COMPLIANCE MONITORING WELL INSTALLATION AND SAMPLING PLAN

LAKE WASHINGTON APARTMENTS, SEATTLE, WASHINGTON

Prepared for
Bayside Washington, LLC

Prepared by
Herrera Environmental Consultants, Inc.

HERRERA

Note:
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INTRODUCTION

This compliance monitoring well work plan describes field activities to be performed at the Lake Washington Apartments property located at 9061 Seward Park Avenue South, Seattle, Washington (Figure 1). The Lake Washington Apartments is a low income housing development first constructed in 1948. The site covers approximately 16.5 acres and includes 34 buildings with 366 residential apartments.

In the late 1990s, the property underwent a complete renovation conducted by a joint venture consisting of A.F. Evans Company, Inc. and SouthEast Effective Development (SEED), a local nonprofit corporation. As part of the renovation, A.F. Evans Co. and SEED contracted to remove 18 underground storage tanks that previously had been used to store diesel heating oil (300-gallon capacity) and PS300 heating oil (1,800-gallon capacity). The 18 tanks were positioned in pairs at each of nine locations, adjacent to boiler rooms that supplied hot water radiant heat for the entire complex. Diesel oil was used to prime the boilers, and heavier oil was used once the systems were warmed up. During the tank removal process, buried drums (55-gallon capacity) containing diesel and water were found at seven of the locations. It is unknown what these drums were used for. During the course of tank removal, soil contamination was removed; however, some residual contamination was left in place beneath buildings and some utilities.

At the time of tank removal, no groundwater was determined to be present in any of the tank excavations (excavations typically extended 10 to 15 feet below ground surface). A geotechnical survey of the property identified the presence of groundwater in three of five borings completed to depths ranging from 20 to 43 feet below ground surface, although the water was not associated with a consistent soil layer or depth (i.e., 12, 17, and 32 feet deep).

The Washington State Department of Ecology (Ecology) conducted a Periodic Review of the Lake Washington Apartments site file (Facility Site ID #2285) in February 2010, determining:

- Cleanup actions appear to be protective of human health, but that groundwater (the environment) had not been investigated. Because the No Further Action (NFA) letter had not clarified that groundwater had not been investigated, the letter may be rescinded.
- Soil cleanup levels have not been met at the standard point of compliance for the site; however, the soil cleanup action has been determined to comply with cleanup standards for human exposure since the long-term integrity of the containment system is ensured and the requirements for containment technologies are being met.
- The Restrictive Covenant for the property is in place and continues to be effective in protecting public health from exposure to hazardous substances and protecting the integrity of the cleanup action.



Figure 1.
Vicinity/site map Lake Washington Apartments, Seattle, Washington.

- Groundwater has not been investigated, so the soil-to-groundwater pathway could be a concern and additional cleanup actions may be required, depending on a groundwater investigation.

Based on discussions with Ecology, a multi-phase approach was developed to first determine whether residual soil contamination continued to pose a potential threat to groundwater based on current concentrations and, if so, follow up definition of groundwater flow characteristics and groundwater quality would be performed.

An initial investigation using angle drilling beneath Building 35 identified water beneath the building in contact with petroleum contaminated soil, indicating the need for further characterization. This was accomplished using a vibratory probe rig to identify the presence and quality of groundwater surrounding Building 35 and to determine the extent of a shallow clay layer identified during tank removal work conducted in 1997.

SITE CONDITIONS

Physical Setting

The east boundary of the Seward Park Estates complex is located approximately 200 feet west of Lake Washington. The site is nearly flat at an elevation of 25 feet above sea level. The surface of Lake Washington is at 21 feet above sea level.

A geotechnical study conducted at the site included five test borings advanced to depths ranging from 20 to 44 feet below the existing grade (Terra Associates 1996). The borings indicated that near-surface site geology generally consisted of a fill-peat-clay-sand sequence in four of the five locations. Near-surface soil consists of very loose to medium dense silty sand at depths ranging from 2.5 to 9.5 feet below grade. Very soft to soft peat underlies the fill at four of the boring locations; fill at the northeast corner of the site is underlain by native sandy silt to silty fine sand to a depth of at least 22.5 feet (bottom of boring B-2). Peat layer thickness was 9.5 feet at B-1, nonexistent at B-2, 19.5 feet at B-3, 13.0 feet at B-4, and 7.0 feet at B-5. Very soft to very stiff clay was found beneath the peat at borings B-1, B-4, and B-5. Dense to very dense till-like soils consisting of silty fine to medium grained sand with gravel was found at the bottom of all borings.

In general, the series of soil layers identified during the geotechnical study was corroborated during tank removal and subsequent investigations. An imported fill material, consisting of varying amounts of clay, silt, sand, and gravel, was found overlying native soils. This fill layer ranged in thickness from 2.5 to 6.0 feet. Beneath the fill, native soils usually consisted of peat, generally underlain by blue-gray clay. The inferred lateral and vertical extent of the shallow clay layer identified at the site is shown in Figure 2, based on boring log and tank excavation information. The shallow clay layer appears to extend across a large portion of the property, with a top elevation ranging from 9 to 22 feet below ground surface. At the north end of the property, the clay layer ranged from 2 to 5.5 feet thick; no discontinuities were apparent based on sampling performed at approximate 200-foot intervals across the entire property.

The clay layer does not have a level surface and groundwater does not appear to perch as a succinct water body on top of a near-level clay layer. Groundwater appears to accumulate as a result of rainfall and irrigation percolation either within or at the base of the peat layer on top of the underlying shallow clay.

Historical Cleanup

The tanks were removed from all nine locations at the Lake Washington Apartments in October 1996, prior to extensive excavation of contaminated soil associated with each set of tanks. Soil removal was based on the then-current MTCA method A cleanup level for diesel and heavier-than-diesel total petroleum hydrocarbon (TPH) fractions (200 milligrams per

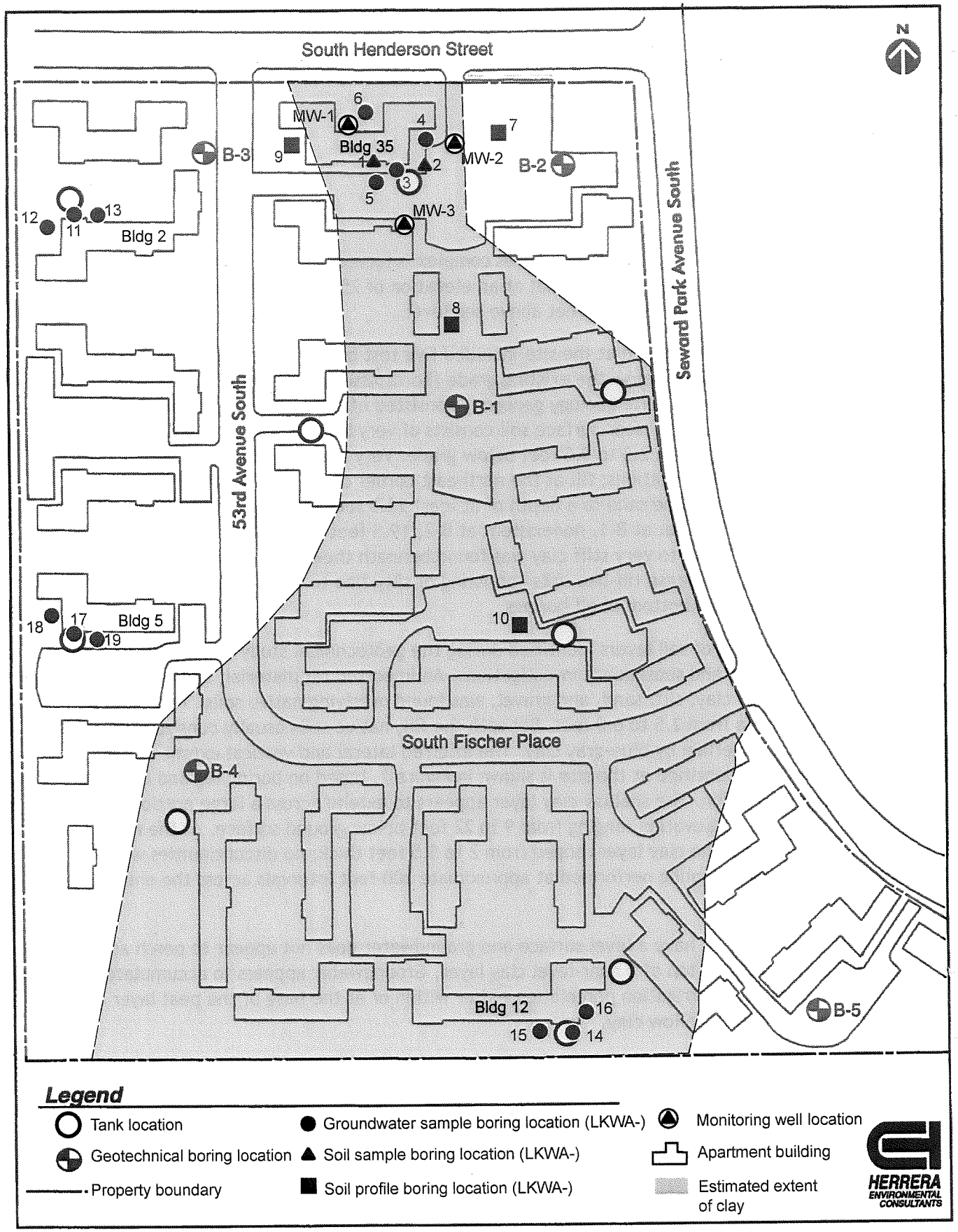

Figure 2. Monitoring well location map, Lake Washington Apartments.

kilogram [mg/kg]). Cleanup to this level was achieved at most tank locations, except for TPH left in place adjacent to and beneath buildings or beneath limited pipe runs. An estimated 85 percent of contaminated soil was removed from the site, with little residual contamination available for downward transport. A significant amount of peat, high in organic matter, was considered an aid to retarding vertical transport of petroleum, as was the clay layer that appears to exist across much of the site.

In 2001, the MTCA method A cleanup level for diesel- and heavy oil-range TPH was raised to 2,000 mg/kg. As such, almost all soil with residual TPH documented across the site following tank removal fell below the updated cleanup level. Contaminated soil was left at only one tank location (beneath Building 35 at the north end of the property) at concentrations exceeding the current MTCA method A cleanup level (ranging between 2,100 and 6,600 mg/kg); soil identified as greater than the current cleanup level at Building 2 (Tank 5), Building 5 (Tank 4), and Building 12 (Tank 2) were all over-excavated when the tanks were removed.

FIELD WORK

Three hollow-stem boring borings will be constructed and completed as monitoring wells at locations shown in Figure 2, the wells will be surveyed relative to a temporary benchmark, and one groundwater sample will be collected at each location.

Field Procedures

Pre-Drilling Activities

Prior to commencing drilling activities, a utility locate service will be retained to locate underground utilities at each proposed boring location.

Monitoring Well Installations from Hollow-Stem Auger Borings

Borings will be drilled using an auger drill rig equipped with 4.25-inch inside diameter hollow-stem auger flights. Discrete soil samples will be collected at 2.5-foot depth intervals using a drive split-spoon sampler 18 inches long by 3-inch outside diameter for soil classification and field screening. The sampler will be driven using a 300-pound downhole hammer with a drop of 24 inches. Following retrieval, each sample will be logged by a geologist for soil lithology. Soils encountered during drilling will be visually inspected for staining and classified in accordance with the Unified Soil Classification System (USCS; American Society for Testing and Materials [ASTM] D2488-08).

Each well will be constructed of 2-inch diameter Schedule 40 polyvinyl chloride (PVC) blank well casing flush threaded with a 5-foot section of 0.010-inch slotted machine cut well screen casing at the base. A filter pack of clean #2/12 silica sand or equivalent will be placed in the annular space between the screened casing and borehole to a height approximately 2 feet above the top of the screened well casing. Bentonite chips will be placed above the filter pack to within 2 feet of the ground surface. Each well will be completed below grade with a water-tight well monument box set in a concrete surface seal.

Survey Elevations

Survey elevations of the top of each well casing will be measured using an auto leveler, tripod, and a level rod with graduations in feet and decimals. Wellhead elevations will be measured and calculated to the nearest 0.01 foot and recorded on the field log. A temporary bench mark will be established near Building 35 and assigned a reference elevation of 100.00 feet.

Well Development

Following installation, monitoring wells will be developed with a submersible pump. Development will continue until levels of sand and silt are reduced and water removed from

the well is generally of clear quality. Development water from each well will be contained in 55-gallon drums and stored temporarily at the site.

Groundwater Sampling

General procedures for collecting groundwater samples from monitoring wells will be as follows:

1. Remove the well monument cover and inspect the condition of the well and surrounding area. Note observations in the field notebook and well sampling log. Unlock and remove the well casing plug.
2. Using an electronic water level indicator, the depth to ground water will be measured to the nearest 0.01 feet. Measurements will be taken relative to the surveyed reference mark at the top of the PVC well casing. Date, time, and measurements will be recorded in the field notebook and well sampling log.
3. Low-flow sampling will be used and monitoring wells will be purged of standing water using a peristaltic pump and polyethylene tubing placed about 1 foot below the static water level. During purging, the water level, purge rate, pH, water temperature, dissolved oxygen, and specific conductivity will be measured at 5-minute intervals and recorded on the well sampling log. Purging will continue until the water level is stable and pH, temperature, and specific conductivity vary by less than 3 percent over three 5-minute intervals. Purged water will be placed into 55-gallon drums stored onsite.
4. Following purging, samples will be collected using the peristaltic pump and polyethylene tubing to directly fill the sample containers. Containers will be securely capped, labeled, and placed into a chilled cooler for storage prior to delivery to the laboratory. The date and time sample collected will be recorded in the field notebook, well sampling log, and on the chain-of-custody form.
5. The well casing plug will be replaced and locked, and the well monument cover secured.

Decontamination Procedures

Decontamination will be performed on all sampling equipment potentially exposed to contaminated soil between boring locations. All sampling equipment will be decontaminated prior to entry in the field. In addition, chemical-resistant gloves worn during sample collection will be changed between sampling locations.

Decontamination of Sampling Equipment

The following decontamination procedure will be used for soil sampling equipment, including split-spoon samplers:

- Rinse with tap water
- Scrub with water and Liquinox detergent

- Rinse with tap water
- Rinse with deionized water

Decontamination of Drilling Equipment

Drilling equipment, including sections of augers and drill rods will be decontaminated between boring locations using a high-temperature pressure washer. The rinse water generated during decontamination of drilling equipment for this field investigation will be contained in 55-gallon drums.

Sample Handling

All samples collected during this investigation will be handled according to the procedures described in this section.

Sample Containers and Labeling

Groundwater samples will be placed into containers supplied by the analytical laboratory and sample container labels will be completed at the time of collection using a permanent waterproof pen or marker. Sample labels will include the following information:

- Project name
- Sample identification
- Date and time of collection
- Initials of sampling personnel
- Analysis to be performed

Sample Storage

Immediately following sample collection, sample containers will be placed into a chilled cooler for storage prior to delivery to the analytical laboratory.

Sample Shipment and Delivery

Samples collected during this investigation will hand delivered to the analytical laboratory.

Chain of Custody

Following collection, sample information will be recorded on a chain-of-custody form. The purpose of this record is to account for the possession (or custody) of each sample from the time it is collected until laboratory testing and reporting is complete. The signature of each person in possession of the samples must be recorded on the chain-of-custody form. Information to be recorded on the chain-of-custody record will include the following:

- Project name and location

- Project number
- Names of project manager and sampling personnel
- Sample identification
- Date and time of collection
- Analysis requested (for each sample)
- Number of sample containers
- Signature, date, and time (for each person releasing or accepting sample custody)

Sample Documentation

Sampling activities will be documented in a dedicated field notebook. The notebook will be labeled with the project name, project identification number, dates of field activities, and the name and phone number of the project manager. All relevant activities will be recorded in the field notebook during the sample collection period. Entries into the field notebook will be made in permanent ink. Corrections will be made by placing a single line through the original entry and the initials of the person entering the correction. At a minimum, information in the field notebook will include:

- Date and atmospheric weather conditions
- Activities to be performed
- Name(s) of sampling personnel
- General condition of sampling area
- Start and stop times of work
- Any unusual events or occurrences
- Description of soil profile

Disposal of Investigation-Derived Waste

Disposal of Incidental Trash

Incidental trash generated during this investigation (including discarded nitrile gloves, used Ziploc® bags, paper towels) will be placed in plastic trash bags and disposed of as solid waste.

Disposal of Soil Cuttings

Soil cuttings generated during drilling will be placed into 55-gallon drums and stored onsite until analytical results are reviewed. Drums associated with samples found to be contaminated will be disposed of at a disposal facility permitted to accept the contamination found; clean soil will be spread across the property.

Decontamination Water Disposal

Decontamination solutions and rinse water will be stored onsite in 55-gallon drums pending analytical results; contaminated liquids will be disposed of at a licensed facility.

ANALYTICAL PROCEDURES

Method NWTPH-Dx will be performed by OnSite Environmental, an accredited Washington State Department of Ecology laboratory.

QUALITY CONTROL OBJECTIVES AND PROCEDURES

The overall quality assurance objective is to ensure that data of known and acceptable quality are provided. All measurements will be performed to yield consistent results representative of the media and conditions measured. Specific objectives and procedures for precision, accuracy, representativeness, completeness, and comparability are identified below:

- **Precision** will be assessed using laboratory duplicates. One laboratory duplicate will be analyzed for each sample batch. Two levels of precision for duplicate analyses will be evaluated. For values that are greater than 5 times the reporting limit, the relative percent difference (RPD) of laboratory duplicates will be less than or equal to 20 percent. For values that are less than or equal to 5 times the reporting limit, duplicate values will be within ±2 times the reporting limit.
- **Accuracy** will be assessed with analyses of laboratory preparation blanks and matrix spikes. The values for blanks will not exceed the reporting limit. The percent recovery of matrix spikes will be between 50 and 150 percent.
- **Representativeness** will be ensured by employing consistent and standard sampling procedures.
- A **completeness** goal of 100 percent analysis of samples submitted to the laboratory will be judged valid.
- **Comparability** will be ensured through the application of standard sampling procedures, analytical methods, units of measurement, and detection limits. The results will be tabulated in standard spreadsheets for comparison with regulatory standards and historical data.

Data Assessment Procedures and Corrective Actions

Quality control problems and corrective actions will be summarized in quality assurance worksheets. Values associated with minor quality control problems will be considered estimates and flagged with a "J". Values associated with major quality control problems will be rejected and flagged with an "R". Estimated values may be used for evaluation purposes, while rejected values will not be used. This section describes the data assessment procedures for the following quality control elements:

- Completeness
- Methods
- Holding times
- Detection limits
- Blanks
- Duplicates
- Matrix spikes

Completeness

Completeness will be assessed by comparing valid sample data with this quality assurance plan and the chain-of-custody records. Completeness will be calculated by dividing the number of valid values by the total number of values. Samples may be reanalyzed if completeness is less than 100 percent.

Methods

Analytical and field methods will be assessed by examination of the field notebook and laboratory reports for deviation from the quality assurance plan. Unacceptable deviations will result in rejected values.

Holding Times

The dates that analyses are performed will be reported by the laboratory. Holding times will be assessed by comparing analysis dates to sample collection dates. Values that exceed the maximum holding times allowed by the method will be flagged as estimates (J), whereas severe exceedances will result in rejected values (R).

Detection Limits

Detection limits will be reported in each laboratory report. If detection limits are elevated due to matrix interference, the laboratory will be requested to reanalyze the samples and/or revise the method, if time permits. The reporting limits are 0.25 mg/L for diesel-range petroleum hydrocarbons and 0.50 mg/L for heavy oil-range petroleum hydrocarbons.

Blanks

Method blanks, composed of deionized distilled water prepared as a sample, will be analyzed and the results reported in each laboratory report. If a blank value exceeds the detection limit, associated sample values that are less than 5 times the blank value will be flagged as estimates (J).

Duplicates

Precision of laboratory duplicate results will be presented in each laboratory report and checked by the project chemist. Precision of laboratory duplicate results will be calculated according to the following equation:

$$RPD = \frac{(C_1 - C_2) \times 100\%}{(C_1 + C_2) / 2}$$

where: RPD = relative percent difference
C_1 = larger of two values
C_2 = smaller of two values.

Laboratory duplicate results exceeding the objectives will be noted in the quality assurance worksheets and associated values will be flagged as estimates (J). If the objectives are severely exceeded (e.g., more than twice the objective), associated values will be rejected (R).

Matrix Spikes

Matrix spike results will be presented in the laboratory reports and checked by the project chemist. The percent recoveries for matrix spikes will be calculated using the following equation:

$$\%R = \frac{(S - U)}{C_{sa}} \times 100\%$$

Where: %R = Percent recovery
S = Measured concentration in spike sample
U = Measured concentration in unspiked sample
C_{sa} = Actual concentration of spike added.

If the analyte is not detected in the unspiked sample, then a value of zero will be used in the equation.

REPORTING

Herrera will prepare a report, including sample location map, summary of sampling results compared to MTCA method B cleanup criteria, and a quality assurance review for the analytical results.

Any problems and associated corrective actions taken will be reported. Specific quality assurance information that will be noted in the report includes:

- Changes in the sampling and quality assurance plan
- Significant quality assurance problems and recommended solutions
- Data quality assessment in terms of precision, accuracy, representativeness, completeness, comparability, and detection limits
- Discussion of whether the quality assurance objectives were met and the resulting impact on decision-making
- Limitations on use of the measurement data

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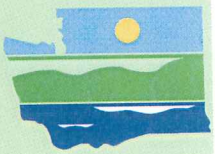

DEPARTMENT OF
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State of Washington

Guidance on In-Lieu Fee Mitigation

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Purpose

The purpose of this guide is to describe how the Washington State Department of Ecology (Ecology) will implement in-lieu fee (ILF) mitigation. This guide is meant, primarily, to provide assistance to qualified entities (e.g., local governments, tribes, non-profits) intending to establish ILF programs. Once established, ILF programs provide a potential option for permittees with unavoidable impacts to aquatic resources that need to satisfy requirements for compensatory mitigation. Aquatic resources include both the physical elements of the aquatic environment, such as wetlands, rivers, streams, lakes and also marine and estuarine systems (including bedlands, mudflats, tidelands and shorelands), as well as life forms such as amphibians, aquatic plants, fish, and shellfish that live within these aquatic environments.

This guide supersedes the information regarding in-lieu fee mitigation found in *Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance*.[1] Ecology reserves the right to make exceptions to or modify this guidance when doing so would benefit the public interest, the aquatic environment, and/or authorized in-lieu fee programs operating in Washington State.

Pertinent Regulations

Federal

The U.S. Army Corps of Engineers (Corps) and the U.S. Environmental Protection Agency (EPA) published the *Federal Rule on Compensatory Mitigation: Compensatory Mitigation for Losses of Aquatic Resources; Final Rule* (33 CFR Parts 325 and 332 and 40 CFR Part 230), dated April 10, 2008[2]. The federal rule defines requirements of compensatory mitigation for unavoidable impacts to waters of the U.S. and other aquatic resources resulting from authorized activities. The federal rule outlines the review and approval process and requirements for ILF programs. The Corps serves as chair of the process and invites Ecology to participate as co-chair[3] of the Interagency Review Team (IRT).

State

While Ecology does not have a direct rule regarding ILF programs, we do have authority to require compensatory mitigation for unavoidable impacts to waters of the state. Ecology's authority rests with the state Water Pollution Control Act (Chapter 90.48 RCW) and associated water quality regulations (Chapter 173-201A WAC). Based on the anti-degradation policy (Chapter 173-201A-300 WAC), adequate mitigation is required to effectively offset unavoidable impacts to surface waters of the state of Washington. Per Section 401 of the federal Clean Water Act, Ecology must certify that projects comply with state water quality standards before the Corps' Section 404 permit can be authorized. For projects proposing to use ILF mitigation, Ecology follows the federal ILF review and approval process. It is under this process that Ecology serves as co-chair of the IRT.

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[1] Ecology publication #06-06-11a, March 2006, see: http://www.ecy.wa.gov/programs/sea/wetlands/mitigation/guidance/index.html.

[2] To download a copy of the federal rule, see: http://www.epa.gov/wetlandsmitigation or Corps Regulatory Branch: http://www.nws.usace.army.mil/Missions/CivilWorks/Regulatory.aspx.

[3] Throughout this document the term co-chairs is used to refer to Ecology and the US Army Corps of Engineers. When state-only approval is sought, "co-chairs" refers to Ecology.

For programs affecting the bed or flow of state waters, applicants must also coordinate with the Washington Department of Fish and Wildlife to obtain a Hydraulic Project Approval[4] (HPA, Chapter 77.55 RCW). As required by state and federal permit processes, an HPA must contain all avoidance, minimization, and compensation measures necessary to ensure the proper protection of fish and their habitats. For projects located on state-owned aquatic lands, applicants must also coordinate with the Washington Department of Natural Resources.

Local

For projects affecting critical areas or their buffers, applicants need to coordinate with local jurisdictions to allow use of the program for local permits.

Description of In-Lieu Fee Mitigation

In-lieu fee mitigation is defined as a program involving the restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a program sponsor to satisfy compensatory mitigation requirements for unavoidable impacts to wetlands and other aquatic resources. Per the federal rule, sponsorship of ILF programs is limited to governmental, tribal, or non-profit natural resource management entities.

Similar to a wetland mitigation bank, an in-lieu fee program sells credits to permittees whose unavoidable impacts occur within a specified geographic area (service area). In the ILF approach to mitigation, permittees pay a fee to a third party (the ILF program sponsor) in-lieu of conducting their own mitigation project or buying credits from a mitigation bank. When credits are purchased from the ILF program, the permittee's obligation to provide compensatory mitigation is then transferred to the ILF program sponsor. The sponsor is then required to implement satisfactory mitigation within a specified timeframe, working with regulatory agencies to make sure impacts are fully mitigated.

The mitigation fees charged by the ILF sponsor (i.e., ILF fees) represent the full cost of compensating for the aquatic resource functions lost or degraded as a result of a development project. These costs include land acquisition, site protection, design, construction, maintenance, monitoring, administrative costs, and long-term management. ILF fees collected from one project are combined with fees collected from other projects within the same service area. Once ILF fees are collected from a permittee, the ILF sponsor has three full growing seasons to complete land acquisition and initiate physical and biological improvements, unless the co-chairs decide more time is needed to implement an ILF mitigation plan.

See Table 1 on the next page, for a comparison of in-lieu fee mitigation to other mitigation options.

[4] For more information on the Hydraulic Project Approvals, see: http://wdfw.wa.gov/licensing/hpa/.

Table 1. Comparison of In-Lieu Fee Mitigation to other mitigation options.

Type of mitigation	Who is Responsible for Site Development, Management, Performance & Protection	Timing of mitigation	Sale of mitigation allowed
In-lieu fee	Program Sponsor – must be a governmental (including tribal) or non-profit natural resource entity	Within 3 years of fees collected	Yes
Permittee-responsible	Permittee	Within one year of impacts	No
Wetland mitigation banking	Bank Sponsor – any private, tribal, or public entity	Prior to impacts	Yes

ILF Benefits

Ecology supports the establishment and use of ILF programs. ILF programs provide a watershed-based approach that may offer an environmentally preferable option compared to onsite permittee-responsible mitigation. In addition, ILFs have numerous safeguards in place compared to permittee-responsible mitigation. ILFs are anticipated to be a key component in the "toolbox" of mitigation options.

- One safeguard added to ILF programs is the requirement in the federal rule for a compensation planning framework[5]. A compensation planning framework details how the in-lieu fee program will select and implement mitigation projects in a watershed context. The framework is essentially a watershed plan designed to support choices in mitigation projects. This type of advanced planning will ensure that in-lieu fee programs are guided by a thorough understanding of the needs, opportunities, and challenges of the areas in which they operate. This strategy will allow the ILF sponsor to select and design more successful projects.
- The federal rule requires that the ILF program instrument establish a cap on the number of credits that the program can sell before securing a compensatory mitigation project site and conducting aquatic resource restoration, establishment, enhancement, and/or preservation. These credits are defined as *advance credits*. To fulfill (repay) advance credits, ILF program sponsors must implement mitigation projects within three full growing seasons of the collection of fees. This reduces the temporal loss, which is the time from when impacts occur to having a mitigation site installed and functioning. It allows regulators to plan for the temporal loss in determining the amount of mitigation needed through the ILF program.

[5] 33 CFR 332.8(c) [§ 230.98(c)]

- Another safeguard specific to ILF programs is the requirement to establish a program account[6], including criteria for the management of this account. The funds collected from permittees must be deposited into this account. The funds may only be used for the selection, design, acquisition, implementation, and management of ILF projects, with a small percentage allowed for administrative costs. If the mitigation project is not implemented within three years of collection, the co-chairs may direct funds from the program account to fulfill the mitigation requirements.

Developing ILF Programs

Qualified entities (sponsors) interested in establishing an ILF program should contact Ecology and the Corps. As part of the review process for proposed ILF programs, an IRT will be convened to provide input to the Corps and Ecology on the proposal. Ecology co-chairs the IRT for programs intending to meet state permit requirements.

The following items apply when proposing an in-lieu fee mitigation program:

1. ILF mitigation programs can only be sponsored by a governmental (including tribal) or non-profit natural resource entity.
2. The development of an ILF program is a two-step process.
    a. Step 1, the prospectus – conceptual proposal. The sponsor must complete a prospectus that includes a summary of the information regarding the proposed in-lieu fee program, at a sufficient level of detail to support informed public and IRT comment.
    b. Step 2, the instrument – detailed agreement. The sponsor, with IRT feedback, must develop a program instrument that details how the program will be established and operated.
3. The sponsor is responsible for preparing all documentation associated with establishment of the in-lieu fee program, including but not limited to the prospectus, instrument, and other appropriate documents, such as mitigation plans and the compensation planning framework. In addition, the sponsor is responsible for the implementation, monitoring, long-term management, and any required remediation of the restoration, establishment, enhancement, and/or preservation activities, even though those activities may be conducted by other parties.
4. A watershed approach[7] must be used for selecting mitigation sites. The compensation planning framework identifies the watershed needs.

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[6] 33 CFR 332.8(i) [§ 230.98(i)]

[7] *Watershed approach* means an analytical process for making compensatory mitigation decisions that support the sustainability or improvement of aquatic resources in a watershed. It involves consideration of watershed needs, and how locations and types of compensatory mitigation projects address those needs. A landscape perspective is used to identify the types and locations of compensatory mitigation projects that will benefit the watershed and offset losses of aquatic resource functions and values caused by activities authorized by local, state and federal permits. The watershed approach may involve consideration of landscape scale, historic and potential aquatic resource conditions, past and projected aquatic resource impacts in the watershed, and terrestrial connections between aquatic resources when determining compensatory mitigation requirements for local, state and federal permits.

What Should Be in the ILF Prospectus

The prospectus should include the following information[8]:

1. The objectives of the proposed in-lieu fee program.
2. How the in-lieu fee program will be established and operated.
3. The proposed service area(s) – specific geographic areas within which unavoidable impacts can be mitigated by the ILF program.
4. The general need for and technical feasibility of the in-lieu fee program.
5. The proposed ownership arrangements and long-term management strategy for the in-lieu fee project sites.
6. The qualifications of the sponsor to successfully complete the type(s) of mitigation project(s) proposed, including information describing any past such activities by the sponsor.
7. The compensation planning framework.
8. A description of the in-lieu fee program account.

Compensation Planning Framework

Applicants shall submit a compensation planning framework with their ILF prospectus and instrument. The level of detail necessary for the compensation planning framework is at the discretion of the co-chairs, and should take into account the characteristics of the service area(s) and the scope of the program.

The compensation planning framework shall contain the following requirements:

1. The geographic service area(s), including a watershed-based rationale for the delineation of each service area.
2. A description of the threats to aquatic resources in the service area(s), including how the in-lieu fee program will help offset impacts resulting from those threats.
3. An analysis of historic aquatic resource loss in the service area(s).
4. An analysis of current aquatic resource conditions in the service area(s), supported by an appropriate level of field documentation.
5. A statement of aquatic resource goals and objectives for each service area, including a description of the general amounts, types, and locations of aquatic resources the program will seek to provide.
6. A prioritization strategy for selecting and implementing compensatory mitigation activities. The selection and implementation of wetland mitigation sites should be consistent with *Selecting Wetland Mitigation Sites Using a Watershed Approach.* [9]
7. An explanation of how any preservation objectives satisfy the criteria for use of preservation for aquatic resources. For example, for wetland preservation the wetland must be: a high quality resource; under threat of loss or degradation; and permanently protected.
8. A description of any public and private stakeholder involvement in plan development and implementation, including, where appropriate, coordination with federal, state, tribal and local aquatic resource management and regulatory authorities.

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[8] This list is consistent with the federal rule on mitigation (33 CFR 332.8 (d)(2)). There will be a prospectus template available on Ecology's ILF web page: http://www.ecy.wa.gov/mitigation/ilf.html.

[9] Ecology Publications #09-06-032 (Western WA version) and #10-06-007 (Eastern WA version), see: http://www.ecy.wa.gov/mitigation/resources.html.

9. A description of the long-term protection and management strategies for activities conducted by the in-lieu fee program sponsor.
10. A strategy for periodic evaluation and reporting on the progress of the program in achieving its goals and objectives including a process for revising the compensation planning framework as necessary.
11. Any other information deemed necessary for effective compensation planning.

What Should be in the ILF Instrument

The instrument is similar to the prospectus, but contains more detail. The instrument should include the following information[10]:

1. A description of the proposed service area(s) – specific geographic areas within which unavoidable impacts can be mitigated by the ILF program.
2. Accounting procedures for tracking credits, debits, and fees.
3. Provision stating that the sponsor assumes legal responsibility for providing the compensatory mitigation once a permittee secures credits from the sponsor.
4. Default and closure provisions.
5. Reporting protocols.
6. Compensation planning framework (see list 1-11 starting on the previous page). This document will be reviewed by the IRT, and will be a major factor in the decision on whether to approve the instrument.
7. Specifications on the amount of advance credits available and fee schedule.
8. Methodology for determining specific credits and fees for each mitigation project.
9. A description of the program account.
10. The proposed ownership arrangements and long-term management strategy for the in-lieu fee project sites.
11. Any other information deemed necessary by the co-chairs.

Reporting Protocols

The instrument must contain a provision requiring the sponsor to establish and maintain an annual ledger report for the ILF program, as well as individual ledgers that track the production of released credits for each in-lieu fee project. The annual ledger report should show the beginning and ending balance of available credits, permitted impacts for each resource type (e.g., wetlands, streams, buffers), all additions and subtractions of credits, and any other changes in credit availability (e.g., credits released, credits suspended). The ledger report must be submitted to the co-chairs.

The instrument must also include requirements for periodic monitoring reports to be submitted to the co-chairs. The sponsor is responsible for monitoring of the in-lieu fee project site. Monitoring will determine the level of success and identify problems requiring remedial action or adaptive management measures. Monitoring must be conducted in accordance with the requirements specified in the approved mitigation plan for the ILF project site, at time intervals appropriate for the particular project type, and will continue until such time that the co-chairs, in consultation with the IRT, have determined that the performance standards have been attained.

[10] This list is consistent with the federal rule on mitigation (33 CFR 332.8(d)(6)). There will be an instrument template available on Ecology's ILF web page: http://www.ecy.wa.gov/mitigation/ilf.html.

Long-Term Management

All legal mechanisms and the party responsible for the long-term management and the protection of the ILF project site must be documented in the instrument or the approved mitigation plans. The responsible party should make adequate provisions for the operation, maintenance, and long-term management of the compensatory mitigation project site. The long-term management plan should include a description of long-term management needs and identify the funding mechanism that will be used to meet those needs.

The instrument or approved mitigation plans should contain provisions to allow the sponsor to transfer long-term management responsibilities to an approved land stewardship entity, such as a public agency, non-governmental organization, or private land manager. The instrument or approved mitigation plan must address the financial arrangements and timing of any necessary transfer of long-term management funds to the steward.

Program Account

The instrument must describe the program account and the procedures used to manage this non-wasting, Federal Deposit Insurance Corporation (FDIC) insured account. Funds collected from permittees, including interest on these funds, may only be used for the selection, design, acquisition, implementation, and management of in-lieu fee projects, with a small percentage allowed for administrative costs.

Method for Determining Credits

Gains in function at a mitigation site are referred to as "credits." A credit is a unit of measure (e.g., a functional or areal measure or other suitable metric) representing the increase in aquatic function at a compensatory mitigation site. The ILF instrument must describe and include the method(s) used to determine credits.

The number of credits must reflect the difference between pre- and post-compensatory mitigation project site conditions, as determined by an appropriate assessment method. An appropriate assessment method (e.g., hydrogeomorphic approach to wetlands functional assessment, index of biological integrity) or other suitable metric must be used to assess and describe the aquatic resource types that will be restored, established, enhanced and/or preserved by the in-lieu fee project. For freshwater wetlands, Ecology recommends using *Calculating Credits and Debits for Compensatory Mitigation in Wetlands*[11].

The standard unit of measure used for in-lieu fee programs to quantify an impact is a "debit." Debits must be calculated using the same method as credits. The number of credits necessary to offset impacts must be approved by the regulatory agencies.

[11] Ecology Publications #10-06-011 (Western WA version) and #11-06-015 (Eastern WA version), see: http://www.ecy.wa.gov/mitigation/creditdebit-comments.html.

ILF Mitigation Site Approval and Implementation

After an ILF instrument is approved, mitigation sites will be added as modifications to the instrument[12]. Once fees are collected, the sponsor has three years to secure a site and implement a mitigation plan. As in-lieu fee mitigation sites are identified and secured, the sponsor must submit mitigation plans to the co-chairs that include all the following items[13]:

1. *Objectives.* A description of the project-specific mitigation goals and objectives and how the site(s) will contribute to the overall objectives of the in-lieu fee program.
2. *Site selection.* A description of the factors considered during the site selection process. This should be consistent with the prioritization strategy included as part of the compensation planning framework.
3. *Site protection instrument.* This should be consistent with, but more detailed than, the description of the long-term protection strategies included as part of the compensation planning framework.
4. *Baseline information.* A description of the ecological characteristics of the mitigation site prior to implementing any mitigation activities.
5. *Determination of credits.* The methodology used to determine the proposed number of credits should be consistent with the methodology for determining specific credits described and included in the approved ILF Instrument.
6. *Mitigation work plan.* Detailed written specifications and work descriptions for the mitigation project.
7. *Maintenance plan.* A description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed.
8. *Performance standards.* Standards that will be used to determine whether the mitigation project is achieving its objectives and is eligible for release of credits. If the in-lieu fee project does not achieve those performance standards the co-chairs, in consultation with the IRT, may modify the credit release schedule, including reducing the number of credits.
9. *Credit release schedule.* Release of credits must be tied to performance standards. In order for credits to be released, the sponsor must submit documentation to the co-chairs demonstrating that the appropriate performance standards for credit release have been achieved. As released credits are produced by ILF mitigation projects, they must be used to fulfill any advance credits that have already been sold within the service area before any remaining released credits can be sold, used, or transferred to permittees.
10. *Monitoring requirements.* A description of parameters to be monitored in order to determine if the mitigation project is on track to meet performance standards. A schedule for monitoring and reporting must be included and be consistent with reporting protocols described in the approved ILF instrument.
11. *Long-term management plan.* A description of how the compensatory mitigation project will be managed after performance standards have been achieved. The plan must include the long-term financing mechanisms and the party responsible for long-term management. This must be consistent with, but more detailed than, the long-term management strategies described in the approved ILF Instrument.

[12] 33 CFR 332.8(g)

[13] This list is consistent with the federal rule on mitigation.

12. *Adaptive management plan.* A management strategy to address unforeseen changes in site conditions or other components of the compensatory mitigation project, including the party or parties responsible for implementing adaptive management measures. The adaptive management plan will guide decisions for revising compensatory mitigation plans and implementing contingency measures to address both foreseeable and unforeseen circumstances that adversely affect compensatory mitigation success.
13. *Other information.* The co-chairs may require additional information as necessary to determine the appropriateness, feasibility, and practicability of the compensatory mitigation project.

Criteria for Allowing the Use of an ILF Program

ILF mitigation may be used to compensate for impacts to aquatic resources when other approaches to compensation are not available, practicable, or when the use of an ILF is in the best interest of the environment.

First and foremost, all in-lieu fee programs must have an approved instrument signed by the sponsor and Ecology prior to being used to provide compensatory mitigation for Ecology permits. Ecology strongly recommends ILF sponsors pursue ILF program approvals from other federal, state, and local jurisdictions to use for HPA's, Department of the Army (Corps), and local permits.

Ecology uses the following criteria to evaluate the use of in-lieu fees as compensation for wetland impacts:

1. The impacts are unavoidable.
2. The impact project is located within the service area of an approved ILF program.
3. The ILF program will adequately mitigate for lost functions, as specified in the compensation planning framework.
4. There are no approved wetland mitigation banks in the area. Or, if there is a bank in the proposed service area there needs to be an explanation of how the ILF would be a better ecological choice.
5. Fees are paid prior to the impacts occurring. The regulatory agencies determine how much mitigation must be provided (the number of credits needed to mitigate for the impacts).

When proposing to use credits from an approved ILF program to meet requirements for compensatory mitigation, an applicant should complete and submit an ILF Use Plan[14] to the regulatory agencies. The regulatory agencies determine if ILF credits provide appropriate mitigation for the unavoidable impacts. If the regulatory agencies decide that it is appropriate to use an ILF program the applicant will enter into a "purchase and sale agreement" with the ILF sponsor and obtain a "statement of sale". The statement of sale should demonstrate the number of credits purchased is in accordance with permit requirements.

Location of an impact project within an in-lieu fee program's service area does not guarantee that federal, state, or local regulatory agencies will approve use of ILF credits as mitigation. Agencies cannot guarantee that an applicant will be approved to use ILF credits prior to review of the complete application package and a permit decision.

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[14] *Guidance to Applicants on Submittal Contents for In-Lieu Fee Use Plans* is located on Ecology's ILF web page: http://www.ecy.wa.gov/mitigation/ilf.html.

IRT members may notify the co-chairs in writing if they have concerns about how credits are being used to satisfy compensatory mitigation requirements. The co-chairs will promptly consult with the IRT member to address the concern. Resolution of the concern is at the discretion of the co-chairs, consistent with applicable statutes, regulations, and policies regarding compensatory mitigation requirements for Corps and Ecology permits. Nothing prohibits or limits the authorities designated to IRT agencies under their own existing statutes or regulations.