the reissuance date would be later than the expiration date but that the permit was administratively extended.

On January 6, 2010, Ecology filed a Public Notice of Draft (PNOD) with the Code Revisers Office to inform the public that the revised proposed permit and fact sheet are available for review and comment; and specify the dates and locations of public workshops and hearings on the proposed permit. The announcement was published in the Washington State Register on January 20, 2010. The public notice, permit and fact sheet are also posted on Ecology's website.

Ecology will accept written and oral comments on the draft permit and fact sheet until **5 pm, February 24, 2010**. Ecology prefers comments to be submitted by email. Emailed comments must contain the commenter's name and postal address. Comments should reference the specific permit and specific text when possible.

The proposed permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at Ecology's regional offices listed below. Written comments should be mailed to:

Gary Bailey, Water Quality Program
Department of Ecology
PO Box 47600
Olympia, WA 98504-7600

The email address for comments is:
gary.bailey@ecy.wa.gov

Ecology will also conduct a workshop and public hearing at the following location to provide an opportunity for people to give formal oral testimony and comments on the proposed permit.

Workshop and Hearing

February 22, 2010 (1 p.m.)

Lacey Timberland Regional Library
500 College St SE
Lacey, WA 98503

Both public workshop and hearing will begin at 1:00 p.m. and conclude as soon as public testimony is completed.

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

Ecology will consider all comments in formulating a final determination to issue, revise, or reconsider the proposed permit. Ecology's response to all significant comments will be available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from Ecology by telephone, (360)407-6127, by writing to the address listed above, or by visiting Ecology's Sand and Gravel web page: www.ecy.wa.gov/programs/wq/sand/

This general permit and fact sheet was written by Gary Bailey, Department of Ecology - Water Quality Program.

Regional office locations are:

Southwest Regional Office

Water Quality Program

300 Desmond Drive

Lacey, Washington

Phone: (360) 407-6280

Central Regional Office

Water Quality Program

15 West Yakima Avenue, Suite 200

Yakima, Washington

Phone: (509) 457-7148

Northwest Regional Office

Water Quality Program

3190 - 160th Avenue SE

Bellevue, Washington

Phone: (425) 649-7201

Eastern Regional Office

Water Quality Program

N. 4601 Monroe, Suite 202

Spokane, Washington

Phone: (509) 329-3565

**X. APPENDIX B. COMMENTS RECEIVED ON THE DRAFT SAND AND GRAVEL
GENERAL PERMIT WITH ECOLOGY RESPONSES**