

SEPA Environmental Checklist

Proposed Lake Hicks Alum Treatment



King County Department of Natural Resources and Parks
201 South Jackson Street, Suite 600
Seattle, WA 98104

March 1, 2005

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A. BACKGROUND

1. Name of proposed project, if applicable:

Lake Hicks Alum treatment

2. Name of applicant:

King County Department of Natural Resources and Parks

3. Address and phone number of applicant and contact person:

Michael Murphy
201 S Jackson St, Suite 600
Seattle, WA 98104
206-296-8008

4. Date checklist prepared:

March 1, 2005

5. Agency requesting checklist:

Washington Department of Ecology

6. Proposed timing or schedule (including phasing, if applicable):

Proposed treatment dates are April 11-14, 2005. Treatment is expected to take 1-2 days, but may be delayed due to inclement weather.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

No.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

- *Integrated Phosphorus Management Plan*, King County, January 2005.
- *Salmon Creek Basin Plan*, King County, 2005 (Unpublished draft).
- *Lakewood Park Master Plan Update*, King County 2000.
- *Lakewood Park Wetlands Study Report*, Adolfsen Associates for Atelier, for King County, 1999.
- *Lakewood Park Master Plan Update, Lake Hicks Hydrologic Modeling and Water Quality Summary*, KCM for King County 1999.
- *Preliminary Hydrogeologic Assessment of Lakewood Park, Seattle, Washington*, Udaloy Environmental Services for King County.
- *Lake Hicks Post-Restoration Monitoring Study*, CH2MHill for King County, 1987.
- *Lake Hicks Restoration Study*, CH2MHill for King County, 1982.

- 9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.**

No.

- 10. List any government approvals or permits that will be needed for your proposal, if known.**

National Pollution Discharge Elimination System permit issued by the Washington Department of Ecology (Permit No. WAG-994000)

- 11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)**

The proposed project involves applying aluminum sulfate (alum) and sodium aluminate to Lake Hicks to lower high phosphorus concentrations and limit internal phosphorus recycling that have lead to frequent, sometimes toxic, cyanobacteria blooms. Lake Hicks is a 4-acre lake that lies within King County's Lakewood Park. Alum and the buffer will be applied to the entire surface of the lake.

A detailed description of the proposed application methods is contained within the *Integrated Phosphorus Management Plan* (King County, 2005), which is attached to this checklist.

- 12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.**

Lake Hicks, also known as Lake Garrett, is in the White Center neighborhood of unincorporated King County between Seattle and Burien located at the southern end of Lakewood Park and to the north of Cascade Middle School at SW 112th St. and 10th Ave. SW. The lake is in Section 6, Township 23 North, Range 4 East (Latitude 47° 30' 12"N, Longitude 122° 20' 43"W). Figure 1 presents an aerial photograph of the lake Hicks vicinity, including the watershed boundary.

B. ENVIRONMENTAL ELEMENTS

1. Earth

- a. *General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other . . .***

Lake, surrounded by low hills within the park.

- b. *What is the steepest slope on the site (approximate percent slope)?***

Not applicable.

- c. *What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.***

Native soils at the site consist of sands and gravels (from the Vashon recessional outwash) that have incised gravelly silt (Vashon till). The till is underlain by sand and gravel from the Vashon advance outwash. The soils are generally classified as urban, and there is a history of contours and fills within the park property.

- d. *Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.***

No.

- e. *Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.***

Not applicable.

- f. *Could erosion occur as a result of clearing, construction, or use? If so, generally describe.***

No.

- g. *About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?***

None.

- h. *Proposed measures to reduce or control erosion, or other impacts to the earth, if any:***

None.

2. Air

- a. ***What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.***

Emissions from internal combustion engines of the boat used to apply the alum to the lake and the trucks that deliver the chemicals to the site.

- b. ***Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.***

No.

- c. ***Proposed measures to reduce or control emissions or other impacts to air, if any:***

None.

3. Water

- a. ***Surface:***

- 1) **Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.**

Yes. The treatment area is Lake Hicks, which is within the Salmon Creek Basin of Watershed Resource Inventory Area 9 – Green/Duwamish River. There are no natural outlets, but when the lake rises above normal high water mark (elevation 344-feet above sea level), outlet pumps pump lake water through a conveyance pipe (the Old Government Line) which drains directly to Puget Sound. During exceptionally heavy rain storms flow through the Old Government Line may reach capacity, at which point a portion of the flow is diverted to Salmon Creek.

The lake level at time of proposed treatment is expected to be below the 344-foot level at which the pumps begin operating. Treatment will be delayed if any storms are occurring or anticipated within 24 hours of the completion of chemical application.

- 2) **Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.**

Yes. The aluminum sulfate (alum) and sodium aluminate (buffer) will be stored on site at Lake Hicks in tanks. A boat with two tanks (one for alum and one for buffer) will be used to apply the alum and buffer to the lake. The size of the tanks on the boat will be limited by the weight of the alum and buffer, so multiple trips will be necessary. A hose extending from each storage tank will be used to refill the tanks on the boat as many times as necessary.

The boat will slowly traverse the lake, going back and forth from one side to the other pumping each chemical into the water. The alum will be pumped through a manifold or set of hoses in the water at or near the front of the boat, and the buffer will be pumped through a manifold or set of hoses trailing from the rear of the boat. As the boat moves through the lake, the boat operator will make sure that chemicals are spread evenly over the surface of

the lake. Since it will be easy to see the white “floc” that forms when the two chemicals combine in the water, the applicator will know which portions of the lake have been treated and which have not.

The attached *Integrated Phosphorus Management Plan* describes the proposed treatment methods in greater detail.

- 3) **Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.**

Not applicable.

- 4) **Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.**

No.

- 5) **Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

No. There are no inflows into the lake other than stormwater.

- 6) **Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

None.

b. *Ground:*

- 1) **Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.**

No.

- 2) **Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.**

None.

c. *Water runoff (including stormwater):*

- 1) **Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.**

The lake is at the bottom of an enclosed basin, so stormwater flows into it from the watershed. If runoff exceeds infiltration rates, the lake level rises. Since there is no natural outlet, pumps convey water out of the lake to Puget Sound.

- 2) **Could waste materials enter ground or surface waters? If so, generally describe.**

Not applicable.

d. *Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:*

As required by the National Pollution Discharge Elimination System Permit, the lake water will be monitored at regular intervals during the alum treatment to ensure that the pH is above 6.0 and below 8.5 and that the alkalinity stays within an acceptable range.

4. Plants

a. *Check or circle types of vegetation found on the site:*

X Deciduous tree: alder, maple, dogwood

X Evergreen tree: fir, cedar, pine

X Shrubs: willow

X Grass

Pasture: none

Crop or grain: none

X Wet soil plants: cattail, bullrush,

X Water plants: *Elodea canadensis*

X Other types of vegetation: *Chara spp.*, *Nitella spp.* (aquatic plant-like algae)

b. *What kind and amount of vegetation will be removed or altered?*

Submersed aquatic vegetation, if present, may initially be covered with a “floc” that forms and settles to the bottom during alum treatment. However, the alum and buffer will not be applied to areas of Lake Hicks shallower than approximately 5 feet deep, which is the area where aquatic vegetation is most likely to grow, given the current light penetration in the lake. Following the alum treatment water in Lake Hicks is expected to become much clearer, so submersed aquatic vegetation may increase due to increased light availability.

c. *List threatened or endangered species known to be on or near the site.*

None. A letter from the Washington State Department of Natural Resources’ Washington National Heritage Program is attached to this checklist that confirms that there are no records of rare or high quality native ecosystems in the project area.

d. *Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:*

None.

5. Animals

a. Check any birds and animals which have been observed on or near the site or are known to be on or near the site:

Birds:

- hawk
- heron
- eagle
- songbirds
- other: seagulls, crows, Canada geese, osprey

Mammals:

- deer
- bear
- elk
- beaver
- other: _____

Fish:

- bass
- salmon
- trout
- herring
- shellfish
- other: carp _____

b. List any threatened or endangered species known to be on or near the site.

The Washington Department of Fish and Wildlife Priority Habitat and Species maps indicate no priority species in the Lake Hicks vicinity. Bald eagles (*Haliaeetus leucocephalus*) are known to be in the area, but have not been documented at Lake Hicks. An email attached to this checklist from the Washington Department of Fish and Wildlife confirms that there are no priority species (endangered or threatened) known to be in the area.

c. Is the site part of a migration route? If so, explain.

No.

d. Proposed measures to preserve or enhance wildlife, if any:

None.

6. Energy and natural resources

- a. *What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.*

Not applicable.

- b. *Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.*

Not applicable.

- c. *What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:*

Not applicable.

7. Environmental health

- a. *Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.*

Yes. The proposed project involves treating Lake Hicks with two chemicals. Aluminum sulfate is moderately acidic, and sodium aluminate is caustic. Direct contact with these chemicals can pose a risk to humans and wildlife, although when applied to the lake simultaneously, the pH will be balanced. Material Safety Data Sheets for alum and sodium aluminate are attached to this checklist.

An Emergency and Spill Response Plan has been developed to guide response to a spill or other accident during the treatment. This plan is attached to this checklist and will be on site during the treatment.

1) Describe special emergency services that might be required.

The Emergency and Spill Response plan will outline steps to take in case of an accidental spill or accidental human exposure.

2) Proposed measures to reduce or control environmental health hazards, if any:

The Emergency and Spill Response plan outlines safety measures to reduce the likelihood of an accident or spill and outline steps to control and contain an accidental spill, if one does occur.

b. *Noise*

- 1) **What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?**

None.

2) **What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.**
Noise associated with machinery used during treatment.

3) **Proposed measures to reduce or control noise impacts, if any:**
None.

8. Land and shoreline use

a. ***What is the current use of the site and adjacent properties?***

Lake Hicks is within King County's Lakewood Park. Lakewood Park is 32-acres and is primarily used by community residents. There is an 18-"hole" flying disc course in Lakewood Park. The park has parking for 90 cars. The park also has a bathroom, picnic shelter and a playground.

b. ***Has the site been used for agriculture? If so, describe.***

No.

c. ***Describe any structures on the site.***

A dock extends over the lake. Lakewood Park has a bathroom and an open-air picnic shelter, and playground. These structures will not be affected by the proposed project.

d. ***Will any structures be demolished? If so, what?***

No.

e. ***What is the current zoning classification of the site?***

The present use is "Park – Public" and the current zoning is R-6.

f. ***What is the current comprehensive plan designation of the site?***

King County Owned Open Space/Recreation

g. ***If applicable, what is the current shoreline master program designation of the site?***

Not applicable.

h. ***Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.***

Yes. The lake and its shoreline are considered sensitive areas under the King County Critical Areas Ordinance.

i. ***Approximately how many people would reside or work in the completed project?***

None.

j. ***Approximately how many people would the completed project displace?***

None.

k. *Proposed measures to avoid or reduce displacement impacts, if any:*

Not applicable.

l. *Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:*

Not applicable.

9. Housing

a. *Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.*

Not applicable.

b. *Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.*

Not applicable.

c. *Proposed measures to reduce or control housing impacts, if any:*

Not applicable.

10. Aesthetics

a. *What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?*

Not applicable.

b. *What views in the immediate vicinity would be altered or obstructed?*

Not applicable.

c. *Proposed measures to reduce or control aesthetic impacts, if any:*

The project should improve the water clarity of Lake Hicks and reduce the frequency and severity of unsightly and potentially toxic cyanobacteria blooms.

11. Light and glare

a. *What type of light or glare will the proposal produce? What time of day would it mainly occur?*

None. Work will occur between 8 A.M. and 4 P.M.

b. *Could light or glare from the finished project be a safety hazard or interfere with views?*

No.

c. What existing off-site sources of light or glare may affect your proposal?

None.

d. Proposed measures to reduce or control light and glare impacts, if any:

None.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

King County's 32-acre Lakewood Park, which surrounds Lake Hicks, has an 18-hole disc golf course, a picnic shelter, a playground, and walking trails. There is parking for 90 cars. There is also a dock that has been used as a fishing pier, but the dock is closed to the public due to structural concerns. A stretch of shoreline is a sandy swimming beach, but swimming has been restricted since 1991 because of water quality concerns and bluegreen algae blooms.

b. Would the proposed project displace any existing recreational uses? If so, describe.

Parked tanker trucks or stationary storage tanks could occupy several parking spaces in the lot, but there should be ample parking available for recreational users who drive to the lake. Boat motors may create noise that could be a minor inconvenience to park users. Access to the lake shore and staging areas for treatment equipment will be restricted during the alum treatment. Immediately upon finishing the alum treatment access to all areas of the park and lake will be open for public use. However, swimming will still be banned, and the dock will remain closed.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

As required by the NPDES permit, notice of the anticipated dates and times of treatment, and corresponding recreational impacts will be sent to all residents living within ¼ mile of Lake Hicks. Notices will also be placed on temporary signs at the park during the two weeks leading up to the expected application date.

13. Historic and cultural preservation

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

No. This has been confirmed by the Washington State Office of Archaeology and Historic Preservation and the King County Historic Preservation Program. Emails confirming the absence of historic landmarks or archaeological sites are attached to this checklist.

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

Not applicable.

c. Proposed measures to reduce or control impacts, if any:

Not applicable.

14. Transportation

- a. *Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.***

The entrance to Lakewood Park is on 10th Avenue SW between SW 112th Street and SW 108th Street in the White Center neighborhood.

- b. *Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?***

The closest bus stop is .39 miles away at SW 108th Street and 8th Avenue SW on Metro Transit bus route number 128.

- c. *How many parking spaces would the completed project have? How many would the project eliminate?***

Not applicable.

- d. *Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).***

No.

- e. *Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.***

No.

- f. *How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.***

Increased traffic related to this project is not anticipated.

- g. *Proposed measures to reduce or control transportation impacts, if any:***

None.

15. Public services

- a. *Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.***

Not applicable.

- b. *Proposed measures to reduce or control direct impacts on public services, if any.***

Not applicable.

16. Utilities

a. Circle utilities currently available at the site:

- electricity
- natural gas
- water
- refuse service
- telephone
- sanitary sewer
- septic system
- other: _____

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

None.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature:

Date Submitted:

D. supplemental sheet for non-project actions

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

There should be no discharge of toxic or hazardous substances that would pose a risk to aquatic plants and animals. The proposed project involves application of two chemicals to Lake Hicks: aluminum sulfate and sodium aluminate. If applied individually, alum would lower the pH of the water to levels that could be harmful to aquatic life, and sodium aluminate could raise the pH to harmful levels. However, when applied simultaneously as proposed, the pH will balance.

The treatment should result in a significant water quality improvement to Lake Hicks.

Proposed measures to avoid or reduce such increases are:

While the chemicals are being added to the lake, project staff will measure the pH and alkalinity of the lake at regular intervals to ensure that the pH is between 6.0 and 8.5 and that the alkalinity remains within an acceptable range.

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

The proposed project is likely to improve water quality of Lake Hicks, which should in turn improve conditions for aquatic plant and animal life, with the exception of bluegreen algae blooms that should be eliminated or greatly reduced.

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

Implementation of the proposed project.

3. How would the proposal be likely to deplete energy or natural resources?

Not applicable

Proposed measures to protect or conserve energy and natural resources are:

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks,

wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

The proposed project will apply two chemicals to Lake Hicks. Lake Hicks is designated by King County as a sensitive area. The proposed alum treatment is designed to improve water quality and habitat value by lowering phosphorus concentrations which have lead to degraded water quality in the lake .

The Lake is entirely within King County’s Lakewood Park. Numerous studies have recommended improvements to Lakewood Park and Lake Hicks. A discussion of those studies and the recommendations that were implemented is included in the attached *Integrated Phosphorus Management Plan*.

Proposed measures to protect such resources or to avoid or reduce impacts are:

Implementation of the proposed project should result in improvements to the lake.

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

The proposed project is not likely to affect current shoreline use.

Proposed measures to avoid or reduce shoreline and land use impacts are:

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

Not applicable.

Proposed measures to reduce or respond to such demand(s) are:

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

The proposed project will not conflict with and laws or environmental protection requirements. In fact, the proposed project is designed in accordance with environmental regulations. The proposed project will lower the high phosphorus concentrations that have lead to the lake being listed as “impaired” by high phosphorus concentrations since 1998 under section 303(d) of the Federal Clean Water Act (1972).