CLEANUP ACTION PLAN & ENGINEERING DESIGN REPORT

Rainier Avenue Facility Remediation

Prepared for: Darigold, Inc.

Project No. 090066-004-02 • July 27, 2011

Aspect CONSULTING

earth + water

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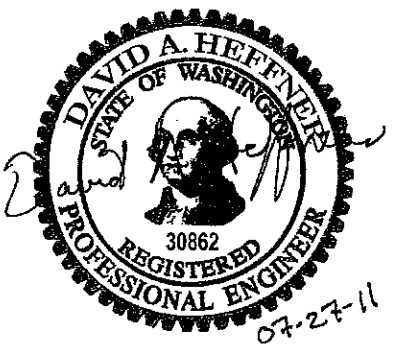

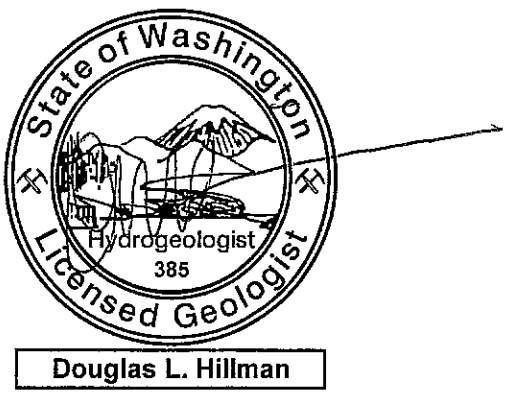

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ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
ARARs	applicable or relevant and appropriate requirements
AS	air sparge
Aspect	Aspect Consulting, LLC
bcy	bank cubic yards
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene and total xylenes
COCs	contaminants of concern
DPD	City of Seattle Department of Planning and Development
Ecology	Washington Department of Ecology
F&BI	Friedman & Bruya, Inc.
FFS	Focused Feasibility Study
GAC	granular activated carbon
GPD	gallons per day
gpm	gallons per minute
KCIW	King County Industrial Waste
lbs/ft^2	pounds per square foot
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MNA	monitored natural attenuation
MTBE	methyl tertiary-butyl ether
MTCA	Washington Model Toxics Control Act
MUP	Master Use Permit
ORC®	Oxygen-Releasing Compound®
PQL	practical quantitation limit
RAOs	Remedial Action Objectives
RI	remedial investigation
RL	reporting limit

SES	Sound Environmental Strategies (now SoundEarth Strategies)
SSPTD	Side Sewer Permit for Temporary Dewatering
SPH	separate-phase hydrocarbon
SVE	soil vapor extraction
TPH	total petroleum hydrocarbon
UIC	Underground Injection Control
UST	underground storage tank
VI	vapor intrusion
WAC	Washington Administrative Code

1 Introduction

Darigold, Inc. (Darigold) is planning to conduct an independent cleanup action under the Washington Model Toxics Control Act (MTCA) at its dairy-processing facility located at 4058 Rainier Avenue South in Seattle, Washington (the Property). A site location map is provided as Figure 1. The Property consists of a single tax parcel (King County parcel number 7950301240) encompassing approximately 6.8 acres situated southeast of the intersection of Rainier Avenue South and South Andover Street. A dairy-processing facility has operated on the Property since the 1920s. Underground storage tanks (USTs) containing various petroleum hydrocarbon-based fuels were removed from the central portion of the facility's North Yard between 1990 and 2004 (see Figure 2). Releases from the former UST systems have impacted soil and groundwater with petroleum hydrocarbons in the gasoline and diesel ranges, as well as the gasoline additive methyl tertiary-butyl ether (MTBE).

Environmental site investigations have been conducted to delineate the nature and extent of contamination. A Focused Feasibility Study (FFS) recently was completed to assess remedial alternatives (Aspect Consulting, 2011a). The remedial alternative selected in the FFS includes a soil removal action to address the most highly impacted soils, enhanced *in situ* degradation of contaminants in the remainder of the impacted area, and monitored natural attenuation to ultimately achieve site cleanup levels.

This Cleanup Action Plan and Engineering Design Report (CAP/EDR) further develops the selected cleanup action and describes the engineering design concepts and criteria for the soil removal action, which is planned for Summer 2011. MTCA specifies that a CAP be prepared in accordance with Washington Administrative Code (WAC) section 173-340-380, and an EDR in accordance with WAC 173-340-400(4)(a). Aspect Consulting, LLC (Aspect), on behalf of Darigold, prepared this CAP/EDR to satisfy MTCA requirements.

2 Cleanup Action Plan

2.1 Contaminants of Concern

A series of environmental site investigations beginning in 1990 have identified the following contaminants of concern (COCs) in site soil and/or groundwater at concentrations exceeding the cleanup levels proposed in Section 2.2:

- total petroleum hydrocarbon (TPH) in the diesel range;
- TPH in the gasoline range;
- the gasoline constituents benzene, toluene, ethylbenzene and xylenes (BTEX); and

- the gasoline additive MTBE.

In addition, separate-phase hydrocarbon (SPH) has been detected floating on the groundwater table, most notably in monitoring well MW07 near the north side of the building (see Figure 2).

2.2 Proposed Cleanup Levels

The cleanup levels proposed in the FFS for site soil and groundwater are the MTCA Method A cleanup levels for unrestricted land use. Cleanup levels were also proposed for indoor air based on MTCA Method B air cleanup levels, which are applicable to a residential use scenario. Proposed cleanup levels are summarized in the following table:

MTCA Cleanup Levels

	Method A		Method B
Contaminant of Concern	Soil (mg/kg)	Groundwater (µg/L)	Indoor Air (µg/m^3)
Gasoline-range TPH	30	800	-
Diesel-range TPH	2,000	500	-
Benzene	0.03	5	0.32
Toluene	7.0	1,000	2,200
Ethylbenzene	6.0	700	460
Total Xylenes	9.0	1,000	46
MTBE	-	20	9.6

µg/L micrograms per liter
µg/m^3 micrograms per cubic meter
mg/kg milligrams per kilogram
MTBE methyl tertiary-butyl ether
MTCA Washington Model Toxics Control Act
TPH total petroleum hydrocarbon

The Figure 2 site plan shows exploration locations where MTCA Method A cleanup level exceedences have been detected in site soil and groundwater for one or more of the COCs. Indoor air has not been directly assessed for COC concentrations. However, sub-slab vapor sampling was conducted in February 2011 (after completion of the FFS) at the three vapor probe locations shown on Figure 2. That sampling event is documented in Aspect, 2011b. Sub-slab sampling results were evaluated in accordance with the Washington Department of Ecology's (Ecology) *Guidance for Evaluating Soil Vapor Intrusion in Washington State* (Ecology, 2009). The evaluation indicated that vapor intrusion (VI) of COCs associated with contamination in the North Yard is not a concern.

2.3 Remedial Action Objectives

Remedial action objectives (RAOs) are media-specific cleanup goals that are considered to be protective of human health and the environment. Each RAO addresses a specific exposure route and provides an acceptable concentration or range of concentrations for COCs. The RAOs proposed in the FFS for this site include the following:

- Conduct SPH removal to the maximum extent practicable, in accordance with WAC 173-340-450(4).
- Ensure that contamination does not migrate off site via the storm sewer utility between manhole CB#8968 and the sewer main under South Andover Street. (SPH and impacted groundwater in the vicinity of monitoring well MW07 have the potential to enter the building's perimeter drain pipe, which discharges to manhole CB#8968. Refer to Section 3.4 for additional discussion.)
- Ensure that VI does not cause air concentrations in the building basement to exceed MTCA Method B cleanup levels for indoor air. (As noted in Section 2.2, post-FFS sampling has demonstrated that VI is not a concern in the existing building.)
- Remediate site soils and groundwater to achieve MTCA Method A cleanup levels throughout the site.
- Implement institutional controls (i.e., a deed restriction prohibiting drinking water well installation) to prevent exposure to impacted groundwater in the North Yard, until groundwater cleanup levels are achieved.
- Implement institutional controls (i.e., a deed restriction addressing invasive work) to prevent exposure to impacted soils and groundwater in the North Yard, until cleanup levels are achieved.

2.4 Selected Cleanup Action

The cleanup action selected in the FFS, identified as **Alternative 4 – Targeted Excavation**, includes the following elements:

- **Soil Removal Action.** Soil excavation with off-site treatment/disposal will be used to address the most highly impacted areas of the site. Two discrete areas are proposed for targeted excavation, labeled "Excavation A" and "Excavation B" on Figure 3. (These areas have been modified somewhat from those depicted in the FFS, and reflect the current excavation design.) The vertical extent of excavation will generally be limited to approximately 10 feet below ground surface (bgs), so that shoring systems are not required. The volume of soils requiring excavation, assuming an excavation sidewall slope of 1.5H:1V, is estimated at roughly 2,700 bank cubic yards (bcy). In areas where soil impacts extend below the excavation depth, Oxygen-Releasing Compound (ORC®) will be spread on the excavation bottom prior to backfilling (to restore grade) with clean imported soil, in order to promote biodegradation of residual contamination. The planned soil removal action, including design modifications made since completion of the FFS, is described in greater detail in Section 4.
- **Enhanced *In Situ* Degradation.** ORC® will be injected into the remainder of the impacted area, the estimated lateral extent of which is shown on Figure 3. ORC® slowly releases oxygen into groundwater to stimulate aerobic biodegradation of contaminants. Pilot testing of ORC® injection will be conducted prior to full-scale implementation in order to: 1) determine its

effectiveness in treating petroleum hydrocarbons and MTBE in the site's less-permeable soils; and 2) develop design information for full-scale application of the technology. Multiple injection events will likely be required during full-scale application, with periodic monitoring of subsurface conditions to assess remediation progress.

- **Monitored Natural Attenuation (MNA) with Confirmation Monitoring.** Once contaminant concentrations are substantially reduced, MNA will be relied on to ultimately achieve cleanup levels. Groundwater monitoring wells will be sampled periodically until it is demonstrated that groundwater cleanup levels have been achieved throughout the site.
- **Institutional Controls.** Property deed restrictions will be implemented prohibiting the installation of drinking water wells and addressing conditions under which invasive work may be performed in the impacted portion of the North Yard. The deed restrictions will remain in effect until confirmation monitoring indicates that cleanup levels have been achieved throughout the site.

2.5 Other Cleanup Alternatives Evaluated in the FFS

In addition to the selected cleanup alternative, the FFS evaluated the following remedial alternatives:

- **Alternative 1 – No Action.** Under this alternative, the site would have remained in its present condition.
- **Alternative 2 – Operate Existing AS/SVE System with MNA.** An air sparging/soil vapor extraction (AS/SVE) system was installed in 2008 along the north side of the northeast portion of the building (see Figure 2). The primary objective of operating the existing AS/SVE system under this alternative would have been to remove SPH in the vicinity of monitoring well MW07, in order to satisfy the MTCA requirement for free product removal. Contamination associated with the balance of the site (outside the influence of the existing AS/SVE system) would have been allowed to attenuate naturally over time. Following discussions between Darigold and its insurers in late 2008 and 2009, a joint decision was made to not initiate operation of the AS/SVE system in order to allow for further evaluation of other remedial alternatives.
- **Alternative 3 – *In Situ* Technologies Only.** Under this alternative, *in situ* remediation technologies would have been applied over the entire North Yard area where COCs have been detected in soils at concentrations above cleanup levels. In addition to operating the existing AS/SVE system, AS/SVE technology would have been applied in the former UST area northeast of the building, where relatively permeable soils facilitate AS/SVE effectiveness. In the remaining areas of impact, injection of ORC® was proposed (similar to the selected cleanup alternative).
- **Alternative 5 – Extensive Excavation.** Under this alternative, it was assumed that all impacted soils would be excavated and treated/disposed of

offsite. Shoring systems would have been implemented as needed to access deeper impacted soils (a maximum excavation depth of 14 feet was assumed) and the impacted soils along the northern property boundary which, under Alternative 4 (the selected cleanup action), will be left in place. All excavated areas would be backfilled with clean imported soil to restore grade.

2.6 Rationale for Selecting Cleanup Action

A comparative evaluation of the remedial alternatives was performed in the FFS in accordance with WAC 173-340-350. The alternatives were evaluated against the threshold criteria and other criteria stated in WAC 173-340-360. All cleanup actions must meet the requirements of the threshold criteria. The other criteria are considered in selecting from among the alternatives that fulfill the threshold criteria.

Alternative 1 did not fully meet the requirements of the threshold criteria. Alternative 2, which relies solely on MNA in all but a small portion of the site, was expected to require more than 30 years to achieve cleanup levels. Therefore, Alternative 2 was judged to not generally meet the criterion to provide for a reasonable restoration time frame. Alternatives 3 through 5 were similarly ranked with respect to the evaluation criteria. However, soil excavation with off-site treatment/disposal provides a higher degree of certainty that contamination has been addressed versus reliance on *in situ* treatment technologies. Therefore, Aspect judged Alternative 5 to have a more certain outcome than Alternative 4. The Alternative 4 outcome was deemed more certain than that of Alternative 3.

Since Alternatives 3 through 5 were similarly ranked, Aspect considered their relative costs. Alternatives 3 and 4 were estimated to be similar in cost, at just over $2.1 million. The restoration time frame of Alternative 3 was estimated at roughly 10 years, versus 5 to 7 years for Alternative 4. Due to its shorter restoration time frame and greater certainty associated with removal (versus *in situ* treatment) of the most highly impacted soils, Aspect judged Alternative 4 to be preferable over Alternative 3.

Alternative 5 was estimated to be considerably more expensive than Alternative 4, at nearly $3.8 million. By removing all impacted soils via excavation, the outcome of Alternative 5 would be highly certain and present the lowest risk in terms of reaching regulatory endpoints. It would also yield a shorter restoration time frame, estimated at just 1 to 3 years. However, the estimated incremental cost of Alternative 5 over Alternative 4 was judged to be disproportionate relative to potential benefits derived from a faster, more certain cleanup. Therefore, Aspect recommended that Alternative 4 be carried forward as the preferred remedial alternative.

2.7 Previous Cleanup-Related Activities and Planning

A cleanup action with elements similar to the selected remedial alternative was developed in 2008, as described in the *Interim Corrective Action Plan* prepared by Sound Environmental Strategies (SES, 2008b). Cleanup-related activities and planning completed by SES include the following:

- **Targeted Soil Removal Action Planning** – Engineering evaluation, design development and planning for a soil removal action were completed in 2008. The

SES design called for removal of a somewhat larger soil volume (roughly 3,300 bcy versus 2,700 bcy in the selected remedial alternative), and included construction of controlled-density fill (CDF) berms to allow for sequential excavation of soil from discrete cells. SES obtained a Master Use Permit (MUP) from the City of Seattle Department of Planning and Development (DPD; Project No. 3009301), and prepared a 9-sheet plan set describing the soil removal action. DPD also required a geotechnical engineering evaluation of the project, which was completed by Adapt Engineering under subcontract to SES (SES, 2008a). SES applied for a DPD grading permit (DPD Project No. 6175969), which was never issued.

- **AS/SVE System Installation** – As noted in Section 2.5, an AS/SVE system was installed in 2008 along the north side of the northeast portion of the building. Per Section 1.2.1 of the Engineering Design Document prepared by SES (SES, 2008c), the system had the dual purpose of providing vapor control for the adjacent building and groundwater treatment. Following discussions between Darigold and its insurers in late 2008 and 2009, a joint decision was made to not initiate operation of the AS/SVE system in order to allow for further evaluation of other remedial alternatives.
- **ORC® Injection Planning –** SES 2008c includes design considerations for ORC® injection to stimulate aerobic biodegradation of residual contaminants in groundwater. Per Section 3.0 of that document, an Underground Injection Control (UIC) registration for ORC® injection was filed with Ecology.
- **SPH Recovery** – A passive skimmer and other methods were used to recover SPH from monitoring well MW07 beginning in February 2008. Through 2010, SES reported that it had removed approximately 25 gallons of mixed water and SPH from MW07.

3 Description of Soil Removal Action

This section describes important elements of the planned soil removal action. Refer also to the current grading permit plan set provided in Appendix A.

3.1 Site Preparation and Truck Traffic Control

The perimeter of the property is fenced. Vehicle and pedestrian access to the Property is gained through monitored, remote-controlled service gates situated along the northern and southern property boundaries. The North Yard, situated between the main building and the northern property boundary, is asphalt-paved except for a concrete apron that runs along the building. The north side of the building consists of a truck loading dock constructed over a basement. Refrigerated trailers used for product cold-storage (extending the cold-storage capacity of the building) are normally parked on the concrete apron along the eastern portion of the loading dock. Darigold temporarily will relocate

these trailers to provide access to the Excavation A area. Other site preparation elements include the following:

- Above-ground components of the existing AS/SVE system, including the AS/SVE enclosure and the three vapor-phase granular activated carbon (GAC) vessels located at the building's northeast corner (see Figure 3), will be permanently removed.
- In accordance with WAC 173-160-460, Aspect will decommission existing groundwater monitoring wells that are located within the footprint of the planned excavations.
- Temporary erosion and sediment control (TESC) measures will be implemented. Refer to Sheets C-5 and C-6 of the plan set (Appendix A). These measures will be maintained for the duration of the soil removal action. DPD will inspect the TESC measures and conduct a preconstruction conference prior to any groundbreaking.

The western portion of the loading dock is used to load out inventory (see Figure 3). Some 40 to 50 tractor-trailer trucks per day enter the facility via the south gate and pass through the planned excavation areas on their way to the inventory loadout area. Once loaded, these trucks exit the facility via a gate due north of the inventory loadout area. During the soil removal action, trucks bringing in clean backfill and trucks hauling out excavated soil will use the same gate as the Darigold trucks to exit the facility. Therefore, given the space restrictions, maintaining a truck corridor and managing truck traffic in the North Yard will be major challenges during the soil removal action. The two excavation areas will be addressed sequentially, and the area excavated first will be fully restored prior to breaking ground in the second area, so that a truck corridor through the North Yard is continuously maintained.

3.2 Temporary Utility Reroutes

Both storm drain and sanitary sewer utilities pass through the planned excavation areas, and will need to be temporarily rerouted during construction. Interim and final utility plans are provided on Sheets C-7 and C-8 of the plan set (Appendix A).

3.3 Soil Excavation

Recommendations contained in the geotechnical engineering evaluation report completed in 2008 (SES, 2008a) will be followed. One such recommendation is that excavation sidewalls be sloped at 1.5H:1V maximum. Sheet C-3 in Appendix A shows plan and cross section views of the planned excavation areas. To the extent practical, the lateral and vertical extent of excavation will be guided by field indications (visual, olfactory and headspace photo-ionization detector [PID] readings) of soil contamination. However, site-specific constraints will limit the ability to "chase" contamination beyond the excavation boundaries shown. Lateral excavation constraints include the building foundation, the northern property boundary, and the need to maintain a truck corridor through the North Yard. Excavation below a depth of approximately 10 feet will be

constrained by the groundwater table and dewatering limitations. Refer to Section 3.4 for discussion of excavation dewatering.

In recent groundwater monitoring events, the highest concentrations of several COCs, including benzene and TPH in the gasoline and diesel ranges, have been measured in monitoring well MW12. (Refer to Figure 7 in the FFS.) As shown on Figure 3, this well is located north of Excavation B in the South Andover Street right-of-way. In order to maximize on-property contaminant source removal in the localized area south of MW12 (i.e., in the vicinity of monitoring well MW04), trench boxes may be used to remove soils that would otherwise be inaccessible given the excavation sidewall slope requirement. The use of trench boxes to enhance soil removal in this area will depend on construction schedule constraints and other factors.

Because of space limitations and other considerations, no attempt will be made to segregate/reuse overburden soils. All excavated soils will be direct-loaded into trucks, with no on-site stockpiling. Imported soils for backfilling the excavations may be temporarily stockpiled on site.

Soil excavation in the vicinity of monitoring well MW07 (in which SPH has been observed) is expected to address the RAO regarding offsite contaminant migration via the storm sewer utility, as well as the RAO regarding SPH removal to the maximum extent practicable. Figure 4 provides a generalized cross section in the vicinity of MW07. It shows building foundation features including the building perimeter drain, which was identified in the FFS as a potential route of offsite contaminant migration. The perimeter drain discharges to the sewer main under South Andover Street via manhole CB#8968. Based on the range of liquid levels measured in MW07, excavation will likely need to extend down to approximately the base of the foundation pile cap (an approximately 11-foot depth) in order to fully remove SPH in this area. Geotechnical review by Aspect has concluded that soils can be safely excavated down to the base of the pile cap and southward to the north wall of the building without compromising the building foundation.

3.4 Excavation Dewatering and Water Treatment

Aspect did not originally propose to excavate soils below the groundwater table (estimated at an approximately 10-foot depth), except in localized areas (i.e., the area around monitoring well MW07). Aspect's initial grading permit submittal to DPD stated that the excavation cavity would serve as a temporary stormwater detention facility, and that a vacuum truck would be used to remove water from the excavation in the event that it did not infiltrate fast enough for construction to proceed. DPD objected on the grounds that potentially contaminated water should not be allowed to infiltrate, and required us to obtain a Side Sewer Permit for Temporary Dewatering (SSPTD) from the City of Seattle. This required that we first obtain approval from King County Industrial Waste (KCIW) to temporarily discharge water (following on-site pretreatment) to sanitary sewer by submitting a Construction Dewatering Request Form. The completed form and accompanying exhibits are provided in Appendix C, along with the KCIW letter of authorization. The SSPTD is provided in Appendix B.

On-site pretreatment will include a weir tank and bag filter for solids removal, followed by two GAC vessels connected in series for removal of dissolved petroleum hydrocarbons. The letter of authorization allows a maximum 46,700 gallons per day (GPD) discharge of pretreated water to sanitary sewer at a maximum discharge rate of 100 gallons per minute (gpm). Having this water treatment/sanitary sewer discharge capacity available during construction will allow for more aggressive excavation of contaminated soils below the water table.

3.5 Regenesis Product Placement in Excavation

As noted in Section 2.4, the FFS description of the selected cleanup action states that, prior to backfilling, ORC® will be spread on the excavation bottom in areas where soil impacts extend below the excavation depth, in order to promote biodegradation of residual contamination. During detailed design of the cleanup action, Aspect provided site information and excavation plans to Regenesis, the supplier of ORC® and other proprietary remediation products. Based on the evaluation of information provided by Aspect, Regenesis recommended that a combination of the following two products be applied to the excavation bottom:

> **RegenOx™**. In areas where there are indications that residual soil contamination remains that cannot be excavated, Regenesis recommended applying RegenOx™, a proprietary formulation that promotes chemical oxidation of contaminants. RegenOx™ is supplied as a two-part product. Part A is the oxidizer powder and Part B is the liquid activator. An application rate of 1.40 pounds per square foot (lb/ft^2) was recommended for Part A, and 0.56 lb/ft^2 for Part B.
>
> **ORC Advanced®**. Regenesis recommended applying ORC Advanced® to the entire excavation bottom at an application rate of 0.30 lb/ft^2. ORC Advanced® is a proprietary formulation of food-grade calcium oxy-hydroxide that produces a controlled release of molecular oxygen (for periods up to 12 months) to promote biodegradation of dissolved contaminants. It can be mixed with RegenOx™ immediately prior to application.

Aspect's quote request to Regenesis, their response and vendor information on the above products are provided in Appendix D. Aspect concurs with Regenesis' more aggressive approach to *in situ* degradation of residual contamination. In addition, the line item for "ORC® placement in excavation" in the FFS cost estimate ($30,000) is not inconsistent with the estimated installed cost of RegenOx™ and ORC Advanced® based on the anticipated excavation bottom area (and assuming that half of that area has indications of residual soil contamination), and using the application rates and product prices quoted by Regenesis. Therefore, Aspect proposes following the Regenesis recommendation with regard to product placement in the excavations prior to backfilling.

3.6 Excavation Backfilling and Compaction

Excavation backfilling and compaction will be completed in accordance with the recommendations of the geotechnical engineering evaluation report (SES, 2008a). Structural fill will be placed in horizontal lifts not exceeding 12 inches in loose thickness. Fill more than 2 feet below finish grade will be compacted to a minimum 90 percent of

maximum dry density as determined by ASTM D-1557. For fill within 2 feet of finish grade, the corresponding compaction requirement is minimum 95 percent of maximum dry density. Soil compaction testing will be conducted in the field using a nuclear densometer.

If conditions at the bottom of the excavation are too wet to place and compact structural fill, quarry spalls may initially be used as backfill.

3.7 Replacement Monitoring Well Installation

Following excavation backfilling and site restoration activities, groundwater monitoring wells will be installed for use (along with pre-existing wells that were not decommissioned) during the enhanced *in situ* degradation and MNA phases of the cleanup. Aspect will determine the number of wells needed and their locations based on excavation performance monitoring results, and may include locations outside as well as within the excavation footprint. Aspect plans to install ¾-inch-diameter wells using a push-probe drill rig. It is anticipated that fewer new monitoring wells will be installed than the seven slated for decommissioning.

4 Permits and Approvals

The following permits/approvals have been obtained for the soil removal action:

- Master Use Permit (MUP), Grading Permit and SSPTD from the City of Seattle; and
- Letter of authorization from KCIW to temporarily discharge water (following on-site pretreatment) to sanitary sewer.

Copies of the City of Seattle permits are provided in Appendix B along with associated correction notices and correspondence. The KCIW letter of authorization is provided in Appendix C. Approval will also need to be obtained from the disposal facility receiving the excavated soils. The selected construction contractor will be responsible for obtaining that approval.

As required by DPD, Aspect reviewed and agreed with the evaluation and provisions contained in the 2008 geotechnical engineering evaluation report (SES, 2008a), and became the Geotechnical Engineer of Record for the project.

Registration with Ecology's Underground Injection Control (UIC) program is required prior to injecting chemicals to enhance *in situ* degradation of contaminants in areas not addressed by the soil removal action.

5 Compliance Monitoring

In accordance with WAC 173-340-410, compliance monitoring for the cleanup action includes the following elements:

- **Protection monitoring** confirms that human health and the environment are adequately protected during the cleanup action;
- **Performance monitoring** confirms that the cleanup action has attained cleanup levels and/or other performance standards such as permit requirements; and
- **Confirmation monitoring** confirms the long-term effectiveness of the cleanup action once cleanup levels and/or other performance standards have been attained.

The protection, performance and confirmation monitoring programs for the Site cleanup action are outlined below.

5.1 Protection Monitoring

Protection monitoring will be conducted during the soil removal action by ensuring that cleanup workers are appropriately trained and follow their project-specific health and safety plan. Air monitoring will be a component of Aspect's project-specific health and safety plan, which is being prepared under separate cover. All contractors working on site are responsible for their workers' safety.

5.2 Performance Monitoring

5.2.1 Soil Removal Action Performance Monitoring

As excavation proceeds, Aspect will collect soil samples and will submit them for laboratory analysis for two purposes:

1) To characterize contaminant concentrations in the excavated soil being transported off site; and

2) To characterize contaminant concentrations in soil remaining in the excavation bottom and sidewalls.

Approximate sample location and depth below original pavement surface will be recorded for each sample collected. Field indications of soil contamination will guide sampling of excavated soil. Relatively "dirty" locations will be targeted for sampling. That is, sampling will attempt to characterize the more highly impacted soils being removed. Aspect expects to submit some 15 to 20 samples of this type. No attempt will be made to estimate "average" contaminant concentrations in the excavated soils.

Aspect will collect excavation bottom samples on a nominal 25-foot grid (minimum of 5 samples from each excavation area), and sidewall samples (collected from the approximate top of the saturated zone, where the highest TPH concentrations are anticipated) at a maximum 25-foot spacing. Sampling procedures are described in Appendix E. If sampling results indicate that constituent concentrations above the soil cleanup level(s) remain, the excavation may be expanded to remove the soil represented

by the exceeding sample(s). As noted in Section 3.3, however, site-specific constraints will limit our ability to "chase" contamination both laterally and vertically. Where sidewall samples exceed the cleanup level(s) and additional soil removal is feasible, the excavation should be extended up to 3 feet laterally, followed by collection of additional sidewall samples. For bottom sample exceedences, the excavation should be deepened approximately 1 foot (where feasible), followed by collection of additional bottom samples.

Soil samples will be analyzed for TPH in the gasoline, diesel and heavy oil ranges, and for the individual BTEX constituents. Table 1 lists the analytical methods, along with the reporting limits (RLs) typically achieved by Friedman & Bruya, Inc. (F&BI) when using those methods. The RL is equivalent to the practical quantitation limit (PQL), and is defined as the lowest concentration at which a chemical can be accurately and reproducibly quantified, within specified limits of precision and accuracy, for a given environmental sample. The RL can vary from sample to sample depending on sample size, sample dilution, matrix interferences, moisture content and other sample-specific conditions. The RLs usually correspond to the lowest calibration standard.

Analytical laboratory procedures are described in greater detail in Appendix E.

5.2.2 Water Pretreatment Monitoring During Removal Action

The following monitoring requirements are specified in the discharge authorization:

- For each day in which a discharge occurs, estimate the discharge volume and measure the settleable solids content and pH of the pretreatment system effluent; and
- Collect pretreatment system effluent samples on one occasion during the first week of system operation, and submit them for laboratory analysis of nonpolar fats, oils and grease (FOG), benzene, toluene and ethylbenzene.

Table 1 lists the methods that will be used to analyze for nonpolar FOG, benzene, toluene and ethylbenzene, as well as typical laboratory RLs. Sanitary sewer discharge limits are provided in the KCIW letter of authorization (Appendix C).

Aspect must submit a self-monitoring report documenting water pretreatment performance monitoring results to KCIW by September 15, 2011.

5.2.3 Post-Removal-Action Performance Monitoring

Following the soil removal action, Aspect will implement enhanced *in situ* degradation and MNA as "polishing" remedial technologies. As discussed in Section 6, Aspect will develop work plans addressing implementation of these technologies. Performance monitoring during implementation of enhanced *in situ* degradation and MNA will be addressed in those work plans.

5.3 Confirmation Monitoring

It is anticipated that MNA will be relied on to ultimately achieve cleanup levels. Natural attenuation will be monitored via periodic groundwater sampling and analysis. The long-term effectiveness of the cleanup action will be confirmed when the results of four consecutive, quarterly groundwater monitoring events are consistently below cleanup levels for all COCs.

6 Enhanced *In Situ* Degradation and Monitored Natural Attenuation

As previously discussed, the soil removal action is targeting only the more highly impacted soils at the site. Enhanced *in situ* degradation (via chemical injection) followed by MNA will be used to address residual contamination. Figure 3 shows areas of the site where it is currently envisioned that enhanced *in situ* degradation may need to be applied. However, performance monitoring results from the removal action and from quarterly groundwater monitoring following completion of the removal action will provide additional data to evaluate the magnitude and areal extent of residual contamination.

Quarterly groundwater monitoring will also provide information on the effectiveness of the Regenesis products placed in the excavations during the removal action (see Section 3.5). Those products will be placed in powder form during the removal action. However, they can also be injected into the subsurface in slurry form using a push-probe drill rig. If groundwater monitoring results indicate that introduction of the Regenesis products has resulted in significantly enhanced *in situ* degradation, those same products will likely be considered for injection into areas of residual groundwater impacts.

For chemical injection to be successful, the soil characteristics must be such that the injection method is able to effectively distribute the chemical in the target area. Effective chemical distribution is of particular concern for the low-permeability soils found in much of the site. We plan to test the effectiveness of the proposed push-probe injection method (using water only) when the drill rig is mobilized to install replacement monitoring wells (see Section 3.7).

After several rounds of post-removal-action quarterly groundwater monitoring are completed, we will develop a work plan for enhanced *in situ* degradation in areas of residual contamination. The work plan will propose specific chemicals for injection, target injection areas, injection spacing, target depth intervals and target application rates. It will also discuss how Aspect will use post-injection groundwater monitoring results to evaluate injection effectiveness and determine whether a follow-up injection event is warranted.

A total of one to three chemical injection events are envisioned. Two injection events were assumed in the FFS remedial alternative evaluation. After that, the site will transition from enhanced *in situ* degradation to MNA. MNA will rely on periodic groundwater monitoring to track residual COC concentrations in groundwater until it is

demonstrated that cleanup levels are achieved in four consecutive, quarterly monitoring events. Aspect will develop an MNA work plan prior to initiating the MNA phase of site cleanup.

7 Cleanup Action Reporting

7.1 Soil Removal Action Reporting

Aspect will prepare a report documenting the soil removal action and new monitoring well installations. The report will include:

- Description of cleanup activities conducted, including deviations from this CAP/EDR;
- As-built maps illustrating work areas and other pertinent information;
- Soil sampling information, including locations/depths, analytical methods, tabulated results and laboratory reports;
- Soil profiling and disposal documentation, including quantities of soil removed and disposed, and landfill certificates of disposal;
- Documentation of Regenesis product application rates to different areas of the excavation bottom, with justification;
- Documentation of quantities of groundwater pumped from the excavations, and sampling results associated with the on-site pretreatment system;
- Excavation backfilling and compaction procedures; and
- Documentation of new monitoring well installations, including well locations, soil sampling results and boring log/well construction diagrams.

7.2 Post-Removal-Action Reporting

Work plans to be developed for enhanced *in situ* degradation and MNA will specify reporting requirements for those polishing technologies.

8 Schedule for Cleanup

The soil removal action will commence in early July 2011, and will be completed in August 2011. The following (preliminary) schedule is envisioned for post-removal-action activities:

- **Late 2011 through mid-2012** – Evaluation of post-removal-action quarterly groundwater monitoring results and development of work plan for injection of chemicals to enhance *in situ* degradation in areas of residual contamination;

- **2nd Half 2012** – Initial injection event; and
- **1st Half 2014** – Follow-up injection event (if needed).

It is anticipated that periodic groundwater monitoring will be conducted throughout this period, and will continue during a subsequent multi-year MNA period until groundwater cleanup levels for all COCs are achieved throughout the site for four consecutive quarters of groundwater monitoring.

9 References

Aspect, 2011a, Focused Feasibility Study, Rainier Avenue Facility Remediation, February 18, 2011.

Aspect, 2011b, Soil Vapor Intrusion Assessment, February 2011 Sub-Slab Sampling, Darigold Rainier Avenue Facility, March 8, 2011.

Ecology, 1995, Guidance for Remediation of Petroleum Contaminated Soils, Publication 91-30, revised November, 1995.

Ecology, 2009, Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action, Washington Department of Ecology, Toxics Cleanup Program, Review DRAFT, October 2009.

SES, 2008a, Letter to S. Rowe, Darigold, Inc., Subject: Geotechnical Engineering Evaluation, Interim Remedial Excavation and Parking Lot Restoration, Darigold Facility – North Yard, 4058 Rainier Avenue South, Seattle, Washington, Prepared by Sound Environmental Strategies Corporation (SES) and Adapt Engineering, Inc., June 12, 2008.

SES, 2008b, Interim Corrective Action Plan, Rainier Avenue Facility, 4058 Rainier Avenue South, Seattle, Washington, July 28, 2008.

SES, 2008c, Engineering Design Document, Rainier Avenue Facility, 4058 Rainier Avenue South, Seattle, Washington, November 7, 2008.

Limitations

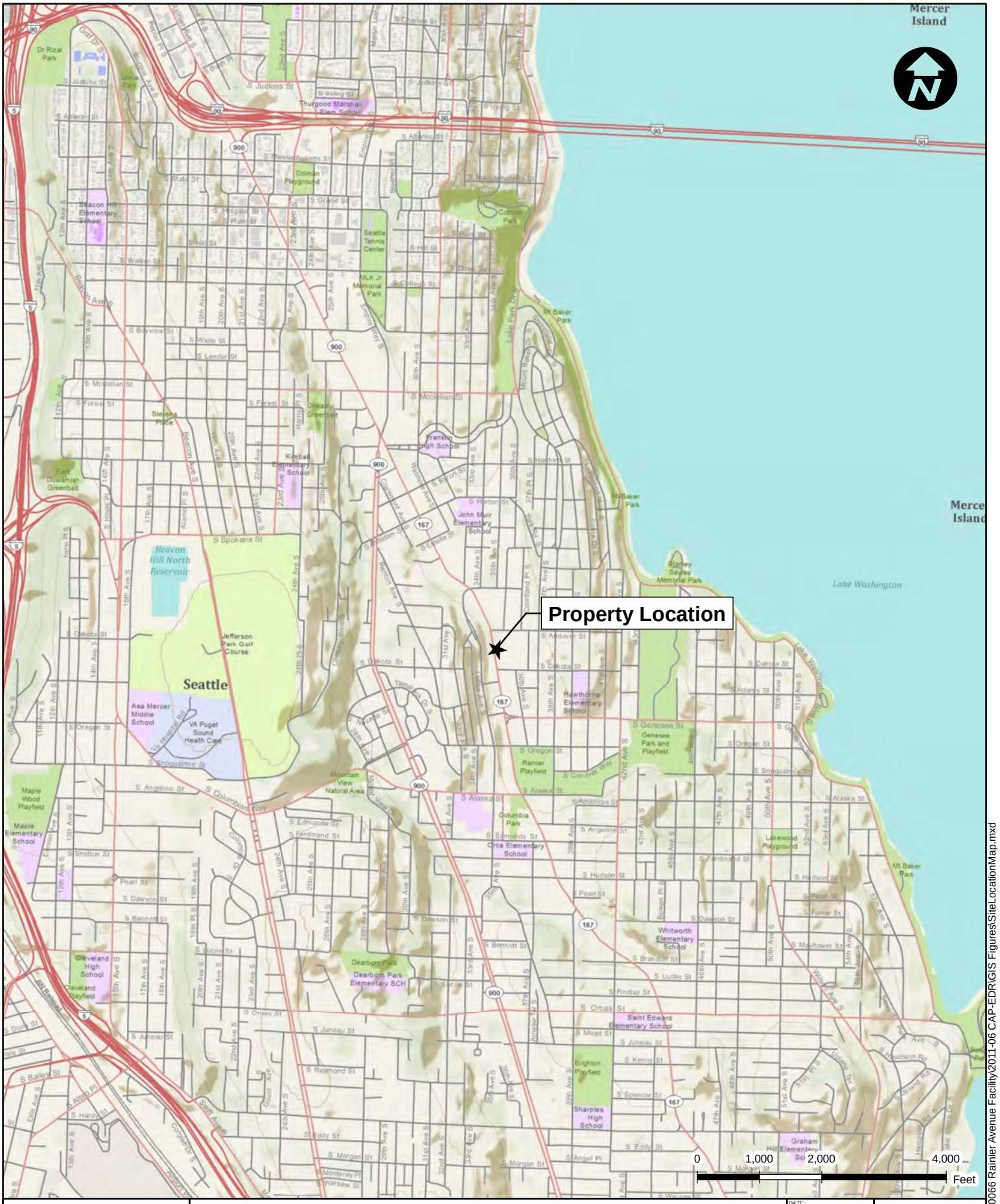
Work for this project was performed and this report prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of Darigold, Inc., for specific application to the referenced property. This report does not represent a legal opinion. No other warranty, expressed or implied, is made.

Table 1 - Analytical Methods and Reporting Limits for Soil and Water

Analyte	Analytical Method	F&BI Reporting Limits (typical)	
		Soil[1]	Water[2]
TPH			
Gasoline Range	NWTPH-Gx[4]	2	100
Diesel Range	NWTPH-Dx[5]	50	50
Heavy Oil Range[3]	NWTPH-Dx[5]	250	250
BTEX			
Benzene	EPA-8021[4]	0.02	1.0
Toluene	EPA-8021[4]	0.02	1.0
Ethylbenzene	EPA-8021[4]	0.02	1.0
Total Xylenes	EPA-8021[4]	0.06	3.0
MTBE	EPA-8021	NA	5.0
Non-Polar FOG	EPA-1664	NA	3,000

BTEX Benzene, toluene, ethylbenzene, xylenes
F&BI Friedman & Bruya, Inc. (analytical laboratory)
FOG Fats, oils and grease
MTBE Methyl tertiary-butyl ether
NA Not applicable
TPH Total petroleum hydrocarbon

Notes:
1) All reporting limits for soil are in units of milligrams per kilogram (mg/kg).
2) All reporting limits for water are in units of micrograms per liter (µg/L).
3) TPH in the heavy oil range is not identified as a contaminant of concern, but it is included in the Method NWTPH-Dx analysis.
4) Soil samples for analysis of volatile components will be collected in accordance with EPA Method 5035A.
5) Samples analyzed by Method NWTPH-Dx will be prepared using EPA Method 3630 (silica gel cleanup).



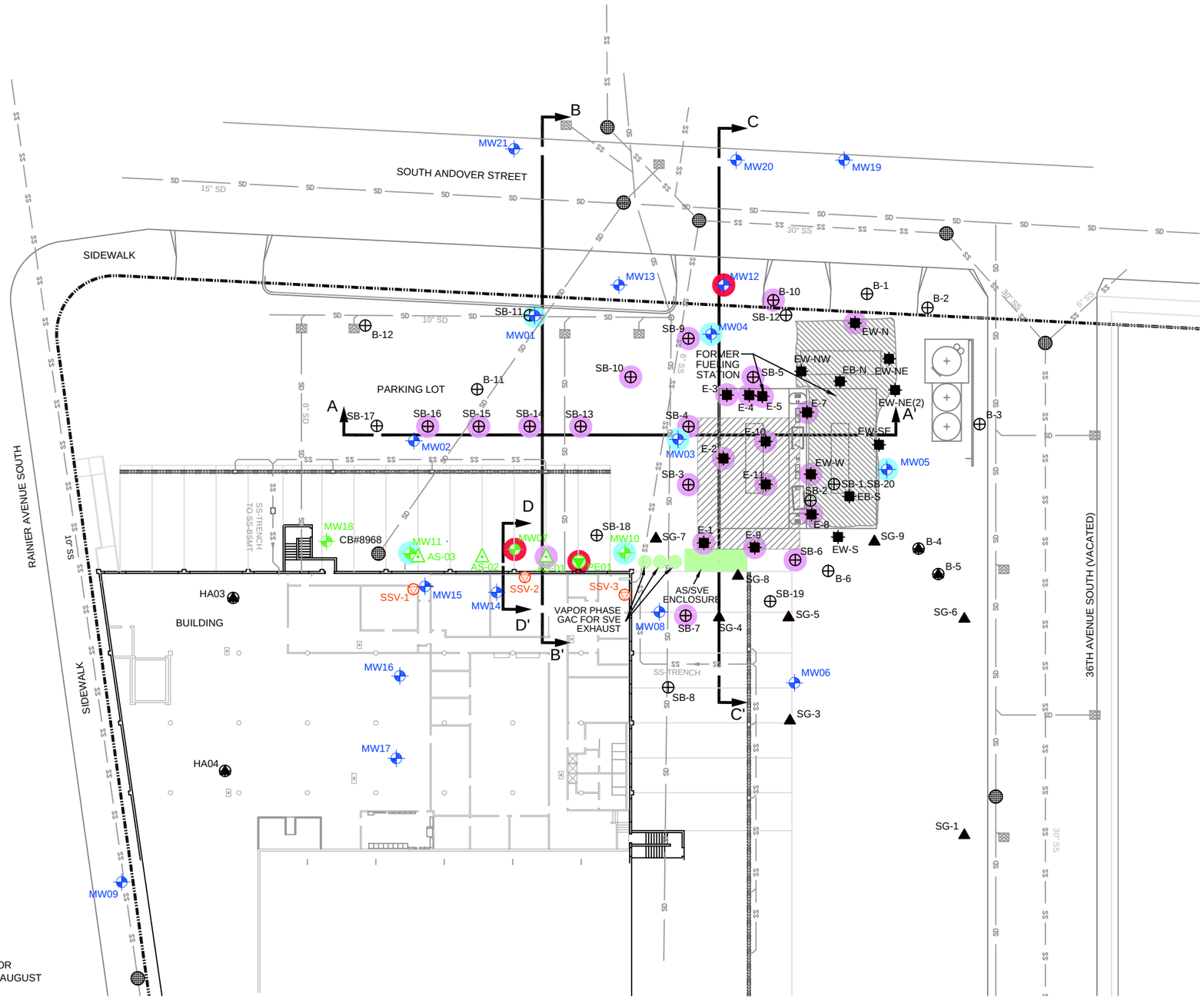
Site Location Map

Darigold - Rainier Avenue Facility

Seattle, Washington

DATE: June 2011	PROJECT NO. 090066
DESIGNED BY: SCC	
DRAWN BY: SCC	FIGURE NO. 1
REVISED BY: - - -	

Path: Q:\Darigold\090066 Rainier Avenue Facility\2011-06 CAP-EDR\GIS Figures\SiteLocationMap.mxd



LEGEND

B-1	SOIL BORING
E-1	SOIL EXCAVATION BASE OR SIDEWALL SAMPLE
SG-1	SOIL GAS SAMPLE
SSV-1	VAPOR PROBE (SUB-SLAB)
MW01	GROUNDWATER MONITORING WELL
PE01	PILOT TEST WELL
	NOTE: Green wells have been incorporated into the soil vapor extraction (SVE) system.
AS-01	AIR SPARGING WELL
	CATCH BASIN OR CURB INLET
	MANHOLE
	PROPERTY BOUNDARY
	APPROXIMATE PARCEL BOUNDARY
SS	SANITARY SEWER
SD	STORM SEWER
	ZIPPER DRAIN
	FORMER UST
	APPROXIMATE FORMER UST EXCAVATION (SES, 2004)
	APPROXIMATE FORMER UST EXCAVATION (SD&C, 1998)
UST	UNDERGROUND STORAGE TANK

DETECTION OF MTCA METHOD A CLEANUP LEVEL EXCEEDENCES

- SOIL ONLY
- GROUNDWATER ONLY
- SOIL AND GROUNDWATER

Note:
- Among the explorations, only the monitoring wells (MWs) and Well PE01 have groundwater sampling results.
- Groundwater cleanup level exceedences are based on the four monitoring rounds between August 2009 and May 2010.

NOTES:

1.) COMPONENTS OF THE AIR SPARGE/SOIL VAPOR EXTRACTION (AS/SVE) SYSTEM INSTALLED IN AUGUST 2008 ARE COLORED GREEN ON THIS FIGURE

REFERENCES: SES, FIELD MEASUREMENTS, 2004-2009
DARIGOLD, INC, FACILITY DRAWINGS, 2005.
CITY OF SEATTLE, SEWER CARD NOS. 1442, 1443, AND 5412, 2001.
SD&C, UNDERGROUND STORAGE TANK SITE ASSESSMENT REPORT, 1998.

N
0 40 80
Feet

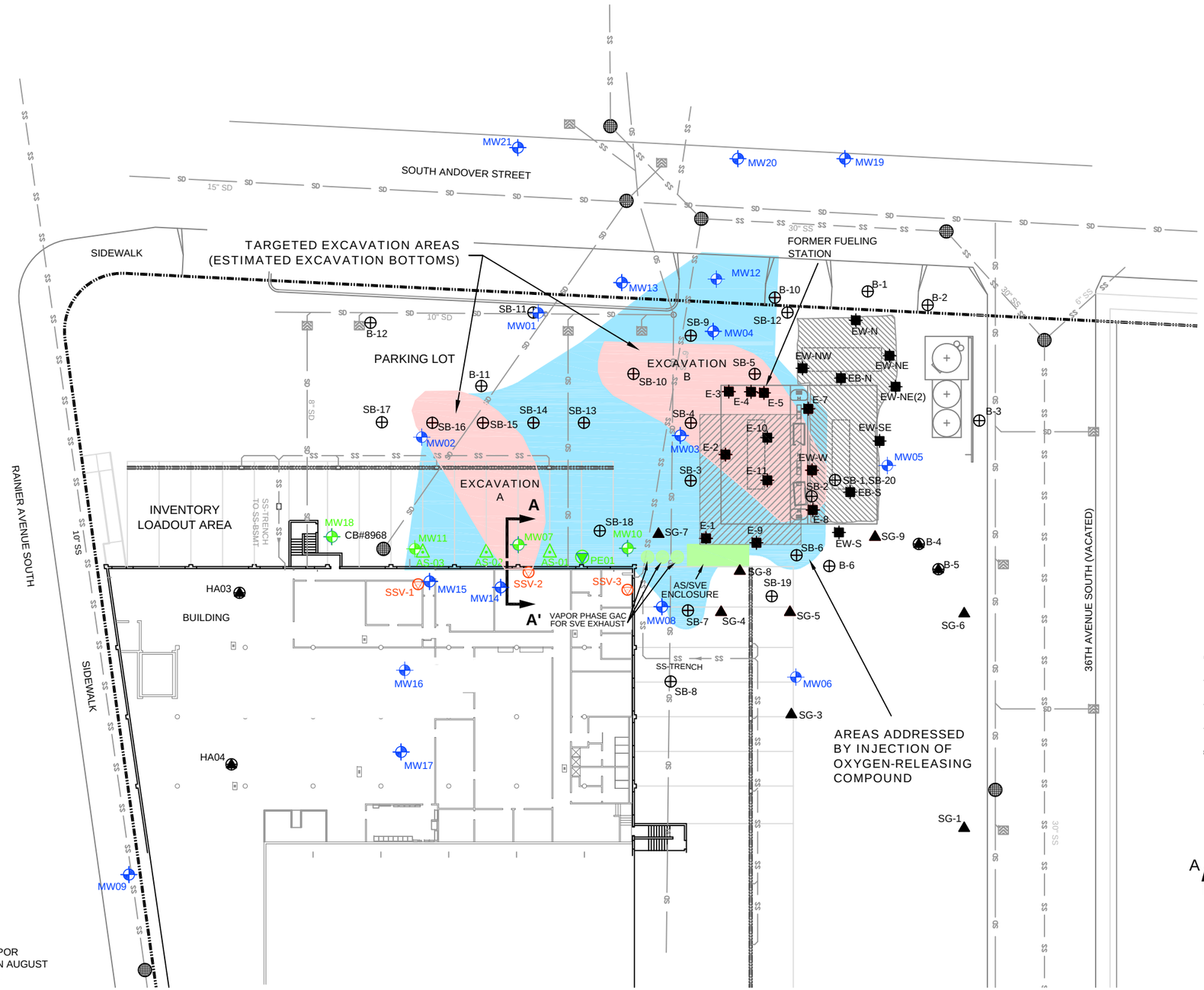
Aspect CONSULTING

Site Plan Showing Cleanup Level Exceedences

Darigold - Rainier Avenue Facility
Seattle, Washington

DATE: June 2011	PROJECT NO. 090066
DESIGNED BY: DAH	
DRAWN BY: PMB	FIGURE NO. 2
REVISED BY: SCC	

Jul 01, 2011 3:39pm scudd
Q:\Darigold\090066 Rainier Avenue Facility\2011-06 CAP-EDR\090066-02.dwg Figure 1 (11 x 17)



LEGEND

- B-1 — SOIL BORING
- E-1 — SOIL EXCAVATION BASE OR SIDEWALL SAMPLE
- SG-1 — SOIL GAS SAMPLE
- SSV-1 — VAPOR PROBE (SUB-SLAB)
- MW01 — GROUNDWATER MONITORING WELL
- PE01 — PILOT TEST WELL

NOTE:
Green wells have been incorporated into the soil vapor extraction (SVE) system.

- AS-01 — AIR SPARGING WELL
- CATCH BASIN OR CURB INLET
- MANHOLE
- PROPERTY BOUNDARY
- APPROXIMATE PARCEL BOUNDARY
- SS — SANITARY SEWER
- SD — STORM SEWER
- ZIPPER DRAIN
- FORMER UST
- APPROXIMATE FORMER UST EXCAVATION (SES, 2004)
- APPROXIMATE FORMER UST EXCAVATION (SD&C, 1998)
- A — A' — ALIGNMENT OF GENERALIZED CROSS SECTION (REFER TO FIGURE 4)
- UST — UNDERGROUND STORAGE TANK

Areas of Cleanup Technology Application

- SOIL EXCAVATION
- ENHANCED *IN SITU* DEGRADATION

NOTES:

1.) COMPONENTS OF THE AIR SPARGE/SOIL VAPOR EXTRACTION (AS/SVE) SYSTEM INSTALLED IN AUGUST 2008 ARE COLORED GREEN ON THIS FIGURE

REFERENCES : SES, FIELD MEASUREMENTS, 2004-2009
DARIGOLD, INC, FACILITY DRAWINGS, 2005.
CITY OF SEATTLE, SEWER CARD NOS. 1442, 1443, AND 5412, 2001.
SD&C, UNDERGROUND STORAGE TANK SITE ASSESSMENT REPORT, 1998.

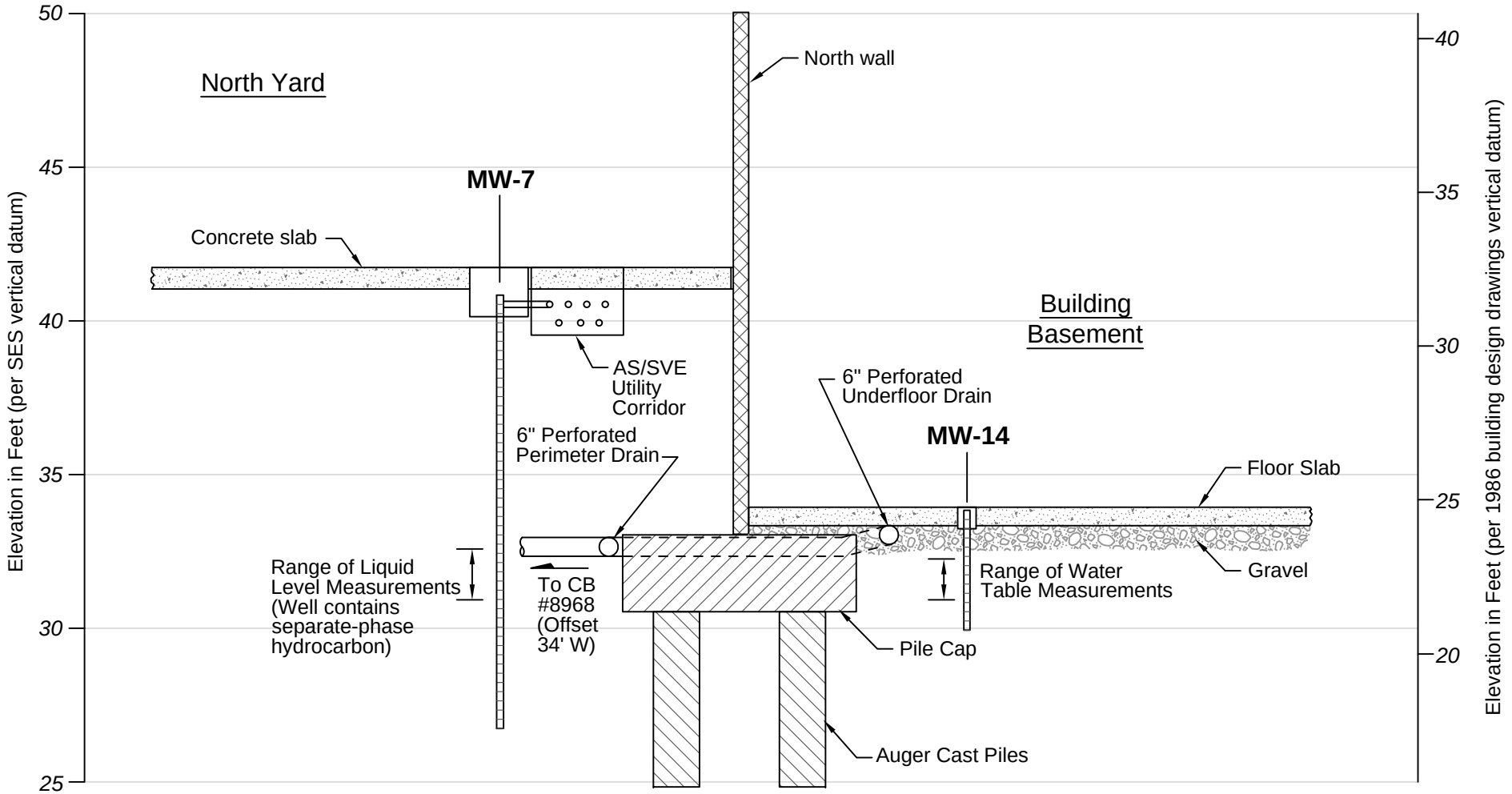
N
0 40 80
Feet

Aspect CONSULTING

Planned Areas of Cleanup Technology Application
Selected Cleanup Action
Darigold - Rainier Avenue Facility
Seattle, Washington

DATE: June 2011	PROJECT NO. 090066
DESIGNED BY: DAH	
DRAWN BY: PMB	FIGURE NO. 3
REVISED BY: SCC	

Jul 01, 2011 3:40pm scudd
Q:\Darigold\090066 Rainier Avenue Facility\2011-06 CAP-EDR\090066-05.dwg Figure 5 (11 x 17)



Note: All dimensions, elevations and orientations are approximate.

0 5 10
Feet

Aspect CONSULTING

Generalized Cross Section A-A'

Darigold - Rainier Avenue Facility
Seattle, Washington

DATE:	June 2011
DESIGNED BY:	DAH
DRAWN BY:	PMB
REVISED BY:	SCC
PROJECT NO.	090066
FIGURE NO.	4

Jul 26, 2011 4:31pm scudd

Q:\Darigold\090066 Rainier Avenue Facility\2011-06 CAP-EDR\090066-06.dwg Figure 2 (8.5 x 11)

APPENDIX A

Soil Removal Action Plan Set

City of Seattle
Department of Planning and Development (DPD)

PLAN COVERSHEET

Updated 4/22/11

Available online at: www.seattle.gov/DPD/publications/Forms/Coversheet.pdf

1. APPLICANT INFORMATION

INSTRUCTIONS: Fill in all areas, in sections 1–7 of the Coversheet, that pertain to your project. Please note that sections 8–14 will be filled out by DPD staff.

PROJECT ADDRESS 4058 Rainier Avenue South PROJECT # 6277528

DESCRIPTION OF WORK Excavate approximately 3,000 cubic yards of petroleum-contaminated soil; backfill and restore to original grades and paved surfaces.

OWNER DARIGOLD ADDRESS P.O. Box 34377, Seattle, WA
OWNER PHONE 206.284.7220 EMAIL bruce.bennett@darigold.com

CONTACT PERSON Jon O'Hare ADDRESS 26456 Marine View Drive, Des Moines, WA
PHONE 425.301.9541 FAX 253.839.4856 EMAIL jon@permitcnw.com
PREVIOUS MUPS RELATED TO PROJECT 300931
RELATED STANDARD PLANS

2. LAND USE CODE INFORMATION

ZONE C2-65 Assessor's Parcel No. 7950301240
OVERLAY ZONING North Rainier/SE Seattle Reinvestment
HISTORIC OR LANDMARK DISTRICT
SHORELINE ZONE
Exempt ☒ Req. Shoreline Review ☐
SEPA
Exempt ☐ Requires Review ☒

DESIGN REVIEW? No ☐ Yes ☐
If yes, please provide:
Planner:
Planner phone:

EXISTING USE	SQ. FT.	PROPOSED USE	SQ. FT.
Industrial	169,487	Industrial	169,487

Permit # establishing existing use

DEPARTMENT OF NEIGHBORHOODS CERTIFICATE OF APPROVAL REQUIRED? No ☒ Yes ☐

STREET/ALLEY IMPROVEMENTS OR WORK IN RIGHT-OF-WAY REQUIRED? No ☒ Yes ☐

PARKING SPACES:
Existing #: Onsite 0 Offsite 0 Accessible
Proposed #: Onsite 0 Offsite 0 Accessible
Off site Location:

NUMBER OF DWELLING UNITS:
Existing 0 Proposed New 0
Demolished 0 Live-work Units 0
TOTAL UNITS: 0

3. HOUSING UNIT OCCUPANCY

DEFINITION: Housing unit means any dwelling unit, housekeeping unit, guest room, dormitory, or single room occupancy unit, and may include a residential unit in a commercial building, an artist's studio dwelling unit, or a live/work unit.

CHECK ONLY ONE BOX BELOW, INDICATING HOUSING OCCUPANCY AT DATE OF PERMIT APPLICATION.

☐ Unit(s) is/are unoccupied
☐ Unit(s) is/are occupied by a residential tenant(s)
☐ Unit is occupied by the owner of the property
☐ Do not know
☒ There is/are no housing unit(s) on the property
☐ Refer to Property Owner/Tenant Assistance
☐ Housing unit on property is not affected by this permit scope.

I certify, under penalty of perjury under the laws of the state of Washington, that the above information is true and correct.

Owner/Applicant Signature | Printed Name | Date & Place

4. GROUND DISTURBANCE

GROUND DISTURBANCE: No ☐ Yes ☒
Cut: cubic yds. 3,000 Maximum Height 0
Fill: cubic yds. 3,000 Maximum Height 0

DISPOSAL SITE: Outside City of Seattle ☒
Inside City of Seattle ☐ Address and/or Permit # ROOSEVELT REGIONAL LANDFILL

EROSION CONTROL IS REQUIRED PRIOR TO ANY GROUND DISTURBANCE. Please refer to Temporary Erosion and Sediment Control (TESC) Plan.

CUSTOMER ALERT!

Site Inspection Required Prior to First Ground Disturbance–Call (206) 684–8900

A DPD site inspection is required prior to any ground disturbance related to this permit, including tree cutting, clearing, grubbing or grading.

Preconstruction Conferences, When Required–Call (206) 684–8860

A DPD PRECONSTRUCTION CONFERENCE should be scheduled prior to beginning work. A conference is required for the following types of work:

1. When any special inspections are indicated on the plan
2. When land use or design review conditions are indicated on the plan
3. When a DPD plans examiner specifies on plans unusual or complex inspection or occupancy requirements

Rules for Ufer Grounds–Call (206) 684–5383

If you have any questions or concerns regarding the rules (2005 NEC) for installation ufer grounds, please contact DPD's Electrical Technical Backup, Monday– Friday, 7a.m.–4:30p.m.

Required SDOT Permits and Inspections

STREET TREE INSPECTIONS: Protection and/or planting/pruning/removal of street trees requires SDOT inspection and approval.
Call prior to construction: Commercial/Multifamily Zones, (206) 684–5693; Single Family Zones, (206) 684–7997

STREET USE PERMITS:
Call prior to construction: (206) 684–5283

Water Service Inspection by SPU Required

All Water Service Piping On Property must be inspected prior to backfilling trench. For information and inspection, call Seattle Public Utilities (SPU) at (206) 684–5800. For water quality backflow protection information and inspection, call SPU at (206) 684–3536.

5. BUILDING CODE INFORMATION

Multiple Buildings in this Project?
No ☐
Yes ☐ Fill out separate sheets and attach.
Shown on plan sheet

Code used for design (one):
☐ 2006 Seattle Building Code
☐ 2006 Seattle Residential Code
☐ 2006 SBC (Struct)/SRC (Arch)

PROVIDE THIS INFORMATION FOR EACH BUILDING IN YOUR PROJECT:

DPD Building ID(s) (see Building Data Sheet)

Existing # of Above-grade stories Proposed # of Above-grade stories
Existing # of Below-grade stories Proposed # of Below-grade stories

Mezzanines: No ☐ Yes ☐ Location
Building Code Type of Construction

FLOOR LEVEL	GROUP	OCCUPANCY/USE	FLOOR AREA	SPRINKLER (Y if yes)	OTHER FIRE PROTECTION
		Grading Work Only for this Permit			

Remodel: Construction Project Value:$ 350,000
Sprinklers: NFPA 13 ☐ Fire alarm ☐
NFPA 13R ☐ Other system ☐ Type?
Partial system ☐ Location
Change Of Occupancy No ☐ Yes ☐ From to
Posted Occupancy:

EMERGENCY SYSTEMS PROVIDED:
Elevator Pressurization ☐
Stairway Pressurization ☐
Smoke Removal System ☐
Exit And Pathway Lighting ☐
Emergency Generator ☐

6. ENERGY/MECHANICAL CODE

SCOPE OF MECHANICAL WORK DESCRIPTION:
None

RELATED BUILDING PERMIT PROJECT#

LOCATION OF DUCTWORK OR MECHANICAL EQUIPMENT:
Interior N ☐ Y ☐ Exterior Walls N ☐ Y ☐ Rooftop N ☐ Y ☐

MECHANICAL–ONLY PERMIT–Project Value: $

APPLICABLE OCCUPANCY:
☐ Group R ☐ Other than Group R

BUILDING ENVELOPE COMPLIANCE:	HEATED	SEMI–HEATED	UNHEATED SPACE
☐ Existing envelope–no change	☐	☐	☐
☐ Existing envelope–altered	☐	☐	☐
☐ New envelope	☐	☐	☐

Compliance method: ☐ System analysis ☐ Target UA ☐ Prescriptive – Group R Provide Option #

HVAC MECHANICAL SYSTEM:
☐ Not included in this application
☐ Included in this application (see scope description for detail)

Separate permit required for: Plumbing, Gas piping, Boiler, and Refrigeration systems.
Heating Fuel Type: Group R ☐ Electric ☐ Other
Other than Group R ☐ Electric ☐ Other

OTHER MECHANICAL EQUIPMENT INCLUDED IN THIS APPLICATION:
☐ Commercial kitchen hood exhaust system
☐ Fume hood
☐ Spray paint booth
☐ Other–specify

DOCUMENT SUBMITTED:
☐ Group R equipment sizing calc (unit by unit)
☐ Cooling and heating load calculation (for other than Group R)
☐ Target UA calculation
☐ Structural load calculation (for mechanical equipment)
☐ Noise compliance report (for mechanical equipment)
☐ Commercial kitchen hood worksheet
☐ Other

LIGHTING: Separate electrical permit application required

SINGLE FAMILY/DUPLEX
Min. equipment size
Max. equipment size
Gas or Oil Heating AFUE %

7. GREEN BUILDING
www.seattle.gov/dpd/CityGreen

LEED
Leadership in Energy & Environmental Design Green Building Rating System™ (LEED)

☐ LEED for New Construction (LEED–NC)
☐ LEED for Core & Shell (LEED–CS)
☐ LEED for Commercial Interiors (LEED–CI)
☐ LEED for Existing Building (LEED–EB)
☐ LEED for Homes (LEED–H)
☐ LEED for Neighborhood Development (LEED–ND)
☐ LEED Application Guide

LEED Rating Anticipated:
☐ Platinum
☐ Gold
☐ Silver
☐ Certified

BUILT GREEN ™
☐ Built Green Remodeler
☐ Built Green Home Builder
☐ Built Green Multi–Family
☐ Built Green Communities

Built Green Rating Anticipated:
☐ 1–2 Star
☐ 3 Star
☐ 4 Star
☐ 5 Star

OTHER PROGRAMS
☐ Sea Green: Seattle's Attordable Housing
☐ Labs for the 21st Century (Labs21)
☐ Green Guide for Healthcare (GGHC)
☐ ENERGY STAR® Home Label

DPD STAFF ONLY
To Fill Out Sections 8-14

8. LAND USE CONDITIONS (DPD staff use only; insert additional sheets if needed)

Assigned Planner Phone

TO BE COMPLETED BY DPD STAFF ONLY

NEW CURB CUT REQUIRED? No ☐ Yes ☐ Residential ☐ Commercial ☐

9. SPECIAL INSPECTIONS
(DPD staff use only; attach extra sheets as needed)

ARCHITECT:
Name:
Phone:

ENGINEER:
Name:
Phone:

GEOTECHNICAL INSPECTIONS:
☐ Soil Bearing Verification
Notes:
☐ Fill–Verify Structural Fill and Compaction
☐ Excavation–Observe and Monitor Excavation
☐ Drainage–Sub/Surface Drainage Installation
☐ Erosion Control–Temp/Permanent
☐ Other
☐ Other
☐ Other

Geotechnical Firm:
Name:
Phone:

STRUCTURAL INSPECTIONS:
☐ Concrete–Reinforced Concrete CIP
Notes:
☐ Shotcrete
☐ Reinforced Masonry Level 1
☐ Structural Steel Fabrication
☐ Structural Steel Erection
☐ Wood Seismic Resistance System (for IBC only)
Notes:
☐ Epoxy Grouting
Notes:
☐ Mechanical Anchor Bolt Installation
Notes:
☐ Epoxy Grouted Anchor Bolt Installation
Notes:
☐ Other
☐ Other
☐ Other

Inspection Agency:
Name:
Phone:

Code Alternate:
See Sheet:

OTHER: ☐ ☐ ☐ ☐

Call (206) 684-8860 to schedule a pre-construction conference before the start of construction.

10. DRAINAGE & SEWER REVIEW (DPD staff use only)

DPD SEWER AND DRAINAGE REVIEW DESK: (206) 684–5362

DRAINAGE REVIEW REQUIRED? No ☐ Yes ☐
☐ Flow control required
☐ No flow control required
☐ Impervious surface this project (new or replaced) sq.ft.
☐

NOTE: The drainage system shown in these plans may be changed at the time of side sewer permit issuance to meet standard plans and methods.

☐ Route for drainage review

SIDE SEWER REVIEW REQUIRED? No ☐ Yes ☐
☐ No Conflict with side sewer
☐ Construction conflicts with applicant's side sewer. Contact Public Health Department at (206) 233–7914
☐ Construction conflicts with side sewer serving another property. Contact DPD Sewer and Drainage Review Desk at (206) 684–5362
☐ Conflict with public utility main (requires buildover). Contact SPU at (206) 684–7563
☐

Reviewed by: Date:

NOTE: A separate side sewer permit is required from DPD. For more information, call the Sewer and Drainage Review Desk at (206) 684–5362

11. ENVIRONMENTALLY CRITICAL AREAS INFO

ENVIRONMENTALLY CRITICAL AREAS (ECA):
☐ Site is not located in ECA
☐ Mapped ECA designation: 1 2 3 4 5 6 7 8 9 10
☐ ECA identified by Preapplication Site Visit Report as:

☐ ECA Exemption [See review details in Hansen.]
Reviewed by:
☐ Denied
☐ Granted. Type:

☐ Small Project Waiver
New Developmental Coverage–this permit: sq.ft.
Previous Developmental Coverage after October 31, 1992:
Permit #, sq.ft.
Permit #, sq.ft.
TOTAL: sq.ft.

12. SHOP DRAWINGS, KEY AREA INSPECTION & BUILDING CONDITIONS (DPD staff use only)

Sprinkler drawings required for:
☐ NFPA 13
☐ NFPA 13 R
☐ Partial system
Location
☐ Fire alarm

13. PERMIT ISSUANCE AUTHORIZATION (DPD staff use only)

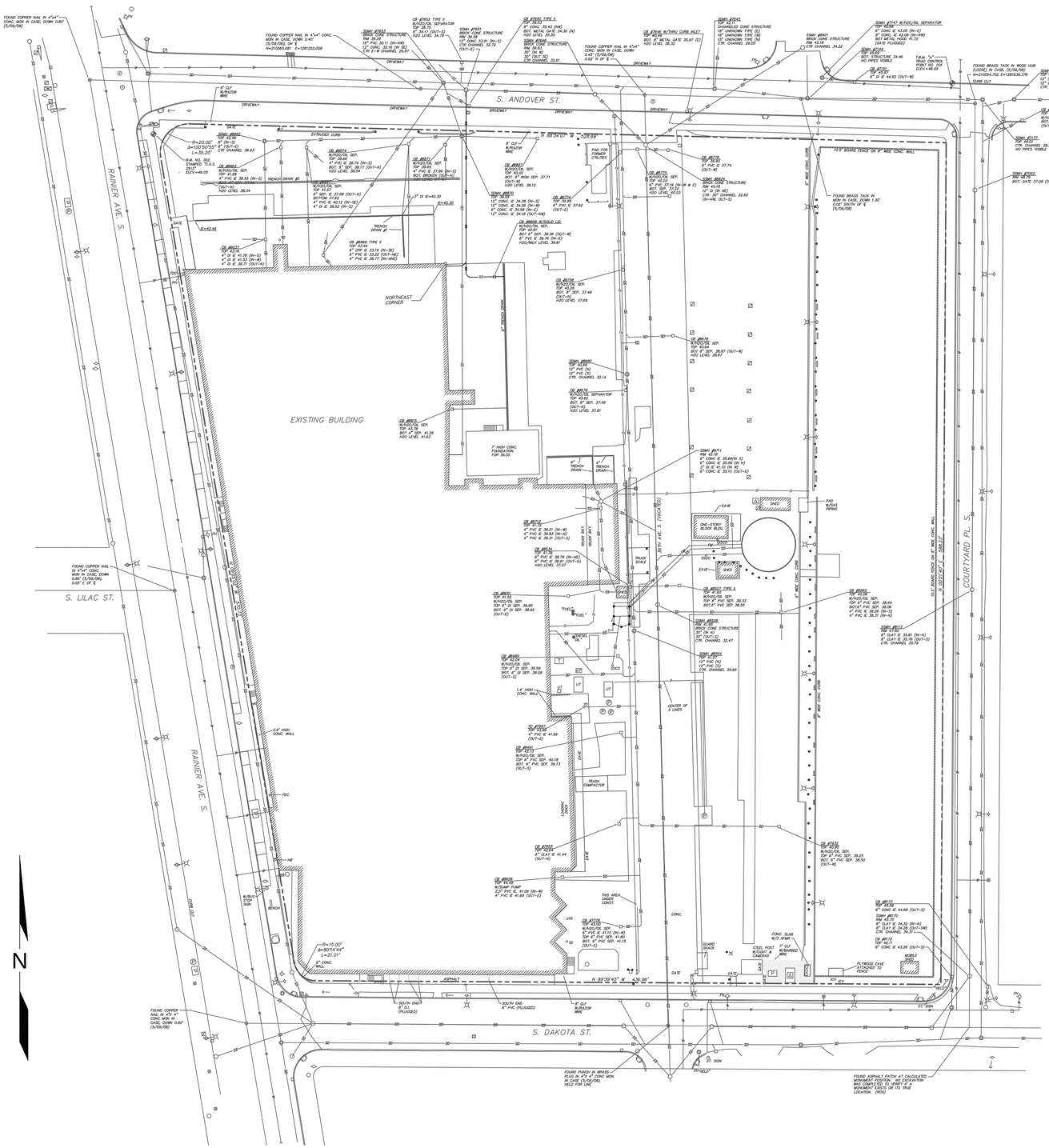
Review Location	Approved		Notes
	Initials	Date	
ZONING (incl. street improvements)			
CURB CUT			
ORDINANCE			
STRUCTURAL			
ENERGY			
MECHANICAL			
DRAINAGE			
ECA			
GRADING			
WATER (SPU)			
FIRE			
HEALTH (King County)			
NOISE			
CONVEYANCE/ELEVATOR			
SHORING (SDOT)			
STREET IMPROVEMENT (SDOT)			
PARKS			
PROTECTED DISTRICTS (DON)			
SEPA EXEMP			
LAND USE REVIEW			

14. DEPARTMENT SIGN OFFS (DPD staff use only)

ISSUED BY: Initials Date

BUILDING PLANS EXAMINER	MECHANICAL PLANS EXAMINER	DATE RECEIVED AT INTAKE

CAD Path: Q:\Darigold\090066 Rainier Avenue Facility\2011-03 Permitting\0396-001-09_20080P_Cover.dwg Layout1 || Coordinate System: NAD 1983 State Plane Washington North FIPS 4601 Feet || Date Saved: Apr 26, 2011 4:00pm || User: scudd



SITE INFORMATION

SURVEYOR /CIVIL ENGINEER:	TRIAD ASSOCATES 12112 115TH AVENUE NE KIRKLAND, WA 98034 (425) 488-0756 ATTN: RICHARD TOMKINS, P.E.
CIVIL/GEOTECHNICAL ENGINEER:	ASPECT CONSULTING, LLC 179 MADRONE LANE NORTH BAINBRIDGE ISLAND, WASHINGTON 98110 (206) 780-9370 ATTN: JOHN PETERSON, P.E.
ENVIRONMENTAL ENGINEER:	ASPECT CONSULTING, LLC 401 SECOND AVENUE SOUTH, SUITE 201 SEATTLE, WASHINGTON 98104 (206) 328-7443 ATTN: DAVID HEFFNER, P.E.

TABLE OF CONTENTS

LEGAL DESCRIPTION

SQUIRES LAKESIDE ADD ALL LOTS BLOCK 8 TGW POR VAC RAINIER AVE ADJ & VAC ALLEY ADJ TGW LOTS 1-38 BLOCK 7 OF SD PLAT & TGW VAC 36TH AVE ADJ PER VO #113993 SD BLKS 7 & 8 THOF

1. INTRODUCTION

THE INTERIM REMEDIAL EXCAVATION SCOPE OF WORK (THE WORK) IS CONDUCTED ON A VOLUNTARY BASIS IN ACCORDANCE WITH THE WASHINGTON MODEL TOXICS CONTROL ACT (MTCA).

THE WORK DESCRIBED HEREIN INCLUDES THE EXCAVATION AND OFF-SITE DISPOSAL OF APPROXIMATELY 3,000 CY OF SOIL THAT CONTAINS ELEVATED LEVELS OF DIESEL, GASOLINE, BENZENE, TOLUENE, ETHYLBENZENE, AND/OR TOTAL XYLENES. THE EXCAVATION AREA IS LOCATED AT THE NORTH END OF THE PROPERTY. THE AFFECTED AREA IS APPROXIMATELY 8,000 SQUARE FEET IN SIZE AND EXTENDS TO DEPTHS OF GENERALLY 10 FEET BELOW GROUND SURFACE (BGS)

A CITY OF SEATTLE MASTER USE PERMIT WAS OBTAINED FOR THIS SOIL EXCAVATION PROJECT IN 2008 (PERMIT NO. 3009301; EXPIRATION DATE: 09/02/2011). A GRADING PERMIT WAS ALSO APPLIED FOR IN 2008 (PROJECT NO. 6175969), BUT WAS NOT OBTAINED. AS A RESULT OF ADDITIONAL ENVIRONMENTAL EVALUATIONS COMPLETED SINCE 2008, THE ESTIMATED VOLUME OF SOIL REQUIRING EXCAVATION HAS BEEN REDUCED FROM 5,000 TO 3,000 CUBIC YARDS..

ANY GROUNDWATER AND STORM WATER RECOVERED FROM THE EXCAVATION ARE CONSIDERED PETROLEUM-CONTAMINATED WASTES. THE WORK PRESENTED IN THESE PLANS SHALL BE PREFORMED IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS FOR PETROLEUM-CONTAMINATED CONSTRUCTION SITES.

2. SITE PREPARATION

A GENERAL DESCRIPTION AND PROPOSED SEQUENCE OF THE WORK IS PROVIDED BELOW. THE REMEDIATION CONTRACTOR SHALL PREPARE AND HAVE READY THE FOLLOWING SITE PREPARATION ELEMENTS PRIOR TO BEGINNING EXCAVATION ACTIVITIES:

- SITE SECURITY AND TRAFFIC CONTROLS – THE PROPERTY IS PERMANENTLY SECURED AGAINST UNAUTHORIZED ENTRY BY CHAIN-LINK FENCING AND SECURITY GATES. TRAFFIC CONTROLS WILL BE IMPLEMENTED IN ACCORDANCE WITH THE CONDITIONS OF THE COMMERCIAL TRUCK PERMIT. CONSTRUCTION TRAFFIC WILL BE STAGED IN NORTHBOUND 36TH AVENUE SOUTH BETWEEN SOUTH DAKOTA STREET AND SOUTH GENESEE STREET. THE CONTRACTOR SHALL PROVIDE THE NECESSARY SIGNAGE, TRAFFIC CONTROLS, AND FLAGGER(S) AND OTHER STREET SUPPORT PERSONNEL.

- TEMPORARY EROSION AND SEDIMENT CONTROLS – THE CONTRACTOR SHALL HAVE IN PLACE ALL TEMPORARY EROSION AND SEDMIENT CONTROL MEASURES PRIOR TO BEGINNING ANY EXCAVATION.

- WORK ZONES – THE CONTRACTOR SHALL SET UP AND MAINTAIN THE DESIGNATED HEALTH AND SAFETY WORK ZONES. THE CONTRACTOR SHALL PROVIDE TRAFFIC BARRICADES, MARKERS, AND DECONTAMINATION SUPPLIES AND EQUIPMENT.

- NOISE, DUST, AND VAPOR CONTROLS – ALL WORK ACTIVITIES THAT MAY GENERATE CONSTRUCTION RELATED NOISE WILL BE RESTRICTED TO MONDAY THROUGH FRIDAY 7:00 AM TO 10:00 PM AND SATURDAY 9:00 AM TO 10:00 PM. THE CONTRACTOR SHALL REQUEST A TEMPORARY NOISE VARIANCE. THE CONTRACTOR SHALL CONTROL VISIBLE DUST BY USING WATER SPRAY OR OTHER APPROVED METHODS. ANTICIPATED SOIL VAPORS SHALL BE CONTROLLED BY CONTRACTOR USING ENGINEERING CONTROLS (FANS, BLOWERS, ETC.) AND MINIMIZING THE ACTIVE AREA OF EXCAVATION.

3. SLOPING AND SHORING

THE EXCAVATION PERIMETER WILL BE SLOPED IN ACCORDANCE WITH THE SPECIFICATIONS OF THE GEOTECHNICAL ENGINEER. REFERENCE THE GEOTECHNICAL EVALUATION REPORT BY SOUND ENVIRONMENTAL STRATEGIES CORPORATION AND ADAPT ENGINEERING DATED JUNE 11, 2008.

4. SOIL EXCAVATION

THE EXCAVATION AREA DEFINED ON THE PLANS SHALL BE EXCAVATED TO A DEPTH OF APPROXIMATELY 10 FEET BGS. THE OBJECTIVE OF THE EXCAVATION IS TO REMOVE PRIMARY AND SECONDARY SOURCES OF PETROLEUM PRODUCT IN SOIL AND GROUNDWATER IN THE VICINITY OF THE FORMER FUELING FACILITY. ALL PETROLEUM-CONTAMINATED WASTE SHALL BE DESIGNATED AND HANDLED IN ACCORDANCE WITH STATE GUIDELINES. EXCAVATION ACTIVITIES SHALL BE DIRECTED BY THE ENVIRONMENTAL ENGINEERING FIRM. DURING EXCAVATION ACTIVITIES THE ENGINEER WILL REQUEST ASSISTANCE TO COLLECT BASE AND SIDEWALL SAMPLES TO DOCUMENT IN SITU SOIL CONDITIONS UPON COMPLETION OF THIS INTERIM ACTION. EXCAVATION SOIL WILL BE EXPORTED TO AN APPROPRIATE RECEIVING FACILITY.

5. BACKFILLING AND COMPACTION

THE EXCAVATION SHALL BE REFILLED TO EXISTING GRADE USING STRUCTURAL FILL AND COMPACTED TO AT LEAST 90 PERCENT OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY, IN ACCORDANCE WITH THE SPECIFICATIONS OF THE GEOTECHNICAL EVALUATION REPORT BY SOUND ENVIRONMENTAL STRATEGIES CORPORATION AND ADAPT ENGINEERING DATED JUNE 11, 2008.

6. SOIL HANDLING AND STOCKPILING PROCEDURES

THE CONTRACTOR SHALL UTILIZE AND IMPLEMENT SOIL HANDLING TECHNIQUES AND METHODS, SUCH AS DIRECT LOADING AND PLASTIC COVERS, IN ORDER TO MINIMIZE THE AMOUNT AND DURATION OF CONTAMINATED SOIL EXPOSED TO THE ATMOSPHERE. THE OBJECTIVE IS TO MINIMIZE THE POTENTIAL RELEASE OF ORGANIC VAPORS TO THE BREATHING ZONE, AS MONITORED THROUGH REAL-TIME MEASUREMENTS ON AND OFF-PROPERTY.

7. SITE CLOSURE

UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL PROVIDE AN AS-BUILT DRAWING RECORDING THE FINAL LIMITS OF EXCAVATION, NEW UTILITY TRENCH EXCAVATIONS, BACKFILL AND OTHER RELATED ACTIVITIES. THE CONTRACTOR AND ENGINEER WILL PERFORM A CLOSEOUT PUNCH LIST PRIOR TO DISMANTLING THE TESC MEASURES AND LEAVING THE PROPERTY. ALL FIELD NOTES, QA/QC FORMS, AND DOCUMENTS SHALL BE INITIALED AND TRANSMITTED TO THE ENGINEER.

LEGEND

⊕		MONUMENT IN CASE
⊕		BENCH MARK
SEP		SEPARATOR
COS		CITY OF SEATTLE
CLF		CHAINLINK FENCE
□		CATCH BASIN (TYP I)
▣		STORM DRAIN MANHOLE (TYP II)
◎	YD	YARD DRAIN
○	SSCO	SANITARY SEWER CLEANOUT
○		SANITARY SEWER MANHOLE
UT		UNKNOWN UTILITY VAULT
	FDC	FIRE DEPT. CONNECTION
	FH	FIRE HYDRANT
	HB	HOSE BIB
⋈	ICV	IRRIGATION CONTROL VALVE
	PIV	POST INDICATOR VALVE
⊞		WATER METER
Ⓦ		WATER MANHOLE
⋈		WATER VALVE
		GAS VALVE
⊛		OIL FILL CAP
⊠	EJB	ELECTRICAL JUNCTION BOX
		POWER POLE w/LIGHT
-○-		POWER POLE
-○-	PP/TR	POWER POLE w/TRANSFORMER
-○-	PP/UC	POWER POLE w/UNDERGROUND CONDUIT
←		UTILITY POLE ANCHOR ASBUILT
◇	GP	GUY ANCHOR POLE

Ⓟ	POWER VAULT W/ ROUND GRATE
P	POWER VAULT
△	PAD MOUNTED TRANSFORMER
	LIGHT STANDARD (PARKING LOT)
⊠	SIGNAL CONTROLER
	TRAFFIC POLE
Ⓣ	TELEPHONE MANHOLE
T	TELEPHONE VAULT
○	BOLLARD
	SIGN
⊗	MONITOR WELL
	DECIDUOUS TREE
—SD—	STORM DRAIN
—SS—	SANITARY SEWER LINE
—FM—	SANITARY SEWER FORCE MAIN
—W—	WATER LINE
—OHP—	POWER AERIAL
—P—	POWER BURIED
—T—	TELEPHONE BURIED
—G—	GAS LINE
—×—×—	FENCE LINE
○—○—○	GUARDRAIL
▨	RETAINING WALL
——	MINOR CONTOURS
——	MAJOR CONTOURS
— - - —	BOUNDARY LINE

APPROVAL

PROJECT
DGI RAINIER AVENUE FACILITY
4058 RAINIER AVENUE SOUTH
SEATTLE, WA

0 10 20 40 80
APPROXIMATE SCALE IN FEET

DATE	4/22/2011
REVISED BY	SCC
CHECKED BY	DAH
CAD FILE	0396-001-09_2008GP_ESL
PROJECT NAME	DARIGOLD RAINIER
PROJECT NO.	090066-004-01

SHEET TITLE
DGI RAINIER PROJECT
SITE PLAN/GENERAL NOTES

Aspect CONSULTING

ASPECT CONSULTING, LLC
401 2ND AVENUE SOUTH, SUITE 201
SEATTLE, WA 98104
ASPECTCONSULTING.COM

#	DATE	REVISION
△		
△		
△		
△		
△		

SHEET NO. 1 OF 9
C-1

LEGEND

⊕		MONUMENT IN CASE
◒		BENCH MARK
SEP		SEPARATOR
COS		CITY OF SEATTLE
CLF		CHAINLINK FENCE
□		CATCH BASIN (TYP I)
◎		STORM DRAIN MANHOLE (TYP II)
◎	YD	YARD DRAIN
○	SSCO	SANITARY SEWER CLEANOUT
◯		SANITARY SEWER MANHOLE
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♀	FDC	FIRE DEPT. CONNECTION
⊣○	FH	FIRE HYDRANT
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○		POWER POLE
○	PP/TR	POWER POLE w/TRANSFORMER
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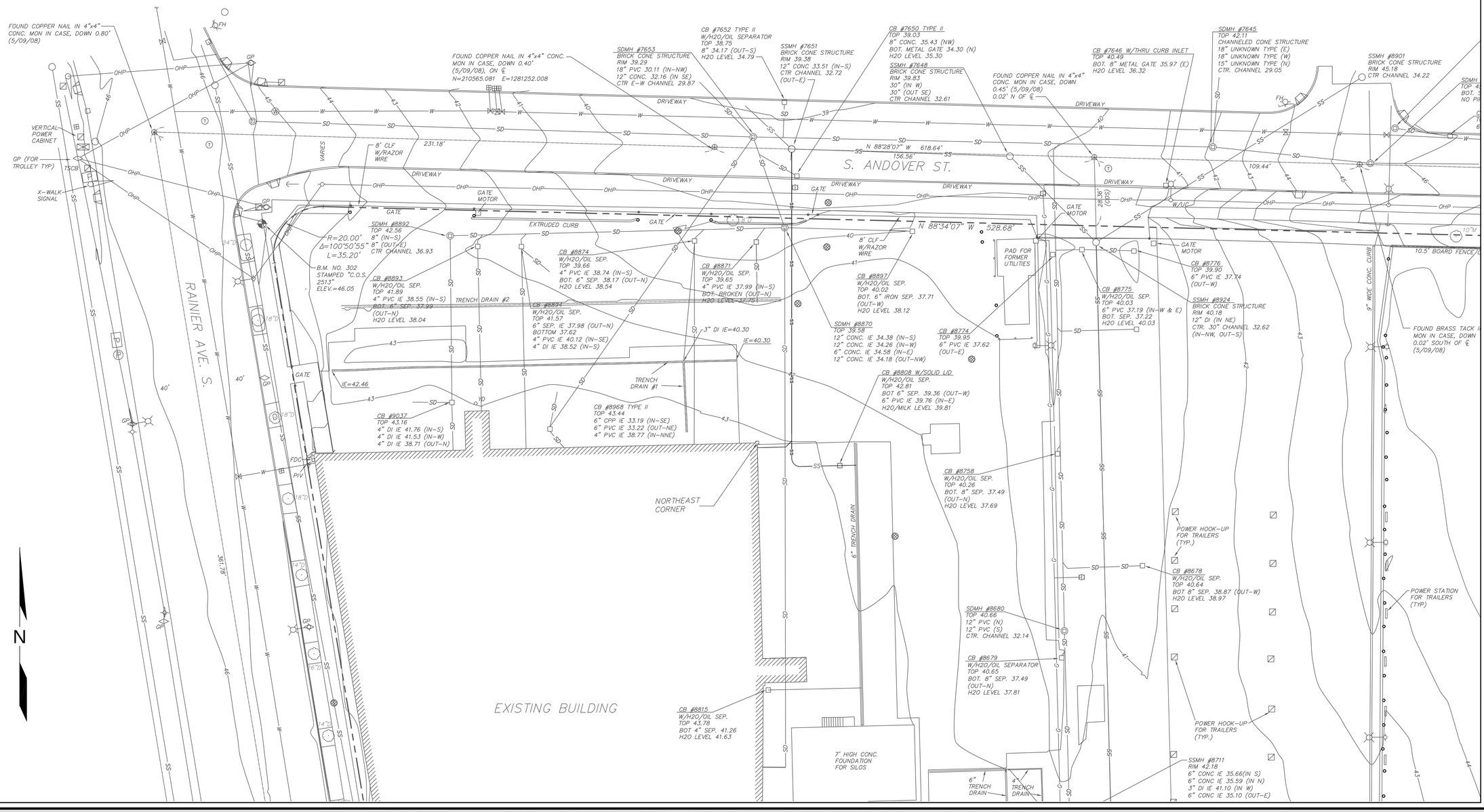
←		UTILITY POLE ANCHOR ASBUILT
◇	GP	GUY ANCHOR POLE
Ⓟ		POWER VAULT W/ ROUND GRATE
P		POWER VAULT
△		PAD MOUNTED TRANSFORMER
⊸○		LIGHT STANDARD (PARKING LOT)
⊠		SIGNAL CONTROLER
		TRAFFIC POLE
Ⓣ		TELEPHONE MANHOLE
T		TELEPHONE VAULT
○		BOLLARD
		SIGN
⊗		MONITOR WELL
		DECIDUOUS TREE
SS		SANITARY SEWER LINE
FM		SANITARY SEWER FORCE MAIN
SD		STORM DRAIN
W		WATER LINE
OHP		POWER AERIAL
P		POWER BURIED
T		TELEPHONE BURIED
G		GAS LINE
		FENCE LINE
		GUARDRAIL
		RETAINING WALL
		MINOR CONTOURS
		MAJOR CONTOURS
		PROPERTY LINE



APPROVAL

PROJECT

DGI RAINIER AVENUE FACILITY
4058 RAINIER AVENUE SOUTH
SEATTLE, WA

APPROXIMATE SCALE IN FEET
0 20 40

DATE	4/22/2011
REVISED BY	SCC
CHECKED BY	DAH
CAD FILE	0396-001-09_2008GP_ESL
PROJECT NAME	DARIGOLD RAINIER
PROJECT NO.	090066-004-01

DGI RAINIER PROJECT
SITE PLAN DETAILS

SHEET TITLE

Aspect CONSULTING
ASPECT CONSULTING, LLC
401 2ND AVENUE SOUTH, SUITE 201
SEATTLE, WA 98104
ASPECTCONSULTING.COM

#	DATE	REVISION

SHEET NO. 2 OF 9

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SSMH #7651
BRICK CONE STRUCTURE
RIM 39.38
12" CONC 33.51 (IN–S)
CTR CHANNEL 32.72
(OUT–E)

S. ANDOVER ST.

N 88°28'07" W 618.64'
156.56'

DRIVEWAY

GATE MOTOR

EXTRUDED CURB

GATE

8" D

8' CLF W/RAZOR WIRE

TRENCH DRAIN #2

TOP OF EXCAVATION

EXCAVATION A

EXCAVATION B

BOTTOM OF EXCAVATION

3" DI IE=40.30

IE=40.30

TRENCH DRAIN #1

NORTHEAST CORNER OF EXISTING BUILDING

6" TRENCH DRAIN

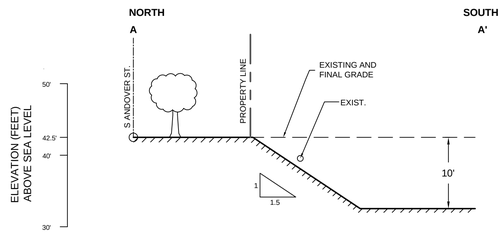
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-10
MW-11
MW-12

A
A'
B
B'
C
C'

NOTE: LOT WILL BE REHABILITATED WITH FINAL EROSION CONTROL MEASURES INCLUDING FINISHED ASPHALT AND CONCRETE PAVEMENT SECTIONS AND LANDSCAPING.

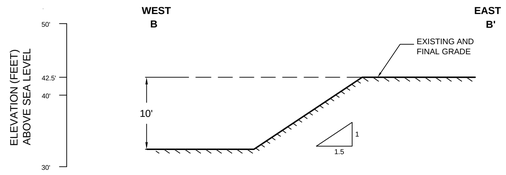
CROSS SECTION A-A'

SCALE 1" = 10'



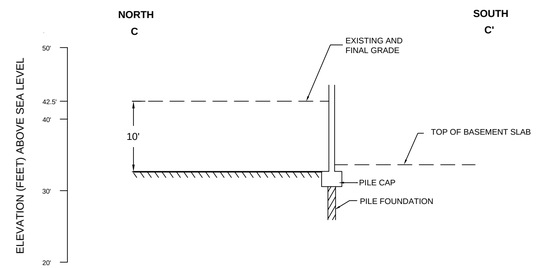
CROSS SECTION B-B'

SCALE 1" = 10'



CROSS SECTION C-C'

SCALE 1" = 10'



APPROVAL

PROJECT
DGI RAINIER AVENUE FACILITY
4058 RAINIER AVENUE SOUTH
SEATTLE, WA

APPROXIMATE SCALE IN FEET
0 5 10

DATE	4/22/2011
REVISED BY	SCC
CHECKED BY	DAH
CAD FILE	0396-001-09_2008GP_EXC
PROJECT NAME	DARIGOLD RAINIER
PROJECT NO.	090066-004-01

SHEET TITLE
DGI RAINIER PROJECT
EXCAVATION PLANS/CROSS SECTIONS

ASPECT CONSULTING, LLC
401 2ND AVE S, SUITE 201
SEATTLE, WA 98104
ASPECTCONSULTING.COM

#	DATE	REVISION

SHEET NO. 3 OF 9

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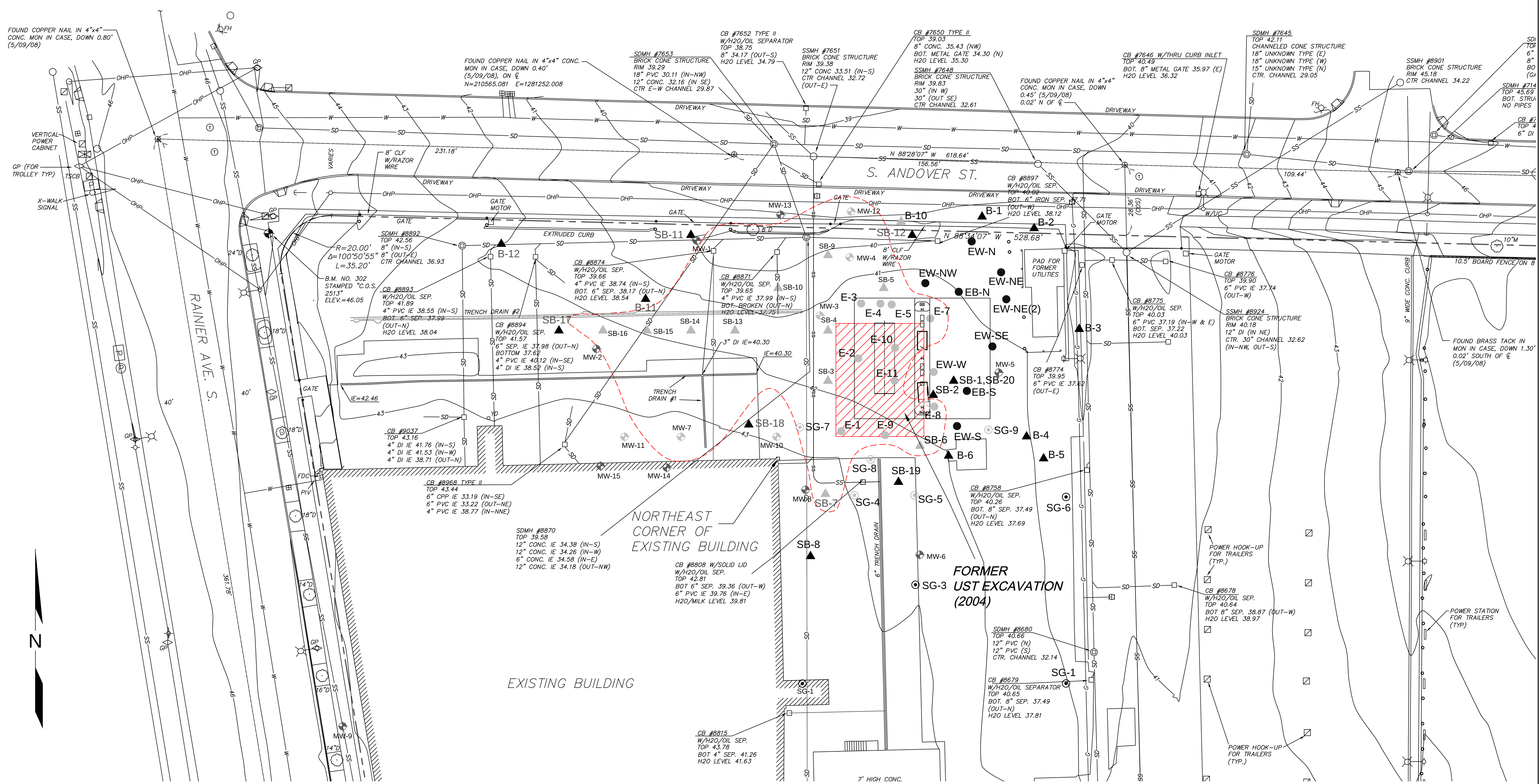
LEGEND

- ▲ SOIL BORING
- ● SOIL EXCAVATION BASE OR SIDEWALL SAMPLE
- ⊙ SOIL GAS SAMPLE
- MONITORING WELL
- SOIL BORING THAT INERSECTS PETROLEUM-CONTAMINATED SOIL
- PETROLEUM-CONTAMINATED SOIL EXCAVATION BASE OR SIDEWALL SAMPLE
- PETROLEUM-CONTAMINATED SOIL GAS SAMPLE
- MONITORING WELL THAT INTERSECTS PETROLEUM-CONTAMINATED GROUNDWATER
- APPROXIMATE LIMITS OF BENZENE-CONTAMINATED SOIL

NOTE :

THIS FIGURE DEPICTS THE LOCATIONS OF SOIL AND GROUNDWATER SAMPLES COLLECTED BY ENVIROS (1990), SLOTTA DESIGN & CONSTRUCTION (1998), INTEGRAL CONSULTING (2003), AND SOUND ENVIRONMENTAL STRATEGIES (2004-2008), AND IS INTENDED TO ILLUSTRATE THE COMPILED ANALYTICAL DATA COMPARED TO CURRENT WASHINGTON STATE CLEANUP LEVELS.



DGI RAINIER AVENUE FACILITY
4058 RAINIER AVENUE SOUTH
SEATTLE, WA

DATE	4/22/2011
REVISED BY	SCC
CHECKED BY	DAH
CAD FILE	0396-001-09_2008GP_TPH
PROJECT NAME	DARIGOLD RAINIER
PROJECT NO.	090066-004-01

DGI RAINIER PROJECT
GENERAL DISTRIBUTION OF PETROLEUM COMPOUNDS IN SOIL AND GROUNDWATER

Aspect CONSULTING
ASPECT CONSULTING, LLC
401 2ND AVENUE SOUTH, SUITE 201
SEATTLE, WA 98104
ASPECTCONSULTING.COM

GENERAL REVISION

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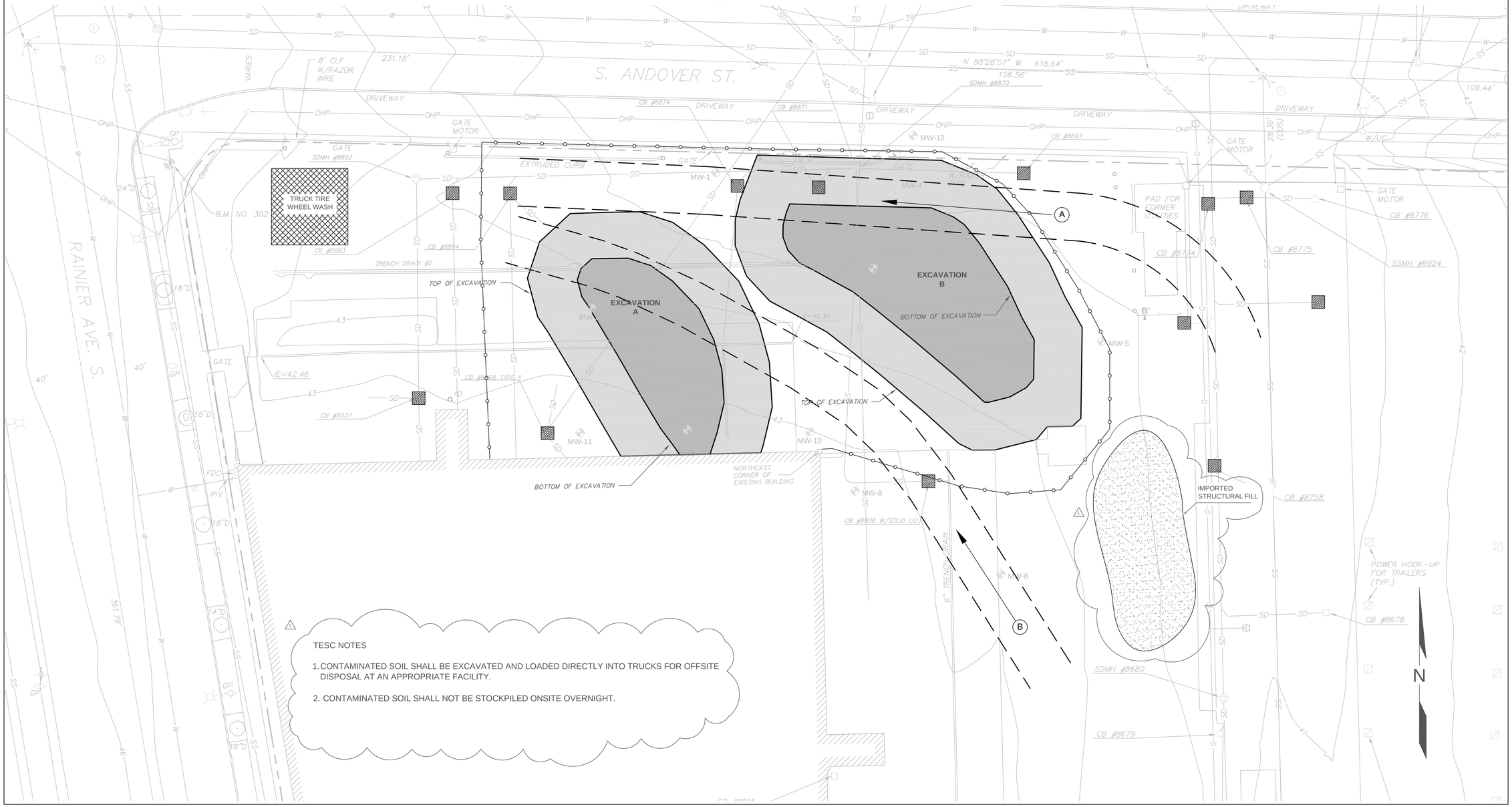

APPROVAL

PROJECT

DGI RAINIER AVENUE FACILITY
4058 RAINIER AVENUE SOUTH
SEATTLE, WA

APPROXIMATE SCALE IN FEET
0 20 40

DATE	4/22/2011
REVISED BY	SCC
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CAD FILE	0396-001-09_2008GP_TESC
PROJECT NAME	DARIGOLD RAINIER
PROJECT NO.	090066-004-01

SHEET TITLE

DGI RAINIER PROJECT
TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) PLAN

Aspect CONSULTING
ASPECT CONSULTING, LLC
401 2ND AVENUE SOUTH, SUITE 201
SEATTLE, WA 98104
ASPECTCONSULTING.COM

#	DATE	REVISION
1	6/7/11	SCALE CORRECTION
1	12/30/08	PER CITY COMMENTS DATED 7/9/2008 RE: PROJECT #6175969
1		GENERAL REVISION

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TESC NOTES

1. A PRE-CONSTRUCTION MEETING IS REQUIRED BETWEEN OWNER'S REPRESENTATIVES (GEOTECHNICAL SPECIAL INSPECTOR, GENERAL CONTRACTOR, AND EXCAVATION CONTRACTOR) AND DPD SITE INSPECTOR. CONTACT (206)684-8860 TO ARRANGE MEETING.
2. CONSTRUCTION EROSION CONTROL MEASURES MUST BE IN PLACE AND APPROVED BY DPD PRIOR TO ANY EARTH DISTURBANCE. CALL (206) 684-8860 TO SCHEDULE AN INSPECTION APPOINTMENT FOR THIS ITEM.
3. NO SEDIMENT SHALL BE TRACKED ONTO PAVED STREETS OR ROADWAYS. SEDIMENT SHALL BE REMOVED FROM TRUCKS AND EQUIPMENT BEFORE LEAVING THE CONSTRUCTION SITE. IN THE EVENT OF FAILURE OF THE TESC SYSTEM RESULTING IN SEDIMENT TRACKING ONTO PAVEMENT, THE CONTRACTOR SHALL IMPLEMENT MEASURES IMMEDIATELY TO CORRECT THE SITUATION.
4. THE EROSION AND SEDIMENT CONTROL DETAILS SHOWN IN THESE PLANS ADDRESS PROCEDURES, EQUIPMENT, AND MATERIALS NECESSARY TO MINIMIZE EROSION, AND CONTROL LOSS OF SEDIMENT FROM THE PROJECT SITE DURING REMEDIATION WORK.
5. EROSION AND SEDIMENT CONTROL BMPS SHALL BE ESTABLISHED, AS CONSTRUCTION PHASING REQUIRES, PREVENTING TRANSPORT OF SEDIMENTS OFF SITE OR TO THE SURROUNDING ENVIRONMENT.
6. DUST GENERATION SHALL BE MINIMIZED OR ELIMINATED BY SPRAYING ALL ACTIVE AND INACTIVE AREAS WITH WATER AS NEEDED.
7. THE IMPLEMENTATION OF THESE TESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE TESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS APPROVED.
8. DURING EXCAVATION OF CONTAMINATED SOIL, ASPECT CONSULTING, LLC, SHALL BE THE DESIGNATED ORGANIZATION RESPONSIBLE FOR OVERSIGHT OF THE TESC/CONTAMINATION CLEANUP.
9. THE TESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL WORK SO AS TO ENSURE THAT THE TRANSPORT OF SEDIMENT TO SURFACE WATERS, DRAINAGE SYSTEMS, AND ADJACENT PROPERTIES IS MINIMIZED.
10. THE TESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE TESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS.
11. THE TESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED TO ENSURE CONTINUED PROPER FUNCTIONING. WRITTEN RECORDS SHALL BE KEPT OF WEEKLY REVIEWS OF THE TESC FACILITIES DURING THE WET SEASON (OCT. 1 TO MARCH 31) AND OF MONTHLY REVIEWS DURING THE DRY SEASON (APRIL 1 TO SEPT. 30).
12. THE TESC FACILITIES ON INACTIVE AREAS SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN 48 HOURS FOLLOWING A STORM EVENT.

2. STORMWATER SHALL BE PUMPED FROM THE EXCAVATION CAVITY, PRETREATED ON SITE, AND DISCHARGED TO SANITARY SEWER UNDER A SIDE SEWER PERMIT FOR TEMPORARY DEWATERING.

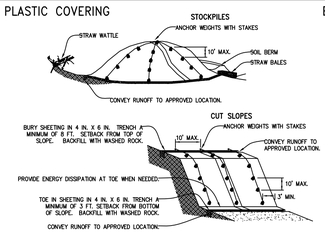
TESC MEASURES

1. EXPOSED SOILS WILL BE LIMITED TO ACTIVE AREAS OF DISTURBANCE WITHIN THE EXTENT OF THE EXCAVATION. ANY STORMWATER RUNOFF CONTACTING EXPOSED SOILS WILL ~~TRAVEL DOWNGRADIENT~~ DRAIN INTO THE EXCAVATION CAVITY, SERVING AS A TEMPORARY STORMWATER DETENTION FACILITY.
2. ~~IN THE EVENT THAT THE EXCAVATION CAVITY CANNOT INFILTRATE STORMWATER AT A RATE NECESSARY FOR CONSTRUCTION TO PROCEED, A VACUUM TRUCK WILL BE AVAILABLE TO DISPOSE OF THE STORMWATER TO A LICENSED DISPOSAL FACILITY.~~
3. CLEARING LIMITS WILL BE MARKED WITH CONSTRUCTION FENCING. THE EXTENT OF THE CONSTRUCTION FENCING WILL BE ADJUSTED AS NECESSARY TO REPRESENT ACTIVE AREAS OF DISTURBANCE.
4. SOIL STOCKPILES SHALL BE STABILIZED AT THE END OF EACH WORKDAY.
5. ALL CATCH BASINS IN THE VICINITY OF CONSTRUCTION ACTIVITIES WILL BE PROTECTED WITH FILTER FABRIC AND CLEANED PRIOR TO COMPLETION OF THE WORK. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT-LADEN WATER INTO THE DOWNSTREAM SYSTEM.
6. TRUCK LOADING ROUTES WILL SHIFT AS THE EXCAVATION PROGRESSES SO AS TO MINIMIZE CONTACT WITH EXPOSED SOILS.
7. A TEMPORARY CONSTRUCTION WHEEL WASH WILL BE PLACED AT THE CONSTRUCTION EGRESS SO AS TO PREVENT SEDIMENT TRANSPORT FROM TRUCK TIRES.
8. DECONTAMINATION WATER GENERATED FROM THE TEMPORARY WHEEL WASH WILL BE ~~STORED IN A HOLDING TANK AND DISPOSED OF BY WAY OF VACUUM TRUCK AS STORAGE CAPACITY WARRANTS.~~ PRETREATED ON SITE AND DISCHARGED TO SANITARY SEWER UNDER A SIDE SEWER PERMIT FOR TEMPORARY DEWATERING.

DEWATERING NOTES:

1. EXCAVATION SHALL OCCUR IN PHASES TO ALLOW NORMAL OPERATIONS AT THE FACILITY.
2. IN THE EVENT THAT GROUND WATER IS ENCOUNTERED, THE WATER SHALL BE PUMPED ~~DIRECTLY TO TRUCKS AND HAULED TO A LICENSED DISPOSAL FACILITY.~~ FROM THE EXCAVATION CAVITY, PRETREATED ON SITE, AND DISCHARGED TO SANITARY SEWER UNDER A SIDE SEWER PERMIT FOR TEMPORARY DEWATERING.

PLASTIC COVERING E1.20

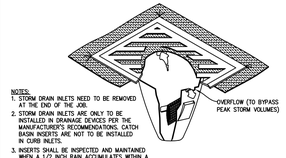


REASON: TO PROVIDE IMMEDIATE TEMPORARY EROSION PROTECTION TO SLOPES AND DISTURBED AREAS THAT CANNOT BE COVERED BY MULCHING & MATTING

SYMBOL:

STORM DRAIN INLET (INSERT) E3.30

PRE-MANUFACTURED CATCH BASIN OR INLET INSERT



NOTES:
1. STORM DRAIN INLETS NEED TO BE REMOVED AT THE END OF THE JOB.
2. STORM DRAIN INLETS ARE ONLY TO BE INSTALLED IN DRAINAGE DEVICES PER THE MANUFACTURER'S RECOMMENDATIONS. CATCH BASIN INSERTS ARE NOT TO BE INSTALLED IN CURB INLETS.
3. INSERTS SHALL BE INSPECTED AND MAINTAINED WHEN A 1/2 INCH RAIN ACCUMULATES WITHIN A 24 HOUR PERIOD. CLEAN AND/OR REPLACE INSERT WHEN HALF OF THE TRAP IS FILLED WITH SEDIMENTS.

REASON: TO PREVENT SEDIMENT FROM ENTERING STORM DRAINAGE SYSTEMS PRIOR TO PERMANENT STABILIZATION OF THE DISTURBED AREA.

SYMBOL:

APPROVAL

PROJECT
DGI RAINIER AVENUE FACILITY
4058 RAINIER AVENUE SOUTH
SEATTLE, WA

NOT TO SCALE

DATE	3/17/2011
REVISED BY	SCC
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CAD FILE	0396-001-09_20090P_TESC NOTE
PROJECT NAME	DARIGOLD RAINIER
PROJECT NO.	090066-004-01

DGI RAINIER PROJECT
TESC NOTES AND DETAILS

SHEET TITLE

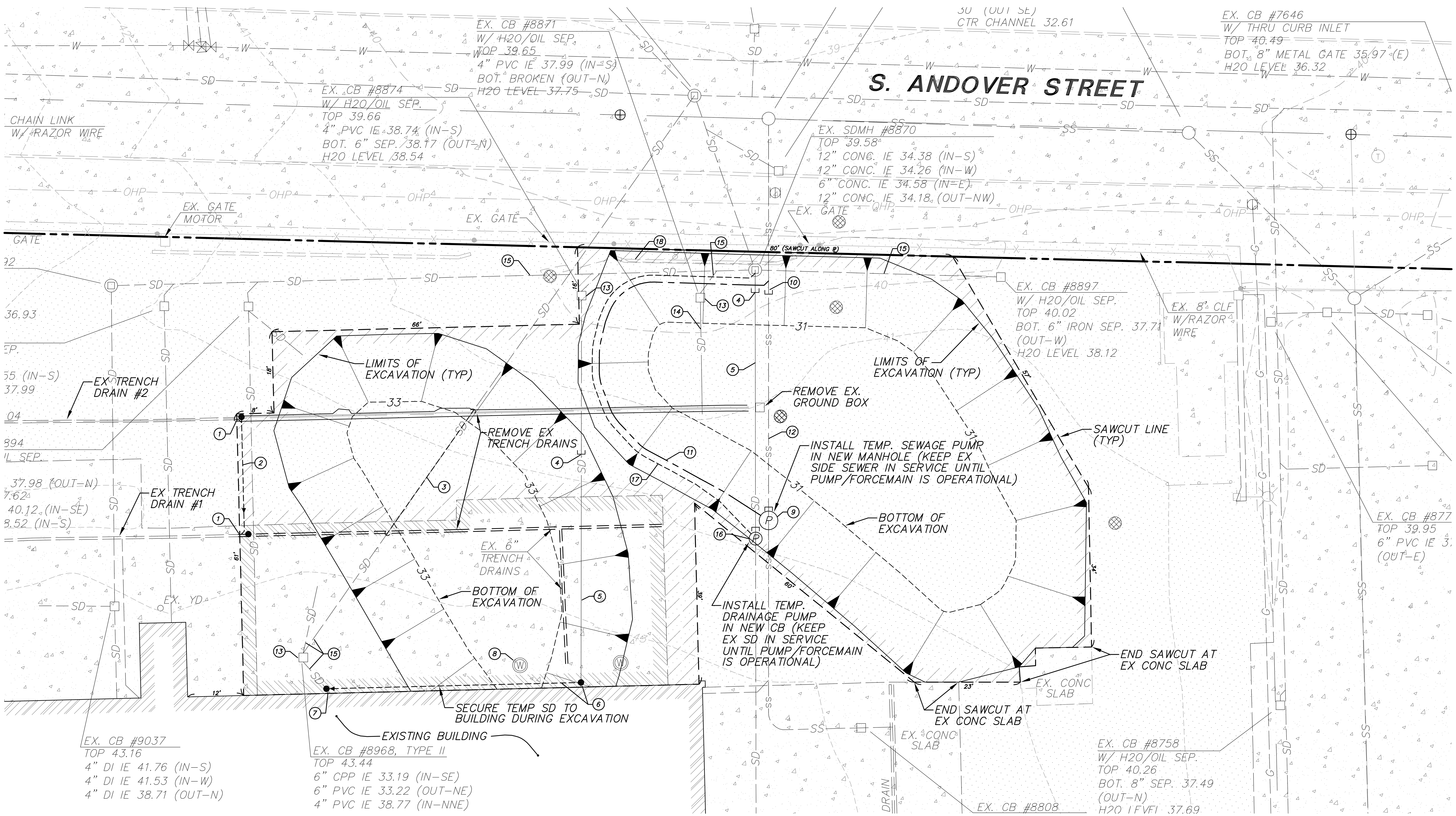
ASPECT CONSULTING, LLC
401 2ND AVENUE S, SUITE 201
SEATTLE, WA 98104
ASPECTCONSULTING.COM

#	DATE	REVISION
1	6/7/11	PER CITY COMMENTS DATED 5/25/11
1	1/7/09	PER SPU COMMENTS DATED 1/7/09 RE: PROJECT #6175969
1	12/30/08	PER CITY COMMENTS DATED 7/9/2008 AND 7/11/2008 RE: PROJECT #6175969
2		GENERAL REVISION

SHEET NO. 6 OF 9

C-6

PTN. SW 1/4 SEC. 15, T. 24 N., R. 4 E., W.M.



CONSTRUCTION SEQUENCE

1. HOLD PRECONSTRUCTION MEETING.
2. INSTALL TESC MEASURES PER SHEET C-5.
3. SAWCUT AND REMOVE EX. PAVEMENT PER ASPECT CONSULTING PHASING PLAN.
4. CUT, CAP, OR REDIRECT UTILITY PIPES AS INDICATED OR SHORE IN PLACE.
5. REMOVE TRENCH DRAINS WITHIN SAWCUT LIMITS.
6. INSTALL TEMPORARY DRAINAGE AND SEWAGE PUMPS AS INDICATED, ROUTE FORCEMAINS AROUND PERIMETER OF EXCAVATION.
7. PROVIDE TEMPORARY STEEL PLATES OR SLEEVES FOR STORM AND SEWER SERVICES THAT MAY RECEIVE TRAFFIC LOADS.
8. PERFORM EXCAVATION AND BACKFILL PER REMEDIATION PLAN.
9. REMOVE TEMP. UTILITIES AND RECONSTRUCT PERMANENT REPLACEMENT UTILITIES PER SHEET C-8.
10. COORDINATE WITH CITY INSPECTOR FOR APPROVAL OF UTILITY RESTORATION PRIOR TO TRENCH BACKFILL.
11. INSTALL REPLACEMENT TRENCH DRAIN.
12. CONSTRUCT CEMENT CONCRETE AND ASPHALT PAVEMENT IMPROVEMENTS.
13. STABILIZE SITE PRIOR TO TESC MEASURE REMOVAL.

NOTE: UTILITY REMOVAL/REPLACEMENT WITH TEMPORARY SERVICES AND ALL SITE IMPROVEMENTS ARE DEPENDANT ON CONSTRUCTION PHASING, TRUCK TRAFFIC, AND SITE CONSTRAINTS. THE CONSTRUCTION SEQUENCE MAY BE MODIFIED TO FACILITATE CONSTRUCTION PHASING AND SITE CONDITIONS.

KEY NOTE LEGEND

1. CUT EX. TRENCH DRAIN.
2. INSTALL TEMP. 4"ø PVC CONNECTION FROM TRENCH DRAIN #1 TO TRENCH DRAIN #2.
3. EX. SD WILL BE EXPOSED AT BOTTOM OF EXCAVATION. PROTECT/SHORE AS REQUIRED TO KEEP IN SERVICE.
4. CUT AND INSTALL TEMP. PLUG ON EX. STORM DRAIN.
5. REMOVE EX. STORM DRAIN EXPOSED BY EXCAVATION.
6. INTERCEPT EX. ROOF DRAIN. INSTALL TEMP. 6"ø PVC CONNECTION TO STORM DRAIN TO WEST.
7. INSERT A WYE FOR TEMP. CONNECTION TO EX. STORM DRAIN.
8. REMOVE MONITORING WELL EXPOSED BY EXCAVATION (TYP).
9. INSERT 48"ø SSMH STRUCTURE OVER EX. SIDE SERVICE EXPOSED BY EXCAVATION.
10. CUT AND INSTALL TEMP. PLUG ON EX. SIDE SEWER. PROVIDE WYE/C.O. TO RECEIVE TEMP. PUMP DISCHARGE.
11. INSTALL TEMP. FORCEMAIN FROM NEW SSMH TO NEW WYE. (3"ø PVC, SOLVENT WELD)
12. REMOVE EX. SIDE SEWER EXPOSED BY EXCAVATION.
13. EX. CB TO REMAIN.
14. PLUG CB #8871 AT PENETRATION AND REMOVE STORM DRAIN TO SOUTH.
15. EX. STORM DRAIN TO REMAIN.
16. INSERT NEW CB TYPE 240 OVER EX. STORM DRAIN EXPOSED BY EXCAVATION.
17. INSTALL TEMP. FORCEMAIN (FIRE HOSE) FROM NEW CB TO EX. SDMH #8870.
18. REMOVE APPROX. 40 LF EXTRUDED CONC. CURB.

LEGEND

ASPHALT PAVEMENT REMOVAL

CEMENT CONCRETE REMOVAL

SAWCUT AROUND EXCAVATION AREA AS SHOWN AND REMOVE EXISTING ASPHALT AND CONCRETE PAVEMENT IN ACCORDANCE WITH CONSTRUCTION PHASING REQUIREMENTS.

N

SCALE: 1" = 10'

0 5 10 20

LOCATIONS OF UNDERGROUND PIPES AND APPURTENANCES NOT VISIBLE ON THE SURFACE ARE APPROXIMATE ONLY AND SHALL BE VERIFIED BY THE CONTRACTOR.

CAUTION
LOCATION OF EXISTING UTILITIES SHOWN IS APPROXIMATE AND MAY NOT BE ACCURATE OR ALL INCLUSIVE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY LOCATION OF UTILITIES PRIOR TO PROCEEDING WITH CONSTRUCTION. YOU MUST CALL 1-800-424-5555 NOT LESS THAN 2 FULL BUSINESS DAYS BEFORE BEGINNING EXCAVATION WHERE ANY UNDERGROUND UTILITIES MAY BE LOCATED. FAILURE TO DO SO COULD MEAN BEARING SUBSTANTIAL REPAIR COSTS.

TRIAD ASSOCIATES
12112 115th Ave. NE
Kirkland, WA 98034-6929
425.821.8448
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800.488.0756 toll free
www. triadassociates.net
Land Development Consultants

DEMO, EXCAVATION, AND INTERIM UTILITY PLAN

D.G.I. RAINIER

4058 RAINIER AVENUE S.

CITY OF SEATTLE, WASHINGTON

NO.	DATE	REVISION	BY	CK

REVIEWED BY:

GREGORY T. JUNEAU, PLS
PROJECT MANAGER

GREGORY T. JUNEAU, PLS
PROJECT SURVEYOR

RICHARD A. TOMKINS, PE
PROJECT ENGINEER

PROJECT LANDSCAPE ARCHITECT

FIRST SUBMITTAL DATE: 4/22/11

SCALE: HORIZ.: 1"=10' VERT.: N/A

RICHARD A. TOMKINS
STATE OF WASHINGTON
25841
REGISTERED
PROFESSIONAL ENGINEER

4-22-11

STAMP NOT VALID UNLESS SIGNED AND DATED

JOB NO. 11-021

SHEET NO. C-7 OF C-9

E:\PROJECTS\11021\Dwgfiles\Final\Demo_Paving_Utilities\08075-DEMO.dwg, TDSC7, 08075-T01 08075 08075-BS1 08075-BDR, Rick's Stamp.tif

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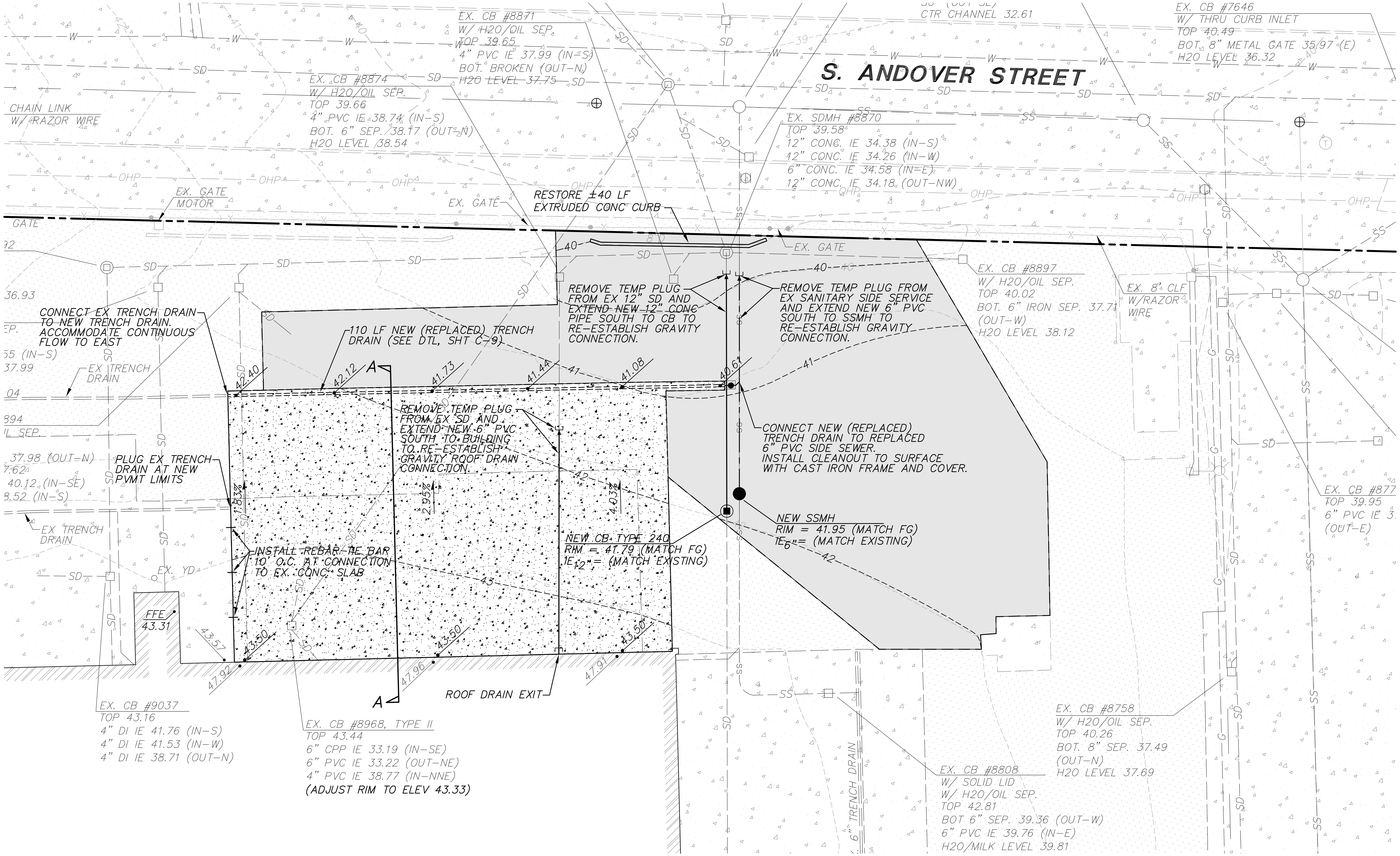

S. ANDOVER STREET
EX. CB #8871
W/ H2O/OIL SEP.
TOP 39.65
4" PVC IE 37.99 (IN-S)
BOT. BROKEN (OUT-N)
H2O LEVEL 37.75
CTR CHANNEL 32.61
EX. CB #7646
W/ THRU CURB INLET
TOP 40.49
BOT. 8" METAL GATE 35.97 (E)
H2O LEVEL 36.32
EX. CB #8874
W/ H2O/OIL SEP.
TOP 39.66
4" PVC IE 38.74 (IN-S)
BOT. 6" SEP. 38.17 (OUT-N)
H2O LEVEL 38.54
CHAIN LINK
W/ RAZOR WIRE
EX. SDMH #8870
TOP 39.58
12" CONC. IE 34.38 (IN-S)
12" CONC. IE 34.26 (IN-W)
6" CONC. IE 34.58 (IN-E)
12" CONC. IE 34.18 (OUT-NW)
EX. GATE MOTOR
EX. GATE
RESTORE ±40 LF
EXTRUDED CONC CURB
GATE
EX. GATE
EX. CB #8897
W/ H2O/OIL SEP.
TOP 40.02
BOT. 6" IRON SEP. 37.71
(OUT-W)
H2O LEVEL 38.12
EX. 8' CLF
W/RAZOR
WIRE
REMOVE TEMP PLUG
FROM EX 12" SD AND
EXTEND NEW 12" CONC
PIPE SOUTH TO CB TO
RE-ESTABLISH GRAVITY
CONNECTION.
REMOVE TEMP PLUG FROM
EX SANITARY SIDE SERVICE
AND EXTEND NEW 6" PVC
SOUTH TO SSMH TO
RE-ESTABLISH GRAVITY
CONNECTION.
CONNECT EX TRENCH DRAIN
TO NEW TRENCH DRAIN.
ACCOMMODATE CONTINUOUS
FLOW TO EAST
110 LF NEW (REPLACED) TRENCH
DRAIN (SEE DTL, SHT C-9)
EX TRENCH
DRAIN
36.93
55 (IN-S)
37.99
42.40
42.12
41.73
41.44
41.08
40.61
REMOVE TEMP PLUG
FROM EX SD AND
EXTEND NEW 6" PVC
SOUTH TO BUILDING
TO RE-ESTABLISH
GRAVITY ROOF DRAIN
CONNECTION.
CONNECT NEW (REPLACED)
TRENCH DRAIN TO REPLACED
6" PVC SIDE SEWER.
INSTALL CLEANOUT TO SURFACE
WITH CAST IRON FRAME AND COVER.
37.98 (OUT-N)
40.12 (IN-SE)
8.52 (IN-S)
PLUG EX TRENCH
DRAIN AT NEW
PVMT LIMITS
EX TRENCH
DRAIN
2.95%
4.03%
1.83%
EX. CB #877
TOP 39.95
6" PVC IE 3
(OUT-E)
NEW SSMH
RIM = 41.95 (MATCH FG)
IE6" = (MATCH EXISTING)
NEW CB TYPE 240
RIM = 41.79 (MATCH FG)
IE12" = (MATCH EXISTING)
INSTALL REBAR TIE BAR
10' O.C. AT CONNECTION
TO EX. CONC. SLAB
EX. YD
FFE
43.31
43.57
43.50
43.50
43.50
47.92
47.96
47.91
A
A
ROOF DRAIN EXIT
EX. CB #9037
TOP 43.16
4" DI IE 41.76 (IN-S)
4" DI IE 41.53 (IN-W)
4" DI IE 38.71 (OUT-N)
EX. CB #8968, TYPE II
TOP 43.44
6" CPP IE 33.19 (IN-SE)
6" PVC IE 33.22 (OUT-NE)
4" PVC IE 38.77 (IN-NNE)
(ADJUST RIM TO ELEV 43.33)
EX. CB #8758
W/ H2O/OIL SEP.
TOP 40.26
BOT. 8" SEP. 37.49
(OUT-N)
H2O LEVEL 37.69
EX. CB #8808
W/ SOLID LID
W/ H2O/OIL SEP.
TOP 42.81
BOT 6" SEP. 39.36 (OUT-W)
6" PVC IE 39.76 (IN-E)
H2O/MILK LEVEL 39.81
6" TRENCH DRAIN

LEGEND

[asphalt hatch]	LIMITS OF NEW ASPHALT PAVEMENT
[concrete hatch]	LIMITS OF NEW CONCRETE PAVEMENT

SEE SHEET C-9 FOR PAVEMENT SECTIONS

N

SCALE: 1" = 10'

0 5 10 20

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PAVING AND PERMANENT UTILITY PLAN

D.G.I. RAINIER

4058 RAINIER AVENUE S.

CITY OF SEATTLE, WASHINGTON

NO.	DATE	REVISION	BY	CK

REVIEWED BY: DATE:

GREGORY T. JUNEAU, PLS
PROJECT MANAGER
GREGORY T. JUNEAU, PLS
PROJECT SURVEYOR
RICHARD A. TOMKINS, PE
PROJECT ENGINEER
PROJECT LANDSCAPE ARCHITECT
FIRST SUBMITTAL DATE: 4/22/11
SCALE: HORIZ.: 1"=10' VERT.: N/A

RICHARD A. TOMKINS
STATE OF WASHINGTON
25841
REGISTERED PROFESSIONAL ENGINEER
4-22-11

STAMP NOT VALID UNLESS SIGNED AND DATED

JOB NO. 11-021

SHEET NO. C-8 OF C-9

GENERAL SEWER AND DRAINAGE NOTES

NOTES #2, 3, 6, 7, 10, 12, 17, 18 AND 19 ARE NOT APPLICABLE TO THIS PROJECT

UNLESS OTHERWISE SPECIFIED:

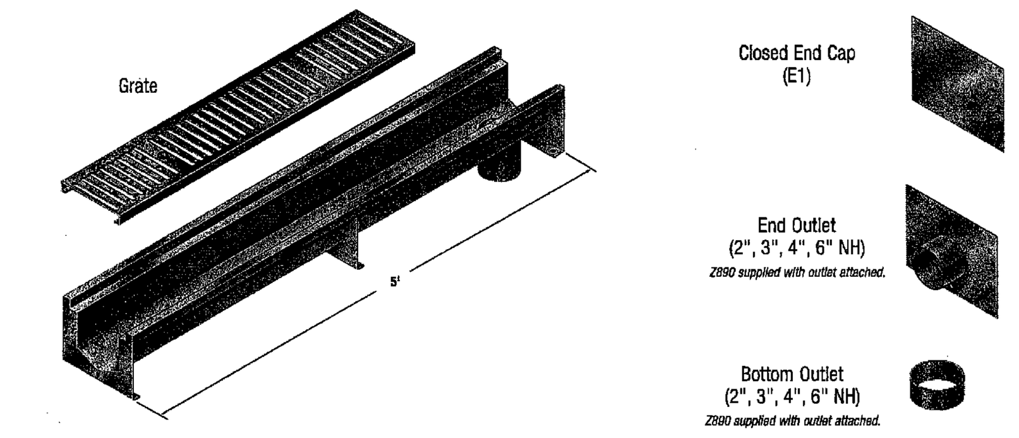
1. CONCRETE PIPE LESS THAN 12" DIAMETER SHALL BE PER ASTM C14 CLASS 3.
4. DUCTILE IRON PIPE SHALL BE PER ANSI A21.51 CLASS 50 WITH PUSH-ON JOINTS. FITTINGS FOR DUCTILE IRON PIPE SHALL BE DUCTILE PER ANSI A21.10 OR ANSI A21.53 WITH PUSH-ON JOINTS. GLANDS ON MECHANICAL JOINT PIPE AND FITTINGS SHALL BE DUCTILE.
5. PVC PIPE AND FITTINGS SHALL BE PER ASTM D3034, SDR35 WITH RUBBER GASKET JOINTS. PVC PIPE FOR PSS AND PSD SHALL BE TESTED FOR EXCESSIVE DEFLECTION WITH A MANDREL PER SECTION 7-17.3(4) OF THE SPECIFICATIONS.
8. BEDDING SHALL BE CLASS B FOR ALL PIPE EXCEPT DUCTILE IRON PIPE, WHICH SHALL BE CLASS D. BEDDING MATERIAL FOR PVC PIPE AND CMP SHALL BE MINERAL AGGREGATE TYPE 22. BEDDING MATERIAL FOR PVC PIPE AND CMP SHALL BE MECHANICALLY COMPACTED TO 95% OF MAXIMUM DRY DENSITY AS MEASURED BY ASTM D-698.
9. TEES ON NEW PIPE LESS THAN 24" DIAMETER SHALL BE PREFABRICATED. TEES ON EXISTING PIPE OR ON NEW PIPE WITHOUT PREFABRICATED. TEES ON EXISTING PIPE OR ON NEW PIPE WITHOUT PREFABRICATED TEES SHALL BE CONNECTED BY CORE DRILLING AND FLEXIBLE CONNECTION. SEE SPECIFICATIONS.
11. TEES, CATCH BASIN CONNECTIONS, SIDE SEWERS, AND SERVICE DRAINS SHALL BE PLACED AT A MIN. SLOPE OF 2% AND A MAX. SLOPE OF 50%. INLET CONNECTIONS SHALL BE PLACED AT A MIN. SLOPE OF 5% AND A MAX. SLOPE OF 50%.
13. SERVICE DRAINS AND SIDE SEWERS SHALL BE CONNECTED OR RECONNECTED AS APPROVED BY THE INSPECTOR.
14. RELAY EXISTING SERVICE DRAINS AND SIDE SEWERS TO CLEAR OVER OR UNDER THE NEW UTILITY AS APPROVED BY THE INSPECTOR.
15. WHERE A NEW PIPE CLEARS AN EXISTING OR NEW UTILITY BY 6" OR LESS, POLYETHYLENE PLASTIC FOAM SHALL BE PLACED AS A CUSHION BETWEEN THE UTILITIES.
16. SERVICE DRAINS AND SIDE SEWERS SHALL NOT BE BACKFILLED UNTIL THE PIPE HAS BEEN INSPECTED AND APPROVED AND THE LOCATION AND DEPTH IS RECORDED BY THE INSPECTOR.

STORM DRAINAGE NOTES:

1. SERVICE DRAINS AND SIDE-SEWERS SHALL BE ONE OR MORE OF THE FOLLOWING:
   A) PVC – ASTM 3034 SDR 35 FOR PIPE 12" IN DIAMETER AND LESS.
   B) CONC – ASTM C-14 CLS FOR PIPE LESS THAN 12" IN DIAMETER.
   C) CONC – ASTM C-76 CL IV FOR PIPE 12" IN DIAMETER OR GREATER.

Z890 SANI-FLO 6" Stainless Steel Drain System

17



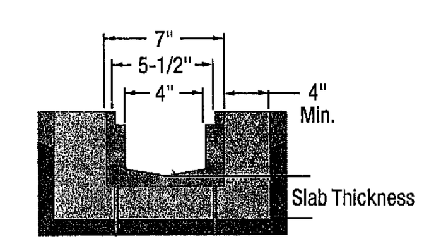
Z890 Applications

Food Processing, Breweries, Dairies, Chemical Plants, Pools, Pharmaceuticals

Features and Benefits

- 60" Modular Sections
- 1.04% Built-In Slope
- Smooth Seamless Construction
- Variety of Gratings – See pages 22-23.
- Custom Fabrications

Installation Specification



4" Throat / 6" Overall Width

Z890 Dimensional Data

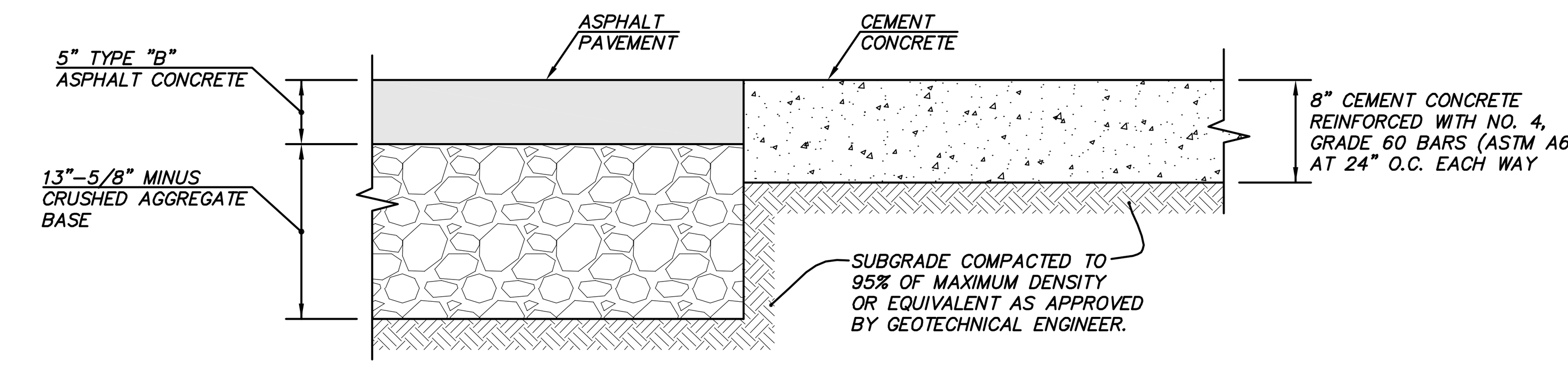
Trench Number	Shallow Invert Inches	Shallow Invert mm	Deep Invert Inches	Deep Invert mm	Max. Flow Rate GPM	Max. Flow Rate LPS	Max. Flow Rate CFS	Approx. Weight (Less Grate) Lbs.	Approx. Weight (Less Grate) Kg
89001	3.50	89	4.13	105	97	6	0.216	20	9.0
89002	4.13	105	4.75	121	124	8	0.276	21	9.5
89002N	4.75	121	4.75	121	–	–	–	22	10.0
89003	4.75	121	5.38	137	151	10	0.336	23	10.4
89004	5.38	137	6.00	152	179	11	0.399	24	10.9
89004N	6.00	152	6.00	152	–	–	–	25	11.3
89005	6.00	152	6.63	168	207	13	0.461	26	11.8
89006	6.63	168	7.25	184	235	15	0.524	27	12.2
89006N	7.25	184	7.25	184	–	–	–	28	12.7
89007	7.25	184	7.88	200	263	17	0.586	29	13.1
89008	7.88	200	8.50	216	292	18	0.651	30	13.6
89008N	8.50	216	8.50	216	–	–	–	31	14.0
89009	8.50	216	9.13	232	321	20	0.715	32	14.5
89010	9.13	232	9.75	248	349	22	0.778	34	15.4
89010N	9.75	248	9.75	248	–	–	–	35	15.9
89011	9.75	248	10.38	264	378	24	0.842	35	15.9
89012	10.38	264	11.00	279	407	26	0.907	37	16.8
89012N	11.00	279	11.00	279	–	–	–	38	17.2
89013	11.00	279	11.63	295	436	28	0.971	39	17.7
89014	11.63	295	12.25	311	465	29	1.036	40	18.1
89014N	12.25	311	12.25	311	–	–	–	41	18.6
89015	12.25	311	12.88	327	494	31	1.101	42	19.0
89016	12.88	327	13.50	343	523	33	1.165	43	19.5
89016N	13.50	343	13.50	343	–	–	–	44	20.0
89017	13.50	343	14.13	359	552	35	1.230	45	20.4
89018	14.13	359	14.75	375	581	37	1.295	46	20.8
89018N	14.75	375	14.75	375	–	–	–	47	21.3
89019	14.75	375	15.38	391	610	39	1.359	48	21.8
89020	15.38	391	16.00	406	639	40	1.424	49	22.2

Engineering Specification Channels shall be 5' long, 6" wide, and have a 4" wide throat. Modular channel sections shall be made of 16-gauge 304 stainless steel and shall be provided with a gasket for flanged connections. Channel shall be provided either flat (neutral) or with a 1.04% pre-slope. Channels shall be available with inverts ranging from 3.5" to 16.00". Choice of class A, B, C, D, E, and F grates shall be available with H-20 and/or FAA load ratings and/or ADA compliance with mechanical lockdown devices. End caps and catch basins shall be available to complement the channels and grates. End outlets, bottom outlets, and side outlets shall be available in 2", 3", 4", and 6" diameters. Trench drain shall be Flo-Thru model Z890.

GDC GRATE ENGINEERING SPECIFICATION: The Zurn P6-GDC, Slotted Grate, Galvanized Ductile Iron Grate, is 5.375 inches wide by 20 inches long, weighing 4.5 lbs per linear foot. The grate has an open area of 28.1 square inches per linear foot, DIN Rating of C, ANSI Rating of Heavy Duty, H-20 Load Rated. Galvanizing (Hot dip) conforms to ASTM specification A123.

GDC - Slotted Grate	
Material: Galvanized Ductile Iron	
DIN Rating:	Class C
Weight:	4.5 lbs/ft.
Open Area:	28.1 in²/ft.
ANSI Rating: Heavy Duty	
Application: Vehicle Traffic	
Slot Width/Hole Size: 0.5"	
ADA:	No
H-20:	Yes
FAA:	No

NOTE:
DEPENDING ON COST AND AVAILABILITY, ZURN MODEL Z886 HDPE TRENCH DRAIN MAY BE SUBSTITUTED WITH OWNER'S APPROVAL. (THIS ALTERNATE WILL ACCEPT P6-GDC GRATE.)

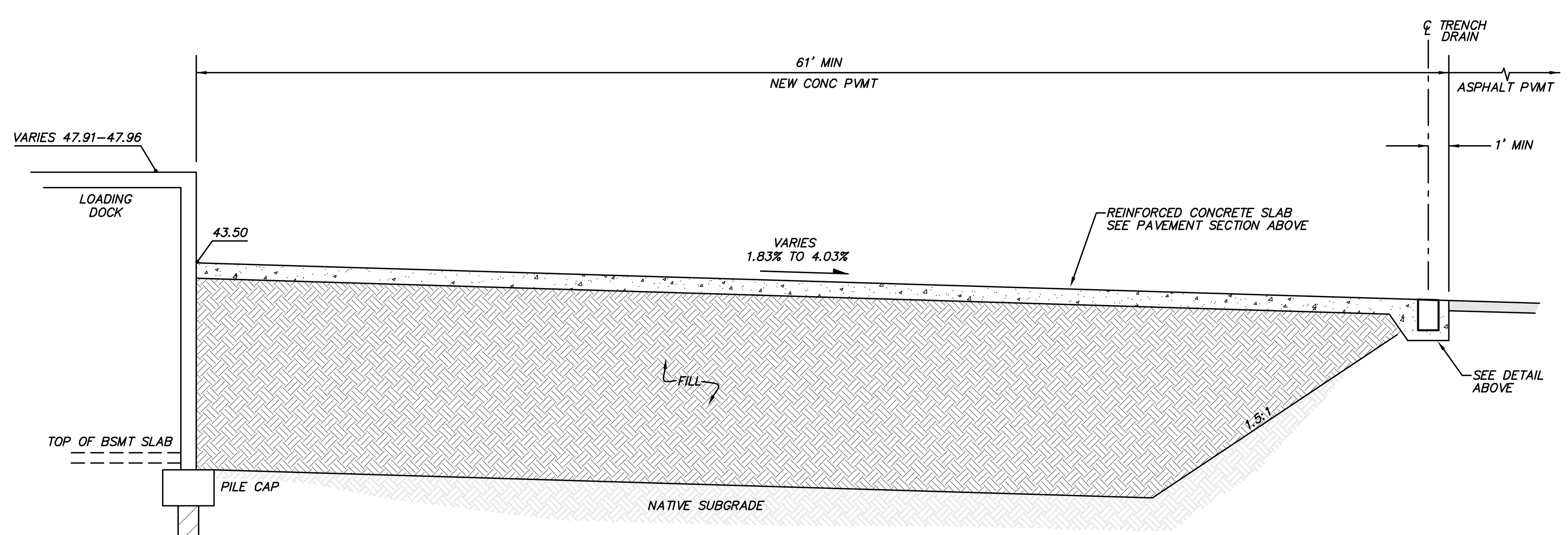


PAVEMENT SECTIONS/ PAVEMENT RESTORATION DETAIL

NOT TO SCALE

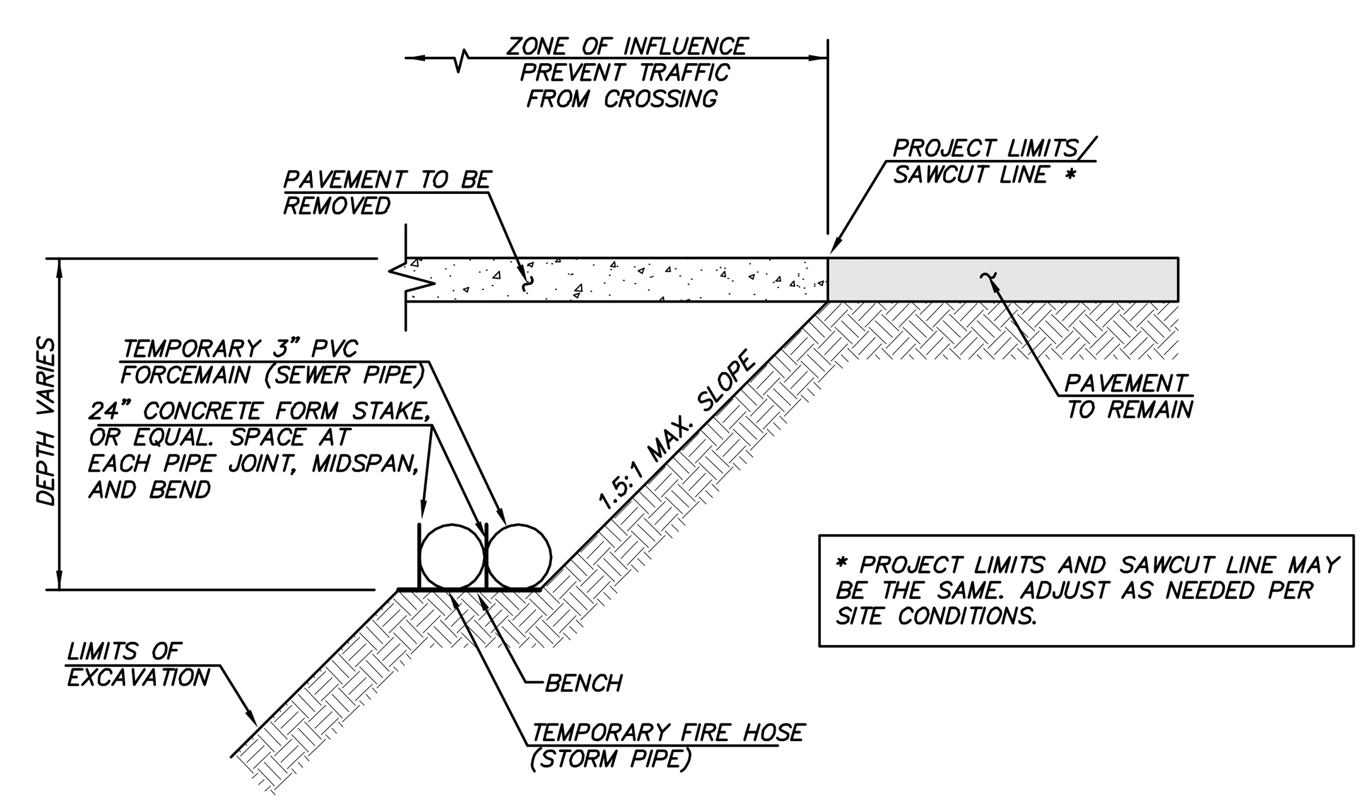
ASPHALT PAVING	CONCRETE PAVING
1 PERIMETER EDGES OF PAVED AREAS SHALL BE THICKENED (GRADUALLY DEEPENED IN A UNIFORM MANNER OVER THE FINAL 3' WIDTH) TO PROVIDE COURSE DEPTHS WHICH ARE EACH 1-1/2 TIMES THOSE NOTED ABOVE.	1 EXCEPT AS OTHERWISE NOTED, MATERIALS AND PROCEDURES ARE TO COMPLY WITH CITY OF SEATTLE STD SPECIFICATION 5-05, CEMENT CONCRETE PAVEMENT.
2 WHERE ASPHALT PAVING EDGES ABUT ANY CONCRETE SURFACE, THE CONCRETE SHALL BE PROPERLY PRIMED TO PREVENT THE INTRUSION OF MOISTURE. NOTE: WORK ADJACENT TO WALLS, CURBS, EXISTING PAVING, ETC. SHALL BE COMPACTED USING HAND OPERATED MECHANICAL EQUIPMENT	2 PERIMETER EDGES OF PAVED AREAS SHALL BE THICKENED (GRADUALLY DEEPENED IN A UNIFORM MANNER OVER THE FINAL 3' WIDTH) TO PROVIDE A 12" CONCRETE DEPTH. EDGE REINFORCEMENT IS TO BE TWO CONTINUOUS NO. 5 BARS.
3 PAVING AREAS SHALL BE COMPACTED TO UNIFORM, SMOOTH, DENSE AND IMPERVIOUS SURFACES, AND PROPERLY SEALED.	3 –THE CONCRETE MIX IS TO BE DESIGNED TO PRODUCE A MINIMUM F'C OF 4000 PSI AT 5-7 DAYS (HIGH-EARLY). –AN AIR ENTRAINMENT ADMIXTURE SHALL BE USED; 6% ± 1.5%.
	4 TRANSVERSE SAW CUT JOINTS SPACED EVERY 12 FEET TO A DEPTH OF 1.5 INCHES BELOW CONCRETE SLAB SURFACE.
	5 JOINT WIDTH OF 3/16" MIN. AND 5/16" MAX.
	6 JOINT SPACING (IN FEET) FOR PLAIN CONCRETE PAVEMENTS SHOULD NOT EXCEED TWICE THE SLAB THICKNESS (IN INCHES) IN ACCORDANCE WITH AASHTO GUIDE FOR DESIGN OF PAVEMENT STRUCTURES SECTION 3.3.2.
	7 CONTRACTION JOINT DEPTH SHOULD BE ONE-FOURTH THE SLAB WIDTH THICKNESS IN ACCORDANCE WITH WASHINGTON DEPARTMENT OF TRANSPORTATION STANDARD PLANS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION STANDARD PLAN A-1.
	8 SAWED CONTRACTION JOINTS SHALL BE FILLED WITH A JOINT SEALANT FILLER IN ACCORDANCE WITH WASHINGTON DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION 2008 SECTION 5-05.3(8)B AND 9-04.2.
	9 CONSTRUCTION JOINTS SHALL BE IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS.

PAVEMENT SECTIONS SHALL BE VERIFIED BY A LICENSED GEOTECHNICAL ENGINEER. ADDITIONAL GRAVEL BASE MAY BE REQUIRED PENDING FIELD CONDITIONS.



SECTION A-A

SCALE: 1"=5'



* PROJECT LIMITS AND SAWCUT LINE MAY BE THE SAME. ADJUST AS NEEDED PER SITE CONDITIONS.

TEMPORARY STORM AND SEWER ROUTING DETAIL

NOT TO SCALE

1. A PRE-CONSTRUCTION MEETING IS REQUIRED BETWEEN OWNER'S REPRESENTATIVES (GEOTECHNICAL SPECIAL INSPECTOR, GENERAL CONTRACTOR, AND EXCAVATION CONTRACTOR) AND DPD SITE INSPECTOR. CONTACT (206) 684-8860 TO ARRANGE MEETING.
2. CONSTRUCTION EROSION CONTROL MEASURES MUST BE IN PLACE AND APPROVED BY DPD PRIOR TO ANY EARTH DISTURBANCE. CALL (206) 684-8860 TO SCHEDULE AN INSPECTION APPOINT FOR THIS ITEM.
3. GRADING MUST BE STABILIZED BY OCTOBER 31ST, AND NO EXCAVATION OR FILL PLACEMENT TO BE PERFORMED BETWEEN OCTOBER 31ST AND APRIL 1ST, UNLESS APPROVED BY THE CITY OF SEATTLE
3. TRENCH BACKFILL AND COMPACTION SHALL BE IN ACCORDANCE WITH WSDOT STANDARDS.

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DETAILS AND NOTES

D.G.I. RAINIER
4058 RAINIER AVENUE S.
CITY OF SEATTLE, WASHINGTON

NO.	DATE	REVISION	BY	CK

REVIEWED BY: DATE:

GREGORY T. JUNEAU, PLS
PROJECT MANAGER
GREGORY T. JUNEAU, PLS
PROJECT SURVEYOR
RICHARD A. TOMKINS, PE
PROJECT ENGINEER
PROJECT LANDSCAPE ARCHITECT
FIRST SUBMITTAL DATE: 4/22/11
SCALE: HORIZ.: N/A VERT.: N/A

RICHARD A. TOMKINS
STATE OF WASHINGTON
25841
REGISTERED PROFESSIONAL ENGINEER
4-22-11

STAMP NOT VALID UNLESS SIGNED AND DATED

JOB NO. 11-021

SHEET NO. C-9 OF C-9

APPENDIX B

City of Seattle Permitting Information

ermit Number:
3009301

CITY OF SEATTLE
Land Use Permit

Department of Planning
and Development
700 Fifth Ave., Suite 2000
P.O. Box 34019
Seattle, WA 98124-4019
(206) 684-8600

APN #: 795030-1240

Site Address: 4058 RAINIER AVE S, SEATTLE, WA
Building ID(s): NONE
Location:

Legal Description: BLKS 7 & 8, SQUIRE'S LAKESIDE ADDN, TGW VAC ALLEY ADJ (VO#87273) & POR VAC RAINIER AV S (VO#40821) & VAC 36TH AV S (VO#113993)
Records Filed At: 4058 RAINIER AVE S

OWNER	APPLICANT	
	JON O'HARE 26456 MARINE VIEW DR S DES MOINES, WA 98198 Ph: (425) 301-9541 Fax: (253) 839-4856	**Application Date:** 07/10/2008 **Issued Date:** 09/15/2008 **Expiration Date:** 09/02/2011 **Fees Paid:** $3,511.25 **As of Print Date:** 09/15/2008
	Primary Applicant	

Description of Project: Land Use Application to allow excavation of 5,000 cubic yards of petroleum laden soil beneath the northwest portion of the truck yard (Darigold). Project includes resurfacing of the same area.

Permit Remarks:

Use: N
TRAO Applies: N
Land Use Conditions: Y
Decision Type: II

Approved Uses	Location
Light Mfg	

Zoning/Overlays:
Commercial2-65
Commercial1-40
Neighborhood Commercial1-30
Contract Rezone
Additional Information on File

Land Use Component Information

Component Type	Component Detail	Outcome
SEPA THRESHOLD DETERMINATION	SEPA DET OF NON SIGNIFICANCE	GRANTED

A/P #	Related Cases/Permits
6175969	Construction and Development Permit

Project Contacts	Name	Phone
Project Facilitator	LAURA KIM	(206) 684-8392
Final Reviewer	LAURA KIM	(206) 684-8392
Zoning Reviewer	CHERYL MOSTELLER	(206) 684-5048

Applicant Signature: _____ **Date:** 9/15/08

This Land Use Permit authorizes the use of the property and/or work described above. Permission is hereby given to develop the site address shown, according to the conditions hereon and according to the specification pertaining thereto, subject to compliance with the Ordinances of the City of Seattle.

Subsequent Demolition, Construction, Site Work, or Mechanical work may require additional permits and may not begin without the appropriate approval. Additional information may be obtained from the Department of Planning and Development at(206) 684-8169.

Department of Planning
and Development
700 Fifth Ave., Suite 2000
P.O. Box 34019
Seattle, WA 98124-4019
(206) 684-8600

CITY OF SEATTLE
Side Sewer Permit

6287616
Permit Number

DISTRICT 9

Site Address: 1130 RAINIER AVE S, SEATTLE, WA
Location:

OWNER'S AGENT	CONTRACTOR	
CRAIG BELCHER PERMITS CONSULTANTS NW 26456 MARINE VIEW DR S DES MOINES, WA 98198 Ph: (206) 295-0613	CLEARCREEK CONTRACTORS 3203 15TH ST EVERETT, WA 98201 Ph: (425) 252-5800 Fax: (425) 252-1093 **Primary Applicant/Installer**	**Application Date:** 06/28/2011 **Issue Date:** 06/28/2011 **Expiration Date:** 12/28/2012 **Fees Paid:** $225.00 **As of Print Date:** 06/28/2011

Description of Work: DEWATERING PERMIT FOR BLDG PERMIT; ASSOC BLDG PERMIT #6282853.

Side Sewer

Activity in the Right-of-Way

Intake Reviewer BERENTSEN, JOSEPH

Curb Crossing and/or Staging: N

Excavation: N

Temporary Dewatering for Construction

Type of Work: Field Review

Drainage Criteria

Flow Control Type:
Treatment Type:
Discharge Point:
Total Development Coverage: Sq. Ft.
New Impervious Surface: Sq. Ft.
New Plus Replace Impervious Surface: Sq. Ft.
Total Area Mitigated by GSI: Sq. Ft.

ATTENTION:
Additional inspection time will be billed at $172.00 per hour per SMC 21.24.021 and Director's Rule 9-2005

Erosion Control required at ground disturbance.

Permitted work must not be covered until inspected. When ready for inspection, make request with the Department of Planning and Development at (206) 684-8900. Provide site address and permit number.

Permission is hereby given to do the above work at the site address shown, according to the conditions hereon and according to the specification pertaining thereto, subject to compliance with Ordinances of the City of Seattle. Correct information is the responsibility of the applicant. Permits with incorrect information may be subject to additional fees. Permit fee includes one hour of inspection. Inspection time includes office, travel, and inspection time. **Call Street Use prior to any work in ROW at (206) 684-5270 or online at SDOTJobStart@seattle.gov**

PERMIT PLACARD MUST REMAIN POSTED AT THE WORK SITE

Permit Number:
6282853

CITY OF SEATTLE
Site Work Permit

Department of Planning
and Development
700 Fifth Ave., Suite 2000
P.O. Box 34019
Seattle, WA 98124-4019
(206) 684-8600

DISTRICT 9

APN #:
795030-1240

Site Address: 4058 RAINIER AVE S, SEATTLE, WA

Location:

Legal Description: BLKS 7 & 8, SQUIRE'S LAKESIDE ADDN, TGW VAC ALLEY ADJ (VO#87273) & POR VAC RAINIER AV S (VO#40821) & VAC 36TH AV S (VO#113993)

Records Filed At: 4058 RAINIER AVE S

OWNER	CONTRACTOR
JAMES WEGNER PO BOX 34377 SEATTLE, WA 98124 Ph: (206) 284-7220	

Application Date:	05/11/2011
Issue Date:	07/13/2011
Expiration Date:	01/13/2013
Fees Paid:	$1,327.50
As of Print Date:	07/13/2011

Description of Work: Excavate approximately 3,000 cubic yards of petroleum-contaminated soil and import clean fill to grade.

Permit Remarks:

GRADING

DPD Valuation: $350,000.00

Special Inspections: Y

Land Use Conditions: Y

Zoning/Overlays:
Commercial2-65
Commercial1-40
Neighborhood Commercial1-30
Contract Rezone
Additional Information on File

A/P #	Related Cases/Permits
3009301	Master Use Permit
6277528	Construction And Development

Project Contacts	Name	Phone
LU Planner	LAURA KIM	(206) 733-9092
Zoning Reviewer	ONUM ESONU	(206) 233-7196
Primary Applicant	JON O'HARE	(425) 301-9541

Applicant Signature: _____ **Date:** 7/13/11

Permitted work must not progress without prior inspection approval. When ready for inspection, make request with the Department of Planning and Development at (206) 684-8900 or on the internet at: www.seattle.gov/dpd/inspectionrequest. Provide the permit number, site address, and contact phone.

Permission is given to do the above work at the site address shown, according to the conditions hereon and according to the specification pertaining thereto, subject to compliance with the Ordinances of the City of Seattle. Correct information is the responsibility of the applicant. Permits with incorrect information may be subject to additional fees.

THIS PERMIT MUST BE CONSPICUOUSLY POSTED AT THE WORK SITE

April 27, 2011

Darigold, Inc.
Post Office Box 34377
Seattle, Washington 98124-1377

Attention: Mr. Steven Rowe
Senior Vice President and General Counsel

Subject: **Assumption of Geotechnical Engineer of Record Duties**
DGI Rainier Project – DPD Project # 6175969
Interim Remedial Excavation and Parking Lot Restoration
Project No. 090066-004-01

Reference: Letter Report Titled "*Geotechnical Engineering Evaluation, Interim Remedial Excavation and Parking Lot Restoration, Darigold Facility – North Yard, 4058 Rainier Avenue South, Seattle, Washington*", dated June 12, 2008, prepared by Sound Environmental Strategies and Adapt Engineering

Dear Mr. Rowe:

As per the correction notice for the permit application from the City of Seattle, Department of Planning and Development (DPD), Aspect Consulting, LLC (Aspect) has prepared this letter of the review of the revised plans and the referenced report. Since the preparation of that report, the remediation proposal has been revised by Aspect to simplify some items of the remediation. The proposal now is composed of a two-staged open excavation which allows loading dock access during the removal and replacement process. The proposed maximum depth of the excavation is to be 10 feet.

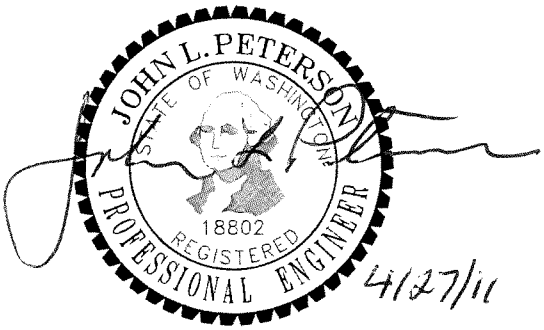
Upon review of the referenced report, Aspect finds the report's proposed geotechnical recommendations and criteria for the excavation and fill/pavement placement to be satisfactory and Aspect has no modifications to amend the report. One item has been eliminated from the remediation proposal and therefore the recommendations for CDF walls are not required.

Limitations

Work for this project was performed and this letter prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of Darigold, Inc. for specific application to the referenced property. This letter does not represent a legal opinion. No other warranty, expressed or implied, is made.

Sincerely,

Aspect consulting, LLC



John L. Peterson, PE
Senior Associate Geotechnical Engineer
jpeterson@aspectconsulting.com

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Aspect CONSULTING

April 27, 2011

Darigold, Inc.
Post Office Box 34377
Seattle, Washington 98124-1377

Attention: Mr. Steven Rowe
Senior Vice President and General Counsel

Re: Review of Revised Drawings and Minimum Risk Statement
DGI Rainier Project – DPD Project # 6175969
Interim Remedial Excavation and Parking Lot Restoration
Project No. 090066-004-01

Dear Mr. Rowe:

As required by the City of Seattle, Department of Planning and Development (DPD), Aspect Consulting, LLC (Aspect) has prepared this review letter of the revised submittal drawing sheets. The revised drawing sheets reviewed by Aspect were C-1 through C-6, dated 4-27-2011, and sheets C-7 through C-9 prepared by Triad, dated 4-22-2011. Aspect finds these drawings incorporate the geotechnical recommendations as presented by Aspect and Adapt Engineering.

Aspect states that these drawings, as detailed above, have been reviewed and conform to the recommendations of the analysis and letter reports. Provided the conditions and recommendations are satisfied, the construction and development will not increase the potential for soil movement. The risk of damage to the proposed development and from the development to adjacent properties from soil instability will be minimal.

We are pleased to have the opportunity to work with you on this project. If you have questions, please do not hesitate to call me at (206) 780-7720.

Sincerely,

Aspect consulting, LLC

John L. Peterson, PE
Senior Associate Geotechnical Engineer
jpeterson@aspectconsulting.com

V:\090066 Darigold\Rainier Avenue Facility\Deliverables\Minimum Risk Letter\darigold min risk letter.doc

Dongseed
ECA Slide/Geo
Please

City of Seattle
Department of Planning & Development
Engineering Services

JON O'HARE
26456 Marine View Dr S
Des Moines, WA 98198

Re: Project# 6175969

Correction Notice #1

Review Type	Eca Slide	**Date**	July 09, 2008
Project Address	4058 Rainier Ave S	**Designer**	
Contact Phone	(425) 301-9541	**Architect**	
Contact Fax	(253) 839-4856	**Engineer**	
Contact Email	jon@lallenassociates.com	**Struct Engineer**	
Owner		**Geotechnical**	
DPD Reviewer	Jim Mattoon	**Reviewer Phone**	(206) 684-5979
Address	Department of Planning & Development 700 5th Ave Suite 2000 PO Box 34019 Seattle, WA 98124-4019	**Reviewer Fax**	
		Reviewer Email	jim.mattoon@seattle.gov

Applicant Instructions

Please see the attached flyer to learn "How to Respond to a DPD Correction Notice".
If the 3-step process outlined in the aforementioned document is not followed, it is likely that there will be a delay in permit issuance and there is a potential for penalty fees.

Codes Reviewed

This project has been reviewed for conformance with the following codes: 2006 Seattle Building Code (SBC); 2006 Seattle Residential Code (SRC); Seattle Stormwater, Grading and Drainage Control Code; Environmentally Critical Areas Regulations (ECA).

Corrections

1 SMC 22.804.160 A. Provide a geotechnical report that summarizes subsurface information and presents recommendations for excavation and backfill and addresses the proposed work.

2 SMC 22.804.160.A. Provide environmental studies to support the anticipated vertical extent of contaminated soil. If contamination extends below the bottom of the proposed excavation (10 feet below existing ground surface), what mitigation effort will be used to remove contamination? Furthermore, on Sheet C-4, a portion of the proposed excavation is called out as contingency excavation. Please define on the plans what this means.

3 SMC 22.804.160 A. Please provide additional cross-sections showing cut slopes along the south side of the excavation and along the "contingency" portion of the excavation.

4 SMC 22.804.160 A. Please identify the stockpile location shown on Sheet C5 and the stockpile detail provided on Sheet C6 as imported structural fill. Will contaminated soil be stockpiled on site? Please provide written comment by the environmental engineer regarding removal and/or temporary stockpile of contaminated soil and incorporate on the plans.

5 SMC 25.09.080 D and 22.808.130 A.1. Liability insurance is required by the ECA and Grading Codes. Contact Keith Ayling of City Risk Management at 206-386-4531 to facilitate submittal of insurance forms from the contractor's insurance agent. Be prepared to provide the names of the excavation and shoring contractors.

Designed Phase Drainage

City of Seattle
Department of Planning & Development
Engineering Services

JON O'HARE
26456 Marine View Dr S
Des Moines, WA 98198

Re: Project# 6175969

Correction Notice #1

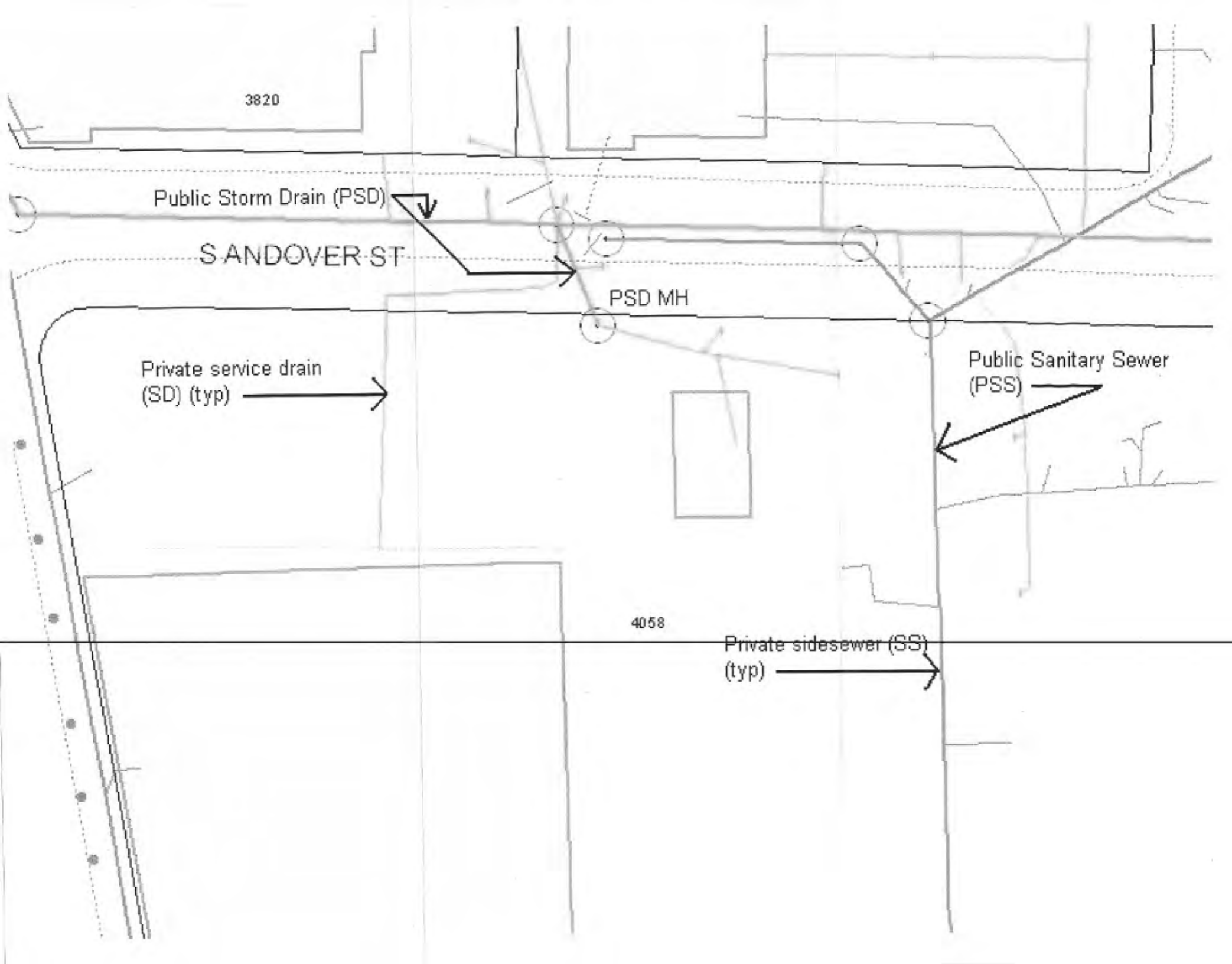
Review Type	Drainage, Grading	**Date**	July 11, 2008
Project Address	4058 Rainier Ave S	**Designer**	
Contact Phone	(425) 301-9541	**Architect**	
Contact Fax	(253) 839-4856	**Engineer**	
Contact Email	jon@lallenassociates.com	**Struct Engineer**	
Owner		**Geotechnical**	
DPD Reviewer	Kevin Donnelly	**Reviewer Phone**	(206) 684-5051
Address	Department of Planning & Development 700 5th Ave Suite 2000 PO Box 34019 Seattle, WA 98124-4019	**Reviewer Fax**	
		Reviewer Email	Kevin.Donnelly@seattle.gov

Corrections

1 This project is required to obtain a Side Sewer Permit for Temporary Dewatering (SSPTD) prior to issuance of the construction permit. Please see DPD Client Assistance Memo 506 and Director's Rule 3-2004 for information. Contact Susie Larson of Seattle Public Utilities (SPU) at 684-5158 or susie.larson@seattle.gov with questions and to begin the process for these permits. SPU will inform you and this reviewer when the SSPTD may be issued by DPD. The SSPTD may then be obtained at DPD's ASC, 20th Floor Seattle Municipal Tower, 700 5th Avenue. The permit fee is $225 plus $750 for SPU's review.

2 There are descrepancies between the base site plan used in the building permit application plan sets and our records, which are only as good as the permits we have on record. Most significant are the connections of the unrecorded SS (notes 7 and 7a), "Ex SDMH #8870", and this MHs undocumented double connection to "Ex SSMH #7651" and "Ex SDMH #7653."

Attached is a GIS map, with annotation, showing the extent of our sewer and service drain records in the work area. Please re-investigate and clarify.


3820
Public Storm Drain (PSD)
S ANDOVER ST
PSD MH
Private service drain
(SD) (typ)
Public Sanitary Sewer
(PSS)
4058
Private sidesewer (SS)
(typ)

City of Seattle
Department of Planning & Development
Engineering Services

JON O'HARE
26456 Marine View Dr S
Des Moines, WA 98198

Re: Project# 6175969

Correction Notice #2

Review Type	Geo Soils, Eca Liqfac	**Date**	January 07, 2009
Project Address	4058 Rainier Ave S	**Designer**	
Contact Phone	(425) 301-9541	**Architect**	
Contact Fax	(253) 839-4856	**Engineer**	
Contact Email	jon@permitcnw.com	**Struct Engineer**	
Owner		**Geotechnical**	
DPD Reviewer	Jim Mattoon	**Reviewer Phone**	(206) 684-5979
Address	Department of Planning & Development 700 5th Ave Suite 2000 PO Box 34019 Seattle, WA 98124-4019	**Reviewer Fax**	(206) 233-7902
		Reviewer Email	jim.mattoon@seattle.gov

Applicant Instructions

Please see the attached flyer to learn "How to Respond to a DPD Correction Notice".
If the 3-step process outlined in the aforementioned document is not followed, it is likely that there will be a delay in permit issuance and there is a potential for penalty fees.

Project Description: "Excavate up to approx 5,000 cubic yards of petroleum contaminated soil. backfill, and restore to original grades to the north of existing food processing bldg per plan."

References:
A. "Geotechnical Engineering Evaluation, Interim Remedial Excavation and Parking Restoration, Darigold Facility - North Yard, 4058 Rainier Avenue South, Seattle, Washington", a report by Sound Environmental Strategies (signed and stamped by Kurt W. Groesch, P.E. of Adapt Engineering, Inc.), for Darigold, Inc., dated June 12, 2008.
B. "Interim Corrective Action Plan, Rainier Avenue Facility, 4058 Rainier Avenue South, Seattle, Washington", a report by Sound Environmental Strategies, for Darigold, Inc., dated July 28, 2008.

Codes Reviewed

This project has been reviewed for conformance with the following codes: 2006 Seattle Building Code (SBC); 2006 Seattle Residential Code (SRC); Seattle Stormwater, Grading and Drainage Control Code; Environmentally Critical Areas Regulations (ECA).

Corrections

1 SMC 25.09.080 D and 22.808.130 A.1. **Repeated correction item**. Liability insurance is required by the ECA and Grading Codes **prior to permit issuance. Therefore, as a reminder please contact Keith Ayling of City Risk Management via the preferred means of e-mail at keith.ayling@seattle.gov, or by phone** at 206-386-4531 to facilitate submittal of insurance forms from the contractor's insurance agent. Be prepared to provide the names of the excavation and shoring contractors.

2 SMC 22.804.040 C.2.d.iv. Provide a signed and stamped letter from the geotechnical engineer that includes review of the plans and provides a minimal risk statement in accordance with Director's Rule 33-2006 (see Site Evaluation Checklist in Director's Rule). The plan review/minimal risk letter must be based upon review of plans with all substantial geotechnical recommendations incorporated.

3 SMC 22.804.180 C. Reference A was signed and stamped by a geotechnical engineer from Adapt Engineering, Inc. DPD considers this geotechnical engineer as the Geotechnical Engineer of Record. Nominate a geotechnical engineering firm on the enclosed DPD Geotechnical Special Inspections Schedule form. This form must be signed by the owner or owner's representative. The Inspection Agency must be the same engineer/firm that prepared the geotechnical report. If the owner nominates a new engineer/firm to act as the Geotechnical Special Inspector, the new engineer must review the original geotechnical report and submit a letter indicating a review was performed, along with a statement of agreement with the evaluation and provisions contained in the report. If the new engineer does not agree with aspects of the report, rebuttal evaluations and recommendations must included in the review letter. The plans must be revised accordingly and submitted to DPD for review.

City of Seattle
Department of Planning & Development
Engineering Services

JON O'HARE
26456 Marine View Dr S
Des Moines, WA 98198

Re: Project# 6282853

Correction Notice #1

Review Type	GEO SOILS	**Date**	May 19, 2011
Project Address	4058 Rainier Ave S	**Contact Phone**	(425) 301-9541
Contact Email	jon@permitcnw.com	**Contact Fax**	(253) 839-4856
DPD Reviewer	Jim Mattoon	**Address**	Department of Planning & Development 700 5th Ave Suite 2000 PO Box 34019 Seattle, WA 98124-4019
Reviewer Phone	(206) 684-5979		
Reviewer Fax			
Reviewer Email	Jim.Mattoon@seattle.gov		
Owner			
		Geotechnical	ASPECT CONSULTING LLC

Applicant Instructions

Please see the attached flyer to learn "How to Respond to a DPD Correction Notice".
If the 3-step process outlined in the aforementioned document is not followed, it is likely that there will be a delay in permit issuance and there is a potential for penalty fees.

Project Description: "Excavate approximately 3,000 cubic yards of petroleum-contaminated soil and import clean fill to grade."

References:
A. "Geotechnical Engineering Evaluation, Interim Remedial Excavation and Parking Lot Restoration, Darigold Facility - North Yard, 4058 Rainier Avenue South, Seattle, Washington", a report by Sound Environmental Strategies, dated June 12, 2008.
B. "Assumption of Geotechnical Engineer of Record Duties, DGI Rainier Project, DPD Project # 6175969, Interim Remedial Excavation and Parking Lot Restoration, Project No. 090066-004-01", a letter by Aspect Consulting, dated April 27, 2011.
C. "Review of Revised Drawings and Minimum Risk Statement, DGI Rainier Project, DPD Project # 6175969, Interim Remedial Excavation and Parking Lot Restoration, Project No. 090066-004-01", by Aspect Consulting, dated April 27, 2011.

Codes Reviewed

This project has been reviewed for conformance with the following codes: 2009 Seattle Building Code (SBC); Grading Code; Environmentally Critical Areas Regulations (ECA).

Corrections

1 SMC 25.09.080 D and 22.170.080 A.1. Liability insurance is required by the ECA and Grading Codes. Contact Keith Ayling of City Risk Management **via the preferred means of e-mail at keith.ayling@seattle.gov, or by phone** at 206-386-4531 to facilitate submittal of insurance forms from the contractor's insurance agent. Be prepared to provide the names of the excavation and shoring contractors.

2 SMC 22.170.130. Nominate a geotechnical engineering firm on the enclosed DPD Geotechnical Special Inspections Schedule form. This form must be signed by the owner or owner's representative. The Inspection Agency must be the same engineer/firm that prepared the geotechnical report. If the owner nominates a new engineer/firm to act as the Geotechnical Special Inspector, the new engineer must review the original geotechnical report and submit a letter indicating a review was performed, along with a statement of agreement with the evaluation and provisions contained in the report. If the new engineer does not agree with aspects of the report, rebuttal evaluations and recommendations must be included in the review letter. The plans must be revised accordingly and submitted to DPD for review. Please do not fill in special inspection items on the enclosed form.

☐ **Revised Schedule** ☐ **Addition to Previous Schedule**

DPD Geotechnical Inspections Schedule

Project Number	6282853	**Date**	May 25, 2011
Project Address	4058 Rainier Ave S	**DPD Plan Examiner**	
Architect		**Architect Phone**	
Engineer		**Engineer Phone**	
Site Reviewer	Jim Mattoon		

Prior to issuance of a building permit, the owner, architect, or engineer acting on behalf of the owner shall appoint an inspection agency and shall sign and submit this form to the building official.

Property Owner, Architect, or Engineer Signature

I hereby certify that the geotechnical engineer named below has been engaged to perform the special inspections outlined below as required by the Seattle Building Code. It is the responsibility of the owner or the owner's designee to notify the inspection agency or observer in a timely manner when the inspections listed below are required.

Signature _____ Title Director Regulatory Date 6-2-11 Phone Number 206-216-2876

Required Special Inspections

Geotechnical Engineering Firm Name	**Geotechnical Engineering Firm Phone**
ASPECT CONSULTING LLC	(206) 780-9370

	Inspection Type	**Description**
1.	MONITOR DEWATERING	temporary
2.	EROSION CONTROL - TEMPORARY	
3.	OBSERVE AND MONITOR EXCAVATION	
4.	VERIFY FILL & COMPACTION	
5.	MONITOR GRADING SEASON RESTRIC	

Call (206) 684-8860 to schedule a pre-construction conference before the start of construction

City of Seattle
Department of Planning & Development
Engineering Services

JON O'HARE
26456 Marine View Dr S
Des Moines, WA 98198

Re: Project# 6282853

Correction Notice #1

Review Type	DRAINAGE	**Date**	May 25, 2011
Project Address	4058 Rainier Ave S	**Contact Phone**	(425) 301-9541
Contact Email	jon@permitcnw.com	**Contact Fax**	(253) 839-4856
DPD Reviewer	Kevin Donnelly	**Address**	Department of Planning & Development 700 5th Ave Suite 2000 PO Box 34019 Seattle, WA 98124-4019
Reviewer Phone	(206) 684-5051		
Reviewer Fax			
Reviewer Email	Kevin.Donnelly@seattle.gov		
Owner			
		Geotechnical	ASPECT CONSULTING LLC

Corrections

1 This project will remove an impervious cap over the contaminated area, exposing the ground during excavation to stormater. Because the stormwater should not be allowed to infiltrate until after all of the contaminated soil is removed, Note 2 on Sheet C-6 should be removed.

2 Please show and note on the plans provisions for dewatering the excavation while exposed to the weather, regardless of encountering the water table.

3 The stormwater falling into the excavtion during work shall be discharged to the sanitary sewer. Please show this on the plans.

This project is required to obtain a Side Sewer Permit for Temporary Dewatering (SSPTD) prior to issuance of the construction permit. Please see DPD Client Assistance Memo 506 and Director's Rule 3-2004 for information. Contact the King County Industrial Waste Program at 206-263-3000 with questions and to apply for discharge authorization.

After obtaining written King County approval, bring their authorization letter to DPD's ASC, 20th Floor Seattle Municipal Tower, 700 5th Avenue. A SSPTD will be issued upon application and will cost $225.

City of Seattle
Department of Planning and Development

ENVIRONMENTAL (SEPA) CHECKLIST

(Revised 12/12/2008)

Purpose of Checklist

The State Environmental Policy Act (SEPA), Chapter 43.21 RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from your proposal, if it can be done) and to help the agency decide whether an EIS is required.

Instructions for Applicants

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply". Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Use of Checklist for Nonproject Proposals

Complete this checklist for nonproject proposals, even though questions may be answered "does not apply". IN ADDITION, complete the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (Part D). For nonproject actions, the references in the checklist to the words "project", "applicant", and "property or site" should be read as "proposal", "proposer", and "affected geographic area",respectively.

A. BACKGROUND

1. Name of proposed project, if applicable:

Rainier Avenue Facility Remedial Excavation

2. Name of applicant:

Sound Environmental Strategies Corporation, on behalf of Darigold, Inc.

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

Address: 2400 Airport Way South, Suite 200, Seattle, WA 98134

Phone: 206.306.1900

Contact: Dee Gardner

4. Date checklist prepared:

March 2008

5. Agency requesting checklist:

City of Seattle Department of Planning & Development

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

July –August 2008 for an estimated duration of approximately 4 weeks.

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

No, not connected to this proposal.

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

The following reports summarize the history of the property development and use since the 1920s, describe the decommissioning of a former vehicle-fueling station and removal of underground storage tanks (USTs) from the north end of the property in 1998 and 2004, document the extent of petroleum hydrocarbons in soil and groundwater, and evaluate technology alternatives for cleanup of the property:

ENVIRON International Corporation. 2004. *Phase I Environmental Site Assessment, WestFarm Foods, 4058 Rainier Avenue South, Seattle, Washington.* May.

Integral Consulting Inc. 2003. *Site Investigation Report, WestFarm Foods, 4058 Rainier Avenue South, Seattle, Washington.* February 25.

Integral Consulting Inc. 2003a. Letter, Assessment Options of Future Action – Rainier Facility USTs. May 27.

Slotta Design & Construction. 1998. *Underground Storage Tank Site Assessment Report.* October 23.

Sound Environmental Strategies Corporation. 2004. *UST Decommissioning and Site Assessment, WestFarm Foods Rainier Facility, 4058 Rainier Avenue South, Seattle, Washington.* March 3.

Sound Environmental Strategies Corporation. 2004a. *Groundwater Investigation, WestFarm Foods - Rainier Facility, 4058 Rainier Avenue South, Seattle, Washington.* June 22.

Sound Environmental Strategies Corporation. 2005. *Groundwater Monitoring Report for November 2004, WestFarm Foods, 4058 Rainier Avenue South, Seattle, Washington.* January 11.

Sound Environmental Strategies Corporation. 2005a. *Technical Memorandum, Status of Fluid Extraction, WestFarm Foods – Rainier Facility, 4058 Rainier Avenue South, Seattle, Washington.* June 24.

Sound Environmental Strategies Corporation. 2005b. *Remedial Alternatives Analysis, WestFarm Foods – Rainier Facility, 4058 Rainier Avenue South, Seattle, Washington.* July 8.

In addition, the results of quarterly groundwater monitoring activities conducted since Fourth Quarter 2006 are summarized in Semi-Annual Groundwater Monitoring Reports prepared by Sound Environmental Strategies Corporation. First Quarter 2008 groundwater elevation contours and the estimated direction of groundwater flow beneath the north end of the property are depicted on Figure 3. Groundwater analytical results through First Quarter 2008 are summarized on Figure 4.

A compilation of the results of soil and groundwater sampling and analysis documented in the above-listed reports is summarized on Figure 5 and forms the basis for the scope of the proposal. The scope of excavation proposed herein is illustrated on Figure 6 and described below in Question 11.

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.

SES is not aware of any other pending proposals that directly affect the scope of this proposal. SES is aware that Darigold plans to submit at least one other SEPA checklist to the City of Seattle in spring 2008. Darigold's pending submittal pertains to a petition to re-zone the eastern third of the property. The proposal described herein pertains

to an environmental cleanup in the northwestern portion of the property as shown on Figure 6.

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

SEPA, Temporary Erosion and Sedimentation Control Plan, Grading Plan, and Grading Permit

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project. 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.)

Excavate approximately 5,000 bank cubic yards of petroleum-contaminated soil from the vicinity of former vehicle fueling facility. Load excavated soil directly into truck-and-trailers for transportation to off-property disposal facility for treatment or disposal. Restore grades to original using an estimated 10-20 percent controlled density fill (CDF) to shore sidewalls and 80-90 percent import granular fill. Excavation activities will proceed in "cells" measuring approximately 20 to 30 feet on each side to accommodate truck traffic and minimize the area of exposed excavation. Depth of excavation will be 10 to 15 feet below existing grades. Four additional 15- by 30-foot areas and one 10- by 50-foot area are included in the proposal as a contingency. The proposed area and depths of excavation are summarized on Figure 6.

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.

The property is located at 4058 Rainier Avenue South, Seattle, WA as shown on Figure 1, Property Location Map.

Section, Township and Range for the proposal is as follows: NW quarter of the SW quarter of Section 15, Township 24 North, Range 4 East.

The King County Parcel Number is 7950301240 and the legal description is:

SQUIRES LAKESIDE ADD ALL LOTS BLOCK 8 TGW POR VAC RAINIER AVE ADJ & VAC ALLEY ADJ TGW LOTS 1-38 BLOCK 7 OF SD PLAT & TGW VAC 36TH AVE ADJ PER VO #113993 SD BLKS 7 & 8 THOF

The proposal applies to an approximate 80- by 120-foot area situated between the north end of the existing building and South Andover Street as shown on Figures 2 through 6.

B. ENVIRONMENTAL ELEMENTS

1. Earth

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

b. What is the steepest slope on the site (approximate percent slope)? 5%

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.

Clay

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.

An estimated 1,000 cubic yards of CDF and 4,000 cubic yards of granular fill will be imported to restore grades to original and replace the volume of petroleum-contaminated soil that was removed. A borrow site has yet to be identified; however numerous borrow pits exist in King County that would meet the physical and chemical criteria for structural fill.

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

In general, no. The project is situated in a relatively flat-lying area at the bottom of the Rainier Valley and the work area is paved (Also see h. below). Components of the proposal that will further minimize the risk of erosion are described below in B.1.h.

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

The area of impervious surface within the project area will be unchanged by the proposal at 100 percent before and after. The estimated area of impervious surface at the property, 65 percent, will be unchanged by the proposal.

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

The proposal will be conducted in accordance with an approved Temporary Erosion Control Plan, construction will be scheduled during the statistically drier summer months, and proceed as a series of approximate 400 to 3,000 square foot cells to limit the area exposed to the elements at any given point in time. The proposal includes prompt restoration of existing paved surfaces.

2. Air

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

Emissions associated with plant operations (vehicle exhaust) will be unchanged by the proposal. Dust, vehicle exhaust, and petroleum odors can be expected during construction, and engineering controls will be implemented to minimize those. The completed proposal will not generate emissions.

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

There are no known off-site sources of odor that may affect our proposal.

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

Use sprinklers to minimize any dust generated by concrete demolition activities.

Restrict the area of open excavation to less than approximately 400 to 900 square feet at any given time to minimize petroleum odors.

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.

There is no surface water body on or in the immediate vicinity of the site.

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.

No.

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.

No.

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

Not applicable.

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

No, the proposal does not lie within a 100-year floodplain.

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.

No, the proposal does not involve any discharges of waste materials to surface water.

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.

The proposal anticipates a contingency to remove approximately 5,000 gallons of groundwater in the event that separate-phase hydrocarbons are encountered on the groundwater table. Otherwise, the depth of the excavation will be limited to the volume of soil that is accessible above the groundwater table.

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.

No waste materials will be discharged into the ground.

c. Water Runoff (including storm water):

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 existing storm and sanitary sewer infrastructure is illustrated on Figure 2. Under the current and proposed conditions surface runoff is intercepted by a series of roof drains, footing drains, sumps and catch basins that discharge to municipal underground storm sewer infrastructure in South Andover Street. The existing drainage infrastructure will either be protected and maintained during excavation (e.g. footing drains) or temporarily re-routed and repaired to original upon completion of the proposal (e.g. roof downspouts).

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

No, the objective of the proposal is to reduce the existing mass of petroleum hydrocarbons that is already in contact with soil and the groundwater table. The mobility of petroleum hydrocarbons is expected to increase temporarily during excavation activities and diminish once excavations are backfilled. The existing network of resource conservation wells (monitoring wells) will be monitored on a quarterly basis for at least one year following excavation to document on-going improvement of groundwater quality within and surrounding the work area.

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

Surface runoff that is not intercepted by the existing storm infrastructure will be diverted around areas of open excavation.

The depth of each excavation cell will be limited to the volume of soil nominally at above the groundwater table.

Perched groundwater will be controlled through the selective use of controlled density fill.

The proposal assumes that soil conditions in the base of each excavation cell will be water-bearing and warrant the use of granular backfill for structural fill.

4. Plants

a. Check or circle types of vegetation found on the site:
_X deciduous tree: alder, **MAPLE**, aspen, **OTHER**
__ evergreen tree: fir, cedar, pine, other
_X shrubs
_X grass
__ pasture
__ crop or grain
__ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
__ water plants: water lily, eelgrass, milfoil, other
__ other types of vegetation

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

A 2-foot wide, 100-foot long, non-irrigated landscaping strip along the north boundary of the site will be removed to facilitate truck traffic during construction. The strip supports small trees and a hedge.

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

No threatened or endangered species are known to be on or near the site.

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

None proposed.

5. Animals

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

birds: hawk, heron, eagle, **SONGBIRDS**,
other:_____

mammals: deer, bear, elk, beaver,
other:_____

fish: bass, salmon, trout, herring, shellfish,
other:_____

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

None known.

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

No.

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

None proposed.

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.

The completed project will not need energy.

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

The proposal would not affect the potential use of solar energy on-site or on adjacent properties.

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:

Scheduling the project during the summer months will eliminate the need for lighting during permitted work hours.

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.

The objective of the proposal is the remediation of an historical spill of petroleum hydrocarbons to soil and groundwater. The outcome of the proposal will be the reduction and mitigation of environmental hazards, risks of exposure, and fire hazards, if any exist.

During construction, work will proceed under the scope of a health and safety plan and excavation plan to minimize worker exposure to petroleum hydrocarbons. Efforts to protect workers from exposure to petroleum hydrocarbons will further protect the public at large.

1) Describe special emergency services that might be required.

No special emergency services are required.

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

Area of open excavation will be limited to approximately 400 to 900 square foot areas to mitigate odors during construction.

b. Noise

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

Street traffic associated with Rainier Avenue South, and truck traffic and refrigerator compressor noise associated with on-going facility operations at 4058 Rainier Avenue South will add to the noise associated with construction of the proposal.

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 site.

Noise associated with long-term sources will not be affected by the proposal. Over the short-term the proposal will generate construction noise (concrete demolition, operation of excavating equipment and dumptrucks) during daylight hours of 7am to 7pm.

3) Proposed measures to reduce or control noise impacts, if any:

Excavated soil will be direct-loaded into truck-and-trailer to prevent re-handling. Permitted work hour restrictions will be observed.

8. Land and Shoreline Use

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

The site is developed as a dairy processing plant. Adjacent properties to the east and west are residential. There is a retail supermarket complex across the street to the north. The land across the street to the south provides parking for employees at the dairy processing plant, and supports a vehicle maintenance shop.

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

No agricultural uses at the site have been documented since at least 1940.

c. Describe any structures on the site.

The scope of the proposal does not overlap with the footprints of any existing structures at the property.

Metro bus routes 9 and 34 can be accessed approximately at Rainier Avenue's intersection with South Andover Street across the street from the proposal.

Metro bus route 7 can be accessed at Rainier Avenue's intersection with South Dakota Street approximately 0.1 miles south of the proposal.

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

The proposal would neither create nor destroy parking spaces.

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).

The proposal will not require any new roads or streets, or improvements to roads or streets.

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

The project will not use or conflict with water, rail, or air transportation routes.

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

The project will not result in net changes to vehicular trips.

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

None proposed.

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.

No, the project will not result in an increased need for public services

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

None proposed.

12. Recreation

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

The closest parks are:

Genesee Park and Playfield approximately 0.5 miles east of the site;
Columbia Park approximately 0.5 miles south of the site; and
Lake People Park approximately 0.25 miles northwest of the site.

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

No, the proposal would not displace any existing recreational uses.

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

None proposed.

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.

None known.

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

None known.

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

None proposed.

14. Transportation

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

The property is secured on all four sides by fencing to restrict access. Vehicles access the property via gates on South Andover Street and South Dakota Street. The proposal will be constructed next to the South Andover Street right-of-way, as shown on the attached Figure 3.

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

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?

No structures are proposed. Existing grades will be restored upon completion of the proposal.

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

No views would be altered or obstructed.

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

No net aesthetic impacts are associated with the proposal.

11. Light and Glare

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

No light or glare will be produced by the proposal.

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?

No existing off-site sources of light or glare affect our proposal.

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

None proposed.

The proposal will be constructed to accommodate continued use of the site as a dairy processing plant.

9. Housing

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

No housing units will be provided.

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

No housing units will be eliminated.

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

No housing impacts have been identified as part of the proposal.

The existing dairy processing plant occupies the approximate western half of the property. The existing plant consists of a series of building additions constructed between the 1920s and 1987. There are a handful of outbuildings including a guard shack and a small storage shed within the vacated 36th Avenue South right-of-way.

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

No structures will be demolished. Approximately 9,500 square feet of asphalt and 1,800 square feet of concrete pavement will be demolished to access areas slated for excavation. Upon completion of the excavation, the asphalt and concrete surfacing will be restored.

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

The zoning classifications currently apply to the site: Commercial C2-65 and C1-40, and Neighborhood Commercial 1-30.

The current land use of the property is Industrial, consistent with its historical zoning classification.

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

The current comprehensive plan designation of the site is:

Commercial / Mixed Use (Hub)

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 critical" area? If so, specify.

No part of the site has been designated as an environmentally critical area.

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

The completed project will not create jobs or housing.

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

The project will not displace any residents or workers.

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:

LEFT COLUMN TO BE COMPLETED BY APPLICANT.
RIGHT COLUMN FOR DPD USE ONLY.

16. Utilities

a. Circle utilities currently available at the site: **ELECTRICTY, NATURAL GAS, WATER, REFUSE SERVICE, TELEPHONE, SANITARY SEWER,** and **STORM SEWER.**

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 immediate vicinity which might be needed.

No new utilities are proposed for the project.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge.

I understand the lead agency is relying on them to make its decision.

Signature: DM

Date submitted: 2APRIL 2008

This checklist was reviewed by:

Land Use Planner, Department of Planning and Development

Any comments or changes made by the Department are entered in the body of the checklist and contain the initials of the reviewer.

D. SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS

(Do not use this sheet for 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?

   Proposed measures to avoid or reduce such increases are:

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

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

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

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

4. How would the proposal be likely to use or affect environmentally critical 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?

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

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?

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?

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.

APPENDIX C

King Count Industrial Waste Permitting Information

King County
Wastewater Treatment Division
Industrial Waste Program
Department of Natural Resources and Parks
130 Nickerson Street, Suite 200
Seattle, WA 98109-1658
206-263-3000 Fax 206-263-3001
TTY Relay: 711

June 20, 2011

Bruce Bennett
Darigold Inc.
1130 Rainier Avenue S.
Seattle, WA 98144

Letter of Authorization 11274-01 to Discharge to the Sanitary Sewer

Dear Mr. Bennett:

The King County Industrial Waste Program has reviewed your request to discharge wastewater to the sanitary sewer from the Darigold Inc.- Rainier Avenue Plant soil removal action project located at 4058 Rainier Avenue South, Seattle, Washington (phone number, 206-286-6804). In accordance with King County Code 28.84.060 (copy available on the Internet at: www.kingcounty.gov/council/legislation), King County grants approval for the discharge of up to 46,700 gallons per day from July 8, 2011, through August 31, 2011, provided that:

- You notify the King County Industrial Waste Program when the discharge begins.
- You obtain the required approval from Seattle Public Utilities before discharge to allow for permitting of a connection to the sanitary sewer and assessment of sewer charges. Please call Susie Larson, 206-684-5158, to obtain required approval.
- You meet the discharge limitations, special conditions, monitoring and reporting requirements listed below.

Discharge Limitations

Discharge rate	100 gallons per minute
Maximum daily discharge volume	46,700 gallons per day
Settleable solids (by Imhoff cone)	7.0 mL/L
Benzene	0.07 mg/L
Toluene	1.4 mg/L
Ethylbenzene	1.7 mg/L
Nonpolar fats, oils, and grease (FOG)	100 mg/L
pH minimum	5.5 s.u.
pH maximum	12.0 s.u.

There shall be no odor of solvent, gasoline, or hydrogen sulfide (rotten egg odor), oil sheen, unusual color, or visible turbidity. The discharge must remain translucent. If any of the discharge limits are exceeded, you must stop discharging and notify the King County Industrial Waste Program at 206-263-3000.

Special Conditions

1. The discharge shall not cause hydraulic overloading conditions of the sewerage conveyance system. During periods of peak hydraulic loading, King County and Seattle Public Utilities representatives reserve the authority to request that discharge to the sewer be stopped.

2. This document permits the discharge of limited amounts of dewatering from the construction site into the sanitary sewer. Wastes or contaminants from sources other than permitted herein shall not be discharged to the sanitary sewer without prior approval from the King County Industrial Waste Program.

3. The contractor shall implement erosion control best management practices to minimize the amount of solids discharged to the sanitary sewer system. As a minimum precaution, the wastewater must be pumped to an appropriately sized settling tank prior to entering the sewer system.

4. Discharge point shall be designated by Seattle Public Utilities representatives.

5. Wastewater monitoring logs containing the results of the required field monitoring specified below must be maintained on site and must be available for review at reasonable times by authorized representatives of King County.

Monitoring Requirements

You shall conduct the following self-monitoring requirements for this authorization:

Parameter	Frequency	Sample Type/Method
Discharge volume	Daily	Pump estimate
Settleable solids	Daily	Grab by Imhoff cone[1]
pH	Daily	Hand held meter
Nonpolar FOG[2]	Once first week[4]	3 Grabs[3]
Benzene	Once first week[4]	Grab-VOA
Ethylbenzene	Once first week[4]	Grab-VOA
Toluene	Once first week[4]	Grab-VOA

[1]The settleable solids field test by Imhoff cone must be performed as follows:

- Fill cone to one-liter mark with well-mixed sample.
- Allow 45 minutes to settle.
- Gently stir sides of cone with a rod or by spinning. Settle 15 minutes longer.
- Record volume of settleable matter in the cone as mL/L.

[2]The result of the composite sample or the average of the concentrations of the three grab samples may be reported as Total FOG unless the value is 100 mg/L or greater, in which case the concentration of nonpolar FOG must be reported.

[3]The three nonpolar fats, oils, and grease (FOG) grab samples shall be of equal volume, collected at least five minutes apart, and analyzed separately. When using U.S. Environmental Protection Agency approved protocols specified in 40 CFR Part 136, the individual grab samples may be composited (at the laboratory) prior to analysis.

[4]Samples for nonpolar FOG, benzene, ethylbenzene, and toluene shall be collected one time, during the first week of operation.

Reporting Requirements

A self-monitoring report (form enclosed) containing results of required self-monitoring and total volume discharged to the sewer shall be submitted to the King County Industrial Waste Program by September 15, 2011.

If you propose to increase the volume of your discharge or change the type or quantities of substances discharged, you must contact the King County Industrial Waste Program at least 60 days before making these changes.

Chapter 28.84 of the King County Code – Water Pollution Abatement sanctions a fee for each letter of authorization issued by the Department of Natural Resources and Parks. The fee for issuance of a letter of authorization in 2011 is $295. You will be sent an invoice for this amount. In addition, the total volume discharged to the sewer is subject to sewer charges that will be billed following the County's receipt of the final self-monitoring report. Normally you will receive the sewer bill from the local sewer agency that operates the sewers where the discharge occurred.

If you have any questions about this authorization, or other questions about your wastewater discharge, please call me at 206-263-3008 or e-mail me at jim.sifford@kingcounty.gov. You may also wish to visit our program's Internet pages at: www.kingcounty.gov/industrialwaste.

Sincerely,

Jim Sifford
Compliance Investigator

Enclosure

cc: Dave Heffner, Aspect Consulting, LLC
Susie Larson, Seattle Public Utilities
Doug Hilderbrand, King County

King County

Industrial Waste Self-Monitoring Report

Mail or FAX to: King County Industrial Waste Program
130 Nickerson Street, Suite 200
Seattle, WA 98109-1658
Phone 206-263-3000 / FAX 206-263-3001

Project Name: Darigold Inc. - Rainier Plant Soil Removal Action

Authorization No.: 11274-01

Project Location: 4058 Rainier Avenue South, Seattle

Sample Date	pH (s.u.)		Settleable Solids, (mL/L)	Nonpolar FOG (mg/L)	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)			Discharge Volume (gallons)	Notes
	Min.	Max.									
									Total Discharge Volume:		

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that all data requiring a laboratory analysis were analyzed by a Washington State Department of Ecology accredited laboratory for each parameter tested.

Signature of Principal Executive or Authorized Agent

Date

The permit holder is responsible for monitoring the discharge in accordance with the monitoring requirements specified in King County Letter of Authorization No. 11274-01. This report form must be completed and submitted to King County by September 15, 2011.

Your King County Industrial Waste Program contact: Jim Sifford, 206-263-3008

Industrial Waste Program
Construction Dewatering Request Form

King County

Submit to the King County Industrial Waste Program
130 Nickerson Street, Suite 200, Seattle, WA 98109-1658
Phone: 206-263-3000
Fax: 206-263-3001

- Submit one application for each construction site.
- Answer all questions and include ALL required exhibits. **Incomplete applications will be returned to you.**
- If you do not have an answer for the requested information, indicate so and explain why.
- Indicate "NA" if a section does not apply to your site.
- Use additional pages, if needed.
- Discharge approval will be issued to the owner of the site. As such, this form must be signed by the site owner, or their authorized representative, as defined by King County Code (KCC) 28.82.050. A King County Delegation of Signature Authority form can be completed to delegate signature authority and can be found at:

www.kingcounty.gov/environment/wastewater/IndustrialWaste/~/media/environment/wastewater/IndustrialWasteProgram/docs/Forms/OtherForms/sigauth.ashx

Applicant / Project Name	Darigold, Inc./Soil Removal Action, Rainier Avenue Facility
Project Location (address, city and zip code)	4058 Rainier Avenue South Seattle, WA 98118

NOTE: Site owner information must be provided. The site owner will be issued the discharge approval. Contractor or consultant will be sent a copy.

	Site / Project Owner	**Contractor / Consultant**
Contact Name	Bruce Bennett	Dave Heffner
Title	Director of Special Projects	Associate Engineer
Company	Darigold, Inc.	Aspect Consulting, LLC
Mailing Address	1130 Rainier Avenue South	401 Second Avenue South, Suite 201
City/State/Zip Code	Seattle/WA/98144	Seattle/WA/98104
Office Phone No.	206-286-6804	206-838-5831
Cell Phone No.	206-228-4596	206-949-1564
Fax No.	206-216-2885	206-838-5853
E-mail Address	bruce.bennett@darigold.com	dheffner@aspectconsulting.com
Primary person to be contacted about this application	Dave Heffner	

Provide detailed project description	Soil impacted by historical gasoline and diesel fuel releases will be excavated from two areas in the facility's North Yard and trucked off-site for disposal. Excavation will proceed down to the groundwater table at approx. 10-foot depth. Total volume of soil to be excavated is approx. 2,700 cubic yards (CY), of which approx. 900 CY is fuel-contaminated.		
Start Date of Dewatering	July 8, 2011	**End Date of Dewatering**	August 31, 2011
Size of Area	Two excavation areas; total area at ground surface est. at 11,000 square feet.	**Environmental Permits Issued for Applicant Site (example: NPDES permit)**	KCIW Waste Discharge Permit No. 7116-05

List construction processes and activities generating wastewater

- *Process/Activity Generating Wastewater: Enter a brief description and assign a process number for each process and activity (e.g., well dewatering, wheel wash, equipment cleaning, concrete curing, jet grouting, contaminated stormwater runoff)*
- *Substances and/or Pollutants: List all substances contained in these wastewaters (e.g., sediment/solids, caustic and/or acidic, oil and grease, other contaminants if groundwater or soil is contaminated).*
- *Type of Pretreatment: Identify the type of wastewater pretreatment provided for each wastestream (e.g., filtration, chemical precipitation, settling, pH neutralization, electrocoagulation, chitosan). King County policy requires that, at a minimum, an appropriately sized settling tank (weir-tank preferred) must be installed to provide gravity separation.*
- *Frequency of Discharge: Indicate the frequency of discharge. Enter "continuous" if you discharge wastewater continuously to the sewer as the wastewater is generated, or "batch" if you store wastewater and discharge it to the sewer in batches.*
- *Daily Quantity Discharged: Calculate the projected daily average and maximum discharge volume. In the space provided directly below the table, provide thorough documentation of the information, methods, and assumptions used to calculate the discharge volume values provided in this table.*

Process Number	Process or Activity that Generates Wastewater	Substances and/or Pollutants in Wastewater	Type of Pretreatment	Frequency of Discharge (continuous or batch)	Daily Quantity Discharged in Gallons	
					Average	Maximum
1	Excavation dewatering	gas- & diesel-range fuel hydrocarbons	weir tank, filtration, & activated carbon	continuous	<10,000	25,000
2	Wheel wash	(same as 1 above)	(same as 1 above)	continuous	<100	500
3	Storm water	(same as 1 above)	(same as 1 above)	continuous	<1,000	21,200

Documentation of Water Balance Calculations

For each process listed in the table above, provide thorough documentation of the information, methods, and assumptions used to calculate your site's water quantity balance. For the purpose of calculating the maximum daily stormwater runoff volume, use a rainstorm event of two inches per 24 hours.

Process No. 1 – The soil removal plan calls for excavating only down to the approximate groundwater table, so dewatering requirements will be minimal.

Process No. 2 – These quantities are based on previous experience for this type of project.

Process No. 3 – The construction area is approx. 17,000 square feet. Two inches of rain falling on this area would produce a stormwater runoff volume of 21,200 gallons. Since construction will be completed during July/August 2011, we anticipate only occasional rainfall, generating an average runoff volume of <1,000 GPD.

If you are requesting to discharge greater than 25,000 gallons per day during November through April, you must submit a detailed explanation for why discharge to surface water is not feasible.

NA. Construction will be completed during July/August 2011.

Is there known groundwater or soil contamination on site?

Yes.

If yes, provide a summary of the contamination and site history clarifying source of contamination.

(If known groundwater or soil contamination is present on site, additional exhibits must be submitted. (See Exhibit D below in the EXHIBITS section of this application form.)

Releases of gasoline and diesel fuel from former underground storage tank (UST) systems have contaminated soil and groundwater in the North Yard of Darigold's Rainier Avenue Facility. Exhibit D provides soil and groundwater quality data, as well as a figure showing sampling locations. Contaminated soil will be excavated in two areas, labeled *Excavation A* and *Excavation B* on the Exhibit A Site Plan. Clean fill soil will be imported to restore the excavation areas to pre-existing grade. A construction duration of seven weeks is anticipated.

Describe the site's temporary erosion and sediment control (TESC) best management practices (BMPs) that will be implemented at the site.

Please refer to plan sheets C-5 (Temporary Erosion and Sediment Control Plan) and C-6 (TESC Notes and Details), which are provided as EXHIBIT C.

You must contact the local sewer agency (city or sewer district) to receive instructions on discharge conditions such as maximum discharge rate, discharge point, and discharge volume reporting procedures for assessment of sewer fees. Maps of King County's wastewater treatment service area and local sewer agency contact information can be found at:
www.kingcounty.gov/environment/wtd/About/SewerAgencies.aspx

Provide the name and phone number of the local city or sewer district personnel you contacted.

Kevin Donnelly (206) 684-5051

Provide the maximum discharge rate (gallons per minute [gpm]) specified by the local city or sewer district contact.

34.7 gpm (50,000 GPD)

Provide sewer account number or billing method that will be used by the local city or sewer district to assess sewer fees.

SPU sewer account number 2-533522-245062

Discharge to the sanitary sewer will require a temporary sewer connection that must be approved by the local city or sewer district. The approved temporary sewer connection (point of discharge) must be clearly indicated in your facility site plan. (See Exhibit A in the EXHIBITS section of this application form.)

EXHIBITS

Required exhibits for <u>all</u> sites:

A. <u>Site Plan</u> – Provide a site plan indicating location of activities and processes generating wastewater, settling ponds/tanks, or other wastewater treatment system components, wastewater conveyance lines, point(s) of discharge (as approved by the local city or sewer utility), groundwater and/or sediment sampling locations, streets, and public sewer and storm drainage utilities.

B. <u>Wastewater Treatment System</u> – Description of proposed wastewater treatment facilities including:

1. Diagrams/specification sheets and basic design data for wastewater treatment system components (for example, pumps, tanks, mixers).
2. Schematic flow diagram of the treatment process, illustrating the system piping, tanks, and control features.
3. Maximum flow rate for wastewater treatment system.

Please note that King County may require that you provide engineering justification and/or other evidence demonstrating that the discharge from the site will meet applicable permit effluent limitations.

Required exhibit for sites requesting discharge approval for longer than six months:

C. <u>Dewatering Schedule</u> – Provide a wastewater discharge schedule indicating when each process can be expected to generate wastewater for the duration of the project. For each process and discharge period, indicate the projected maximum daily discharge volume.

Example: The chart below is meant as an example only. The applicant can provide the information in a different format, provided that the requested information is present. **If you prefer to use this chart, it can be found at:**
www.kingcounty.gov/sitecore/shell/Controls/Rich%20Text%20Editor/~/media/environment/wastewater/IndustrialWasteProgram/docs/SpecDisch/Construct/CDW_exhibit.ashx

Project Name: E X A M P L E O N L Y

	Start Date					Project Timeline									End Date
	week	week	week	week	week	week	week	week	week	week	week	week	week	week	week
Process Generating Wastewater	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Process 1 - drill slurry decant							max 1,000 gpd								
Process 2 - wheel wash									max 500 gpd						
Process 3 - Excavation dewatering					max 8,500 gpd							max 25,000 gpd			
Process 4 - Contaminated Stormwater								max 45,000 gpd							

Required exhibit for sites where known groundwater or sediment contamination is present:

D. <u>Description of contamination source(s) and chemical characteristics</u>: Submit a summary (preferably table form) of all available groundwater and/or sediment quality data. Indicate groundwater and/or sediment sample locations on the site plan. (See Exhibit A.)

King County

Industrial Waste Program
Construction Dewatering Request Form

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Michael Campbell, Director Regulatory

Name (print), Title

Signature **Date** 6-2-11

This form must be signed by an authorized representative of the site owner.

The term "authorized representative" is defined in King County Code 28.82.050. A King County Delegation of Signature Authority form (link below) can be completed to delegate signature authority.

www.kingcounty.gov/environment/wastewater/IndustrialWaste/~/media/environment/wastewater/IndustrialWasteProgram/docs/Forms/OtherForms/sigauth.ashx

Exhibit A - Site Plan

LEGEND

⊕	MONUMENT IN CASE	FDC	FIRE DEPT. CONNECTION		POWER POLE w/LIGHT		TRAFFIC POLE
◆	BENCH MARK	FH	FIRE HYDRANT		POWER POLE	T	TELEPHONE MANHOLE
SEP	SEPARATOR	HB	HOSE BIB	PP/TR	POWER POLE w/TRANSFORMER	T	TELEPHONE VAULT
COS	CITY OF SEATTLE	ICV	IRRIGATION CONTROL VALVE	PP/UC	POWER POLE w/UNDERGROUND CONDUIT		BOLLARD
CLF	CHAINLINK FENCE	PIV	POST INDICATOR VALVE		UTILITY POLE ANCHOR ASBUILT		SIGN
	CATCH BASIN (TYP I)		WATER METER	GP	GUY ANCHOR POLE		MONITOR WELL
	STORM DRAIN MANHOLE (TYP II)	W	WATER MANHOLE	P	POWER VAULT W/ ROUND GRATE		DECIDUOUS TREE
YD	YARD DRAIN		WATER VALVE	P	POWER VAULT	SS	SANITARY SEWER LINE
SSCO	SANITARY SEWER CLEANOUT		GAS VALVE	Δ	PAD MOUNTED TRANSFORMER	FM	SANITARY SEWER FORCE MAIN
	SANITARY SEWER MANHOLE		OIL FILL CAP		LIGHT STANDARD (PARKING LOT)	SD	STORM DRAIN
UT	UNKNOWN UTILITY VAULT	EJB	ELECTRICAL JUNCTION BOX		SIGNAL CONTROLER		

W	WATER LINE
OHP	POWER AERIAL
P	POWER BURIED
T	TELEPHONE BURIED
G	GAS LINE
	FENCE LINE
	GUARDRAIL
	RETAINING WALL
	MINOR CONTOURS
	MAJOR CONTOURS
	PROPERTY LINE

Point of discharge to existing sanitary side sewer.

Discharge Line

Truck Route A

Excav. B

Truck Route B

Excav. A

Water Treatment Equipment

IMPORT SOIL STOCKPILE

S. ANDOVER ST.

RAINIER AVE. S.

EXISTING BUILDING

NORTHEAST CORNER

N

DGI RAINIER AVENUE FACILITY
4058 RAINIER AVENUE SOUTH
SEATTLE, WA

DGI RAINIER PROJECT
SITE PLAN DETAILS

DATE	4/22/2011
REVISED BY:	
CHECKED BY:	SCC
DRAFTED BY:	DAH
CAD FILE	0396-001-09_2008GP_ESL
PROJECT NAME	DARIGOLD RAINIER
PROJECT NO.	090066-004-01

APPROXIMATE SCALE IN FEET: 0 5 10 20 40

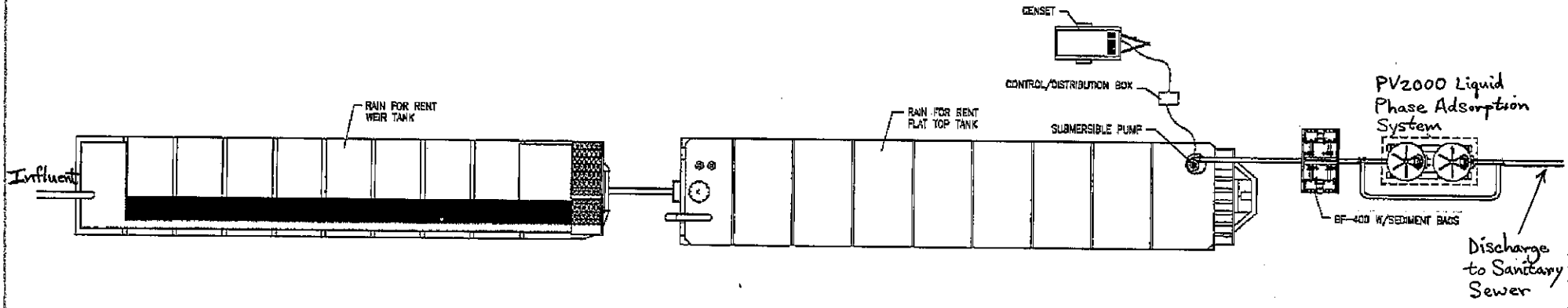
Aspect CONSULTING
ASPECT CONSULTING, LLC
401 2ND AVENUE SOUTH, SUITE 201
SEATTLE, WA 98104
ASPECTCONSULTING.COM

#	DATE	REVISION

SHEET NO. 2 OF 9

C-2

Exhibit B



Note: Max. flow rate for wastewater treatment system = 100 gpm

	Aspect CONSULTING	Treatment Process Schematic Flow Diagram Construction Dewatering Darigold Soil Removal Action Seattle, Washington	Project No. 090066 Figure No. B-1

18,100 GALLON WORKSAFE ™ TWO WEIR TANK

Features

•Over and under Weirs
•Safety stairway
•Complete guard rail system
•"V" shaped floor with 4" valves at each end for
quick cleaning
•Easy to move and transport

Technical

WorkSafe™ Weir tanks come with a "V" shaped floor, allowing any residual fluid in the tank to easily flush out through the floor level 4" valves. Staircase, guard rails, and four 22" manway hatches are standard equipment. This allows easy monitoring of the fluids and easy cleaning when finished.

Material Specifications

Steel construction with cross style internal bracing. Two 4" Butterfly valves located at either end of the "V" shaped floor. Permanently attached axles for maximum maneuverability. Staircase attached to front end and a guard rail system on the tank walkway. Three 22" manway hatches. Each tank comes equipped with over and under weirs for simple seperation of liquids. These tanks are open top with a walkway and complete guard rail running the length of the tank.

Rain for Rent
P.O. Box 2248
Bakersfield CA 93303
800-742-7246
661-393-1542
FAX 661-393-1542
www.rainforrent.com
info@rainforrent.com

21,000 GALLON WORKSAFE ™
STEEL BI-LEVEL TANK

Features

- Unique safety stairway
- Totally enclosed tank
- Quick Kleen "V" shaped floor with two 4" valves at floor level
- Easy to move
- Optional vapor tight features and liquid level gauge
- Optional steam coils

Technical

WORKSAFE™ Bi-Level steel tanks are available with or without an epoxy coated interior. This tank has a "V" shaped Quick Kleen floor which allows any residual fluid in the tank to be easily flushed out the floor level 4" valves. Staircase guard rails and three 22" confined space entry hatches are standard equipment. Optional epoxy coatings offer increased chemical resistance and higher degree of cleanliness for sensitive environmental applications. (Chemical resistance charts are available.) High strength steel walls hold fluids up to 16 pounds per gallon.

Material Specifications

Steel construction, totally enclosed, and optional internal two part epoxy coating. Two 4" butterfly valves with Buna seals standard located at either end of the "V" shaped floor. Permanently attached axles for maximum maneuverability. Staircase attached to the front and a collapsible guard rail system on the roof of the tank. Optional level gauge. Vacuum pressure relief valve standard. Optional vapor recovery fitting. Three 22" vapor tight access hatches. Other gasket materials needs available to match your application.

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Bakersfield CA 93303
800-742-7246
661-393-1542
FAX 661-393-1542
www.rainforrent.com
info@rainforrent.com

Model DCA-25SSIU

MQ WhisperWatt™	
GENERATOR	
Design	Revolving armature, 4 pole, drip proof
Excitation	Brushless with AVR
Standby Output	22 KW (27.5 KVA)
Prime Output	20 KW (25 KVA)
Frequency / Generator Speed	60 Hz / 1800 RPM
Voltage - three phase / star with neutral	208 - 240 / 416 - 480 volts (switchable)
Voltage - single phase / zig - zag	120 / 240 volts (14.4 KW rating)
Voltage Regulation - no load to full load	+ 1.0 %
Power Factor	0.8
Insulation	Class F
Sound Level - db(a) full load at 23 ft.	67
DIESEL ENGINE	
Make/Model	Isuzu C240
Starting System	Electric
Design	4 cycle, water cooled
Displacement	2369 cc
No. of Cylinders	4
Bore & Stroke (mm)	86 x 102
HP at Rated Speed	34.5
Fuel Tank Capacity (gal)	17
Fuel Consumption: Full load	1.7 gph
3/4 load	1.3 gph
1/2 load	0.9 gph
1/4 load	0.6 gph
Coolant Capacity (gal.)	2.9
Oil Capacity (gal.)	1.4
Battery System	12 volt (One - 12 v 53 ah)
SIZE	
L x W x H (in.)	77 x 30 x 39
Approx. Net Weight (lbs.)	1,543
AMPS	
Single Phase 120 / 240 volt	60 amp @ 240 volt (zig - zag connection)
Three Phase 240 / 480 volt	60 / 30 amp (star 120 volt - 167 amp. max.)
3/2004 Features and specifications are per manufacture and subject to change without notice	

LOS ANGELES 1741 COLON STREET, BOX 1212, WILMINGTON, CA 90748 310 835-3161 FAX 310 518-3019
BAKERSFIELD 4949 STANDARD STREET, BAKERSFIELD, CA 93308 661 335-0300 FAX 661 335-0333
FONTANA 14581 MANZANITA DRIVE, FONTANA, CA 92335 909 823-6505 FAX 909 823-6955

BF 400
Up to 400 GPM

Features

- Manifold connections are 6" 150 lb flanges
- Quadruple bag filter
- Bag filter for high solids holding capacity
- Replaceable bag filters from 100 to 1 micron nominal rating
- No moving parts
- Skid mounted

Technical

- Bag filter chambers connect in parallel
- Units are fitted with bleed valves and pressure gauges
- System can stand alone for sediment removal or be used in combination with filter equipment
- Footprint: 62" long x 36" wide x 61" high
- Dry weight: 1,150 lbs.

Material Specifications

- Chambers constructed of 304 Stainless Steel
- Piping constructed of 304 stainless steel
- Each bag filter chamber holds one (1) 7" x 30" double- stitched filter bag
- Maximum operating pressure: 125psi
- Stainless Steel inlet and outlet manifolds

Available Accessories

- Power Prime Pumps
- Spill Guard Containment berms
- Stainless Steel 304 and Carbon Steel storage tanks in
- Bi-Level, Mixer, Weir and Manifold configurations
- Polyethylene storage tanks
- Cartridge and bag filters
- HDPE pipe and fittings
- Roll off boxes, dewatering bins and vacuum boxes
- Flow meters and pressure reducing/ sustaining valves
- Aluminum Victaulic pipe and fittings
- Suction and discharge hose

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Bakersfield CA 93303
800-742-7246
661-393-1542
FAX 661-393-1542
www.rainforrent.com
info@rainforrent.com

DEWATERING PUMPS

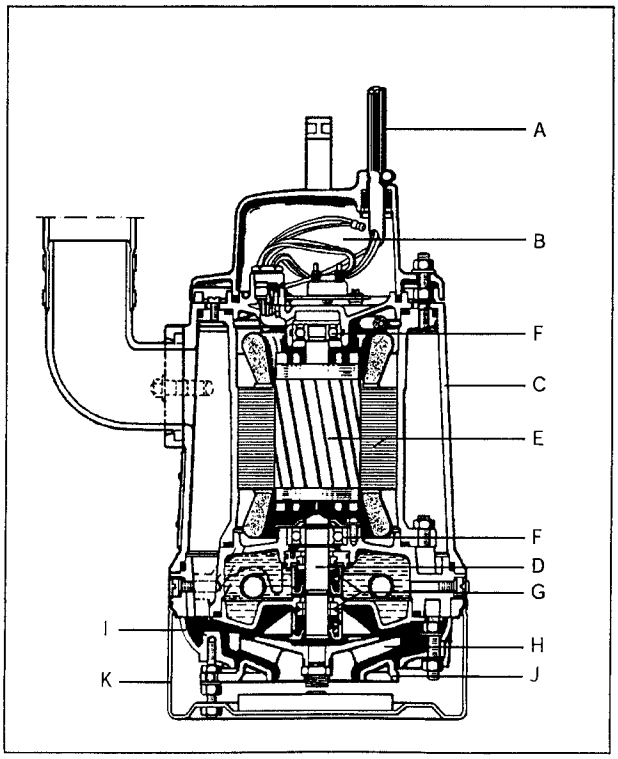
3" Submersible Pump

Small Portable Dewatering Pump

Capacity up to 260 GPM, Heads up to 90 ft.

Applications:

BS-2066 removes water quickly from ditches, manholes, small ponds, pools, caissons, etc.



Specifications

A **Cable.** Standard 50 ft. of AWG 14/4 SubCab cable. Other lengths available upon request.

B **Junction Chamber.** Cable entry incorporates a strain relief and grommet controlled compression sealing. Between the junction box and stator housing a rubber gland provides additional seal protection of the motor.

C **Pump Housing.** High strength, lightweight aluminum alloy. Static seals are leakproof Nitrile rubber O rings in precision machined grooves, with controlled compression.

D **Shaft.** Stainless steel ANSI 431.

E **Motor.** Air filled, NEMA design B with class F (155°C) insulation; 2 pole, 3490 rpm. Shrink-fit to the motor housing. Allows at least 10 starts per hour. Built-in thermal sensors for additional motor overload protection (optional).

F **Bearings.** Upper and lower: single row ball bearing.

G **Shaft Seals.** Independent double face seals running in environmentally friendly, FDA approved (Standard #172.878) lubricant. Upper seal: carbon/tungsten carbide. Lower seal: tungsten carbide/tungsten carbide. Oil specs: 1.2 pints (0.6 l).

H **Impeller.** Multivane, open type. Material: alloyed white cast iron ASTM 532.80 Alloy 111A, hardened for high wear resistance to 60 Rc hardness.

I **Diffuser.** Protected by polyurethane (Polylife) ~~or Nitrile Rubber~~ liner. Adjustable to maintain pump's hydraulic performance.

J **Wear Plate.** Protected by polyurethane (Polylife) ~~or Nitrile Rubber~~ liner.

K **Strainer.** Hot dip galvanized steel. 110 holes 1/4" x 13/16".

Fasteners. Stainless steel ANSI 304.

Options.

Stainless steel impeller (MT). Warm liquid versions

Approval:

CSA approved to UL Standard #778.

NRTL /C

Controls (not shown).

Manual controls, providing short circuit and overload protection, housed in NEMA 4X (watertight, corrosion resistant) plastic enclosures. Level control Model 8.408/4X available for automatic, unattended operation.

Accessories.

Tandem connection; Zinc anodes.

AED

CIMA

National Mining Association

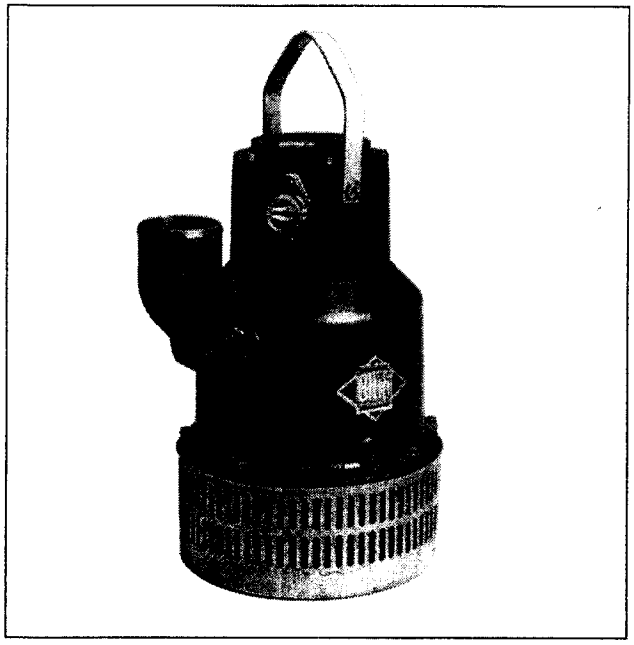
american rental association

DEWATERING PUMPS

4" Submersible Pump

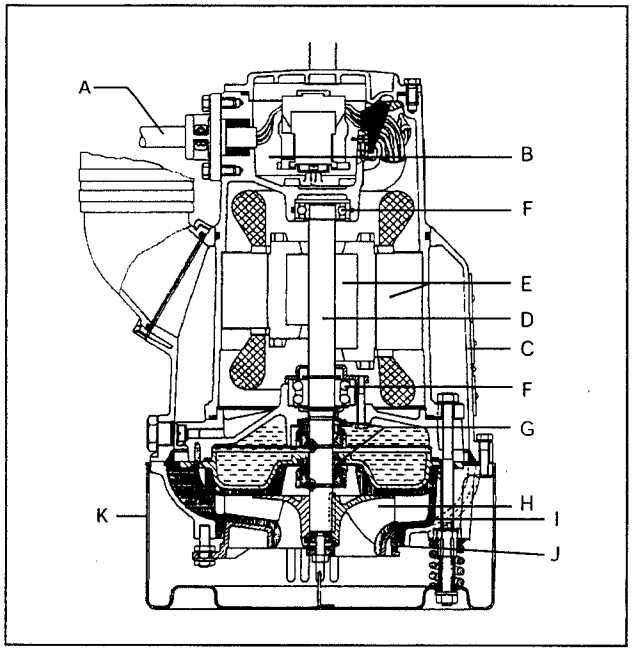
Small Portable Dewatering Pump

Capacity up to 650 GPM, heads up to 155 ft.



Applications:

The BS 2102 is ideal for fast dewatering of construction sites, mines, trenches, marine salvage, public works, deep excavations, etc.



Specifications

A **Cable.** Standard 50 ft. of AWG 10/3-2-1GC Subcab cable. Other lengths available.

B **Junction Chamber.** Cable entry incorporates a strain relief and grommet controlled compression sealing. Between the junction box and stator housing a rubber gland provides additional seal protection of the motor.

C **Pump Housing.** High strength, light weight aluminum alloy. Static seals are leakproof Nitrile rubber O rings in precision machined grooves, with controlled compression.

D **Shaft.** Stainless steel AISI 420

E **Motor.** Air filled, NEMA design B with class F (155°C) insullation. 2 pole, 3450 rpm, Shrink fit to the motor housing. Allows at least 10 starts per hour. Built in thermal sensors for additional motor overload protection.

F **Bearings.** Upper: single row ball bearing. Lower: double-row angular contact ball bearing.

G **Shaft Seals.** Independent double face seals running in an environmentally friendly, FDA approved (Standard #172.878) lubricant. Upper Seal: tungsten carbide/carbon. Lower seal: tungsten carbide/tungsten carbide. Oil quantity: 3.2 pints (1.5 liters).

H **Impeller.** Multivane, open type. Material: alloyed white cast iron ASTM 532.80 Alloy 111A, hardened for high wear resistance to 60Rc hardness.

I **Diffuser.** Protected by polyurethane (Polylife) ~~or Nitrile rubber~~ liner. Adjustible to maintain pump's hydraulic performance.

J **Wear Plate.** Protected by polyurethane (Polylife) ~~or Nitrile rubber~~ liner.

K **Strainer.** Hot dip galvanized steel. 160 holes 1/4" x 1-1/2". Spring loaded to absorb heavy impact.

Fasteners. Stainless steel AISI 304.

Options:

Stainless steel impellers,
Warm Liquid versions

Approvals:

CSA approved to UL Standard #778.

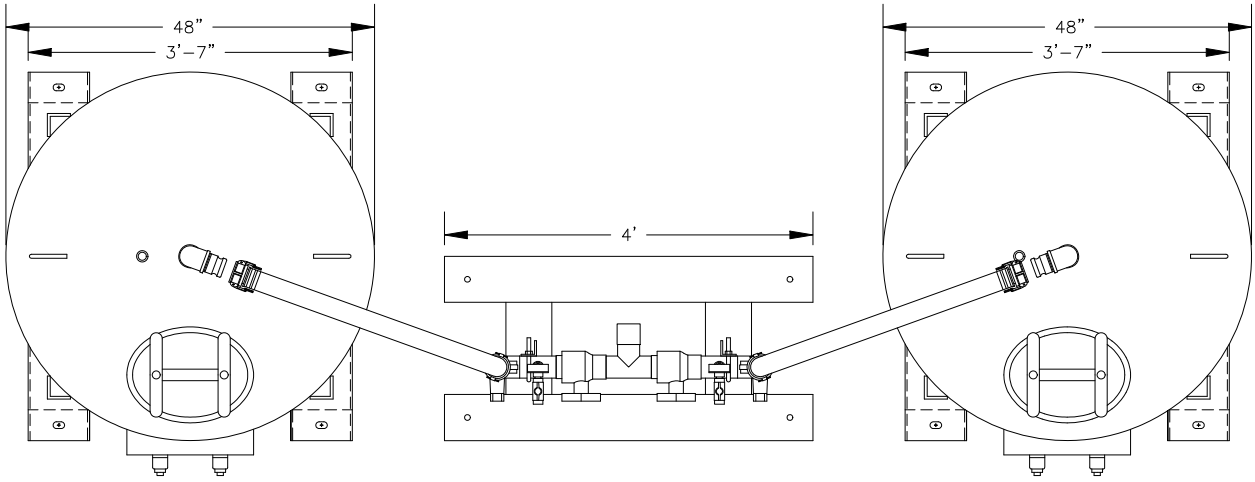
Controls:

Manual controls, providing short circuit and overload protection, housed in NEMA 4X (watertight, corrosion resistant) plastic enclosures. Level control Model 8.408/4X available for automatic, unattended operation.

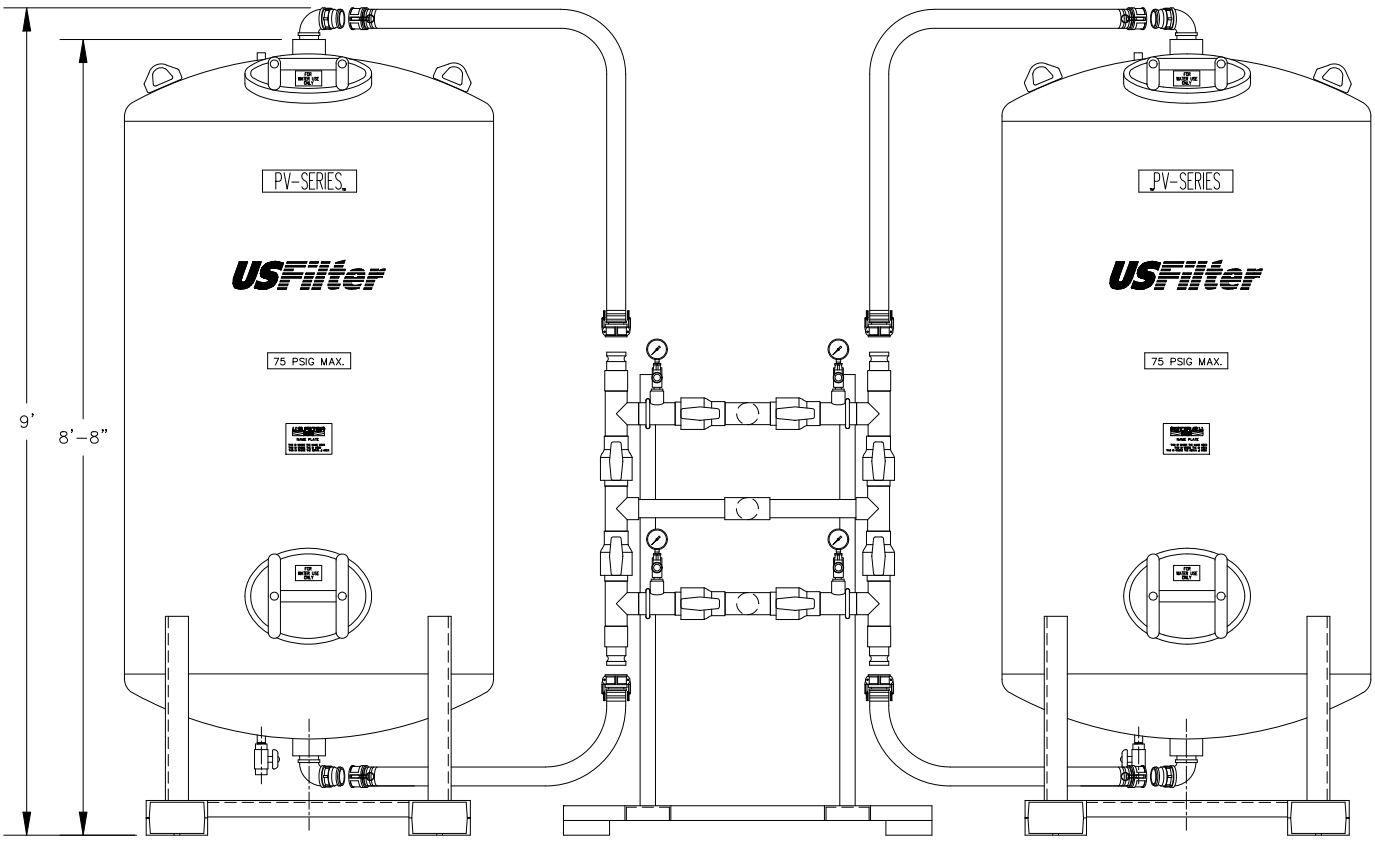
Accessories:

Low suction collar, allowing pumping down to floor level; Tandem connection; Zinc anodes.

STD: 2-0600-8X11A	INTL REF:	



PLAN VIEW



ELEVATION

DESIGNER	DATE
AJA	11-8-02
CHECKER	DATE
ENGINEER	DATE
MANAGER	DATE
FILE:	
SCALE: 1" = 2'	

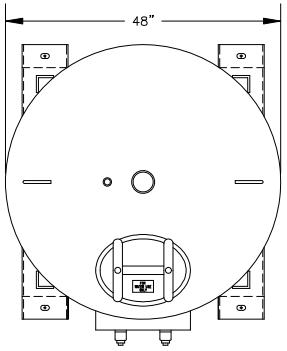
TITLE
2 PV2000 W/ 2" MANIFOLD
GENERAL ASSEMBLY

CLIENT

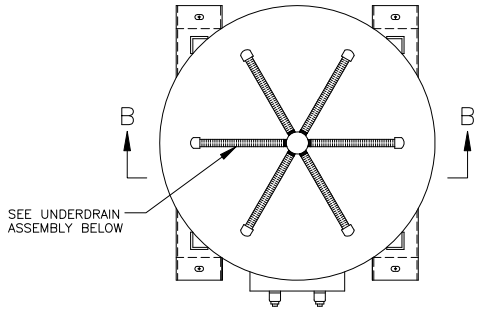
USFILTER/WESTATES
RED BLUFF, CA
1-800-795-2664

PROJECT	DRAWING	SHEET	REV
	2PV20002inMani	1 OF 1	

STD: 2-0600-8X11A | INTR_REF_NO



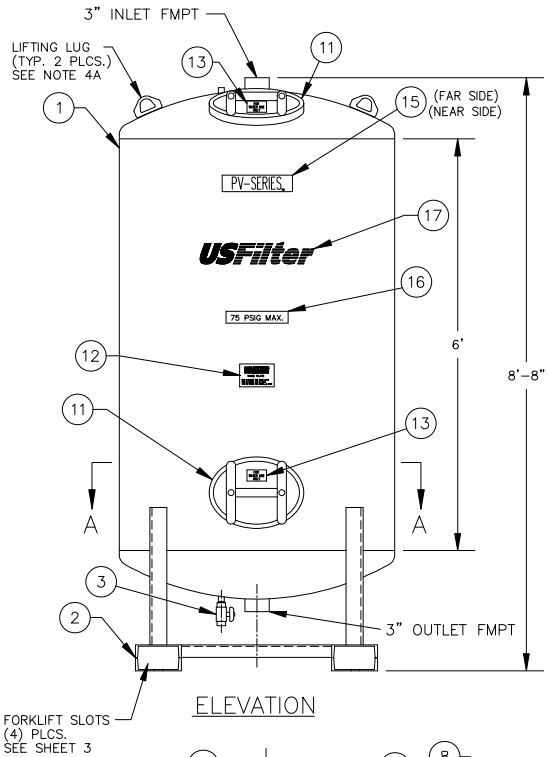
PLAN VIEW



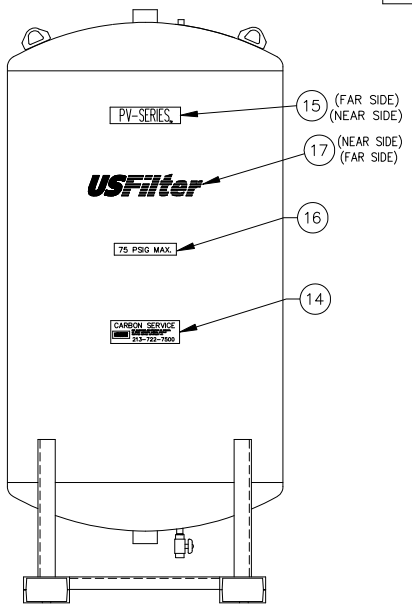
SECTION "A-A"

LIST OF COMPONENTS

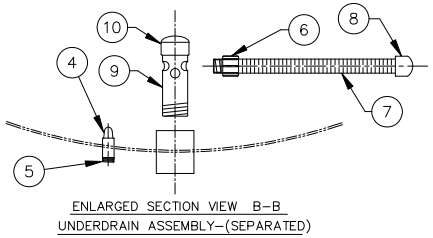
ITEM	QTY	DESCRIPTION	PART NUMBER
1		TANK ASSEMBLY DWG. # PV2000SHEET2	SEE SHEET 2
2		SKID ASSEMBLY DWG. # PV2000SHEET3	SEE SHEET 3
3	1	BRONZE BALL VALVE, 3/4"	1003
4	1	POLY SCREEN ORTHOS PART# N5 R-3/4", MPT	N/A
5	1	CLOSE NIPPLE, SCHD 40 304 SS, 3/4"	N/A
6	6	MALE ADAPTER, SCH 80 PVC, 1"	U4001
7	6	PIPE, SLOTTED SCH 80 PVC, 1" x 15" LG	U4003
8	6	CAP, SCH 80 PVC, SLIP, 1"	N/A
9	1	UNDERDRAIN HUB, 3" DIA x 10 1/2" LG, SCH 80 PVC	N/A
10	1	CAP, SCH 80 PVC, SLIP, 3"	N/A
11	2	MANWAY ASSEMBLY, 12" x 16"	M3001
12	1	PLATE, I.D. & SERIAL NUMBER	N/A
13	2	DECAL, "FOR WATER USE ONLY", 2 1/2" x 4 1/4"	N/A
14	1	DECAL, "CARBON SERVICE" WHITE MYLAR W/BLUE LETTERS, 4" x 12"	N/A
15	2	DECAL, "PV-SERIES", WHITE MYLAR	N/A
16	2	DECAL, "75 PSIG MAX", WHITE MYLAR	N/A
17	2	DECAL, "USFILTER/WESTATES" WHITE MYLAR W/BLUE LETTERS	N/A



ELEVATION



REAR ELEVATION



ENLARGED SECTION VIEW B-B
UNDERDRAIN ASSEMBLY-(SEPARATED)

NOTES:

1. DESIGN DATA:
   48" DIAMETER PRESSURE VESSEL-75 PSIG(MAX)
   @ 150°F-NOT ASME CODE STAMPED
   FOR WATER USE ONLY
   MAXIMUM FLOW RATE: 100 GPM
   MAXIMUM CARBON CAPACITY: 2000 LBS. ACTIVATED CARBON

2. MATERIAL:
   HEADS: STD. F & D NON CODE 3/16" THICKNESS C.S.
   SHELL: 3/16" THK. 48" OD x 72" LONG C.S.
   SKID: SA 36-HR

3. SURFACE PREPARATION:
   INTERIOR:
   SANDBLAST: SSPC-SP-5 WHITE METAL
   ABRASIVE: GARNET OR GRIT - PROFILE: 1.5-2 MILS
   COATING: 3M BRAND SCOTCHKOTE 134
   THICKNESS: 10-15 DFMT - COLOR: GREEN
   EXTERIOR:
   SANDBLAST: SSPC-SP-10 NEAR WHITE METAL
   ABRASIVE: GARNET OR GRIT - PROFILE: 1.5-2 MILS
   PRIMER COAT: RUST PREVENTATIVE EPOXY PRIMER (SHERWIN WILLIAMS)
   THICKNESS: 4-6 DFMT - COLOR: RED
   FINISH COAT: HIGH BUILD POLYURETHANE (SHERWIN WILLIAMS)
   THICKNESS: 3-4 DFMT - COLOR: BLUE (FED. I.D.#15052)

4. LIFTING REQUIREMENTS:
   5,200 LBS. MINIMUM RATING.
   EST. WEIGHTS:
   1190 LBS. - EMPTY VESSEL
   3190 LBS. - WITH CARBON
   7500 LBS. - OPERATING

DESIGNER	DATE
AJA	11-7-02
CHECKER	DATE
ENGINEER	DATE
MANAGER	DATE
FILE:	
SCALE: NONE	

TITLE: PV2000
GENERAL ASSEMBLY

CLIENT

USFilter
USFILTER/WESTATES
RED BLUFF, CA
1-800-795-2664

PROJECT	DRAWING	SHEET	REV
	PV2000SHEET1	1 OF 5	

USFilter
Westates
11711 Reading Road
Red Bluff, CA 96080
Telephone (530) 527-2664
Facsimile (530) 527-8724

PV2000 & PV2000 SYS

SYSTEM SPECIFICATION SUMMARY

PV2000 Liquid Phase Adsorption Systems are designed to treat a wide range of contaminated process streams. Piping and valves are configured for series, parallel, or vessel isolation flows. The system consists of two (2) adsorbers, skid mounted, with all piping, valves, and gauges assembled for ease of operation. The adsorbers are equipped with underdrains capable of maximum flow rate of 100 GPM.

EACH VESSEL:

Vessel Diameter	48”
Side Shell Height	72”
Overall Height (Approx.)	8’-8”
Total Empty Weight / Vessel	1190 lbs
Maximum Working Pressure	75 psi @ 150 °F
Elliptical Manway at Head	11” x 15”
Vessel Volume	660 gal.
Carbon Capacity	2000 lbs.
Carbon Bed Volume-Typical	68 Ft^3
Maximum Flow	100 GPM
Empty Bed Contact Time	5.1 min/vessel @ 100 GPM
Design Criteria	ASME
Code Stamping	None
Material	Carbon Steel
Supports	Skid mounted
Lifting	Lifting Lugs
Seismic	Zone 4
Interior Surface Prep	SSPC-SP5
Linning	3M ScotchKote 134, 10-15 mil min dft
Exterior Primer	Rust Preventative Epoxy 3 mil min dft
Exterior Coating	High Solids Urethane 3mil min dft
Standard Color	Blue (Federal Standard 15052)

UNDERDRAINS:

Lateral	Sch 80 PVC Sloted Pipe .01

VALVE ASSEMBLY AND PIPING:

Piping	2” or 3”Sch 80 PVC
Process Valves	2” or 3” PVC Ball Valves

WEIGHT:

Vessel	1190 lb
Shipping weight (vessel with carbon)	3,190 lb
System Shipping weight (two vessels, carbon & manifold)	6,600 lb
Operating Weight (carbon one vessel)	7,500 lb
Operating Weight (two vessels, carbon & manifold)	15,000 lb

Aspect CONSULTING

Project: Darigold Soil Removal Action Project No: 090066
Date: 6/3/11 By: D. Heffner
Subject: KCIW Construction Dewatering Request Page: _____ of _____

Exhibit C

- Sheet C-5 Temporary Erosion and Sediment Control (TESC) Plan
- Sheet C-6 TESC Notes and Details

LEGEND

- CONSTRUCTION FENCING
- FILTER FABRIC INSERT
- TRUCK ROUTE ALTERNATES (A) & (B)
- SOIL STOCKPILE

TRUCK TIRE WHEEL WASH

EXCAVATION A

EXCAVATION B

TOP OF EXCAVATION

BOTTOM OF EXCAVATION

TRENCH DRAIN #1

TRENCH DRAIN #2

IMPORTED STRUCTURAL FILL

NORTHEAST CORNER OF EXISTING BUILDING

S. ANDOVER ST.

RAINIER AVE. S.

1 TESC NOTES

1. CONTAMINATED SOIL SHALL BE EXCAVATED AND LOADED DIRECTLY INTO TRUCKS FOR OFFSITE DISPOSAL AT AN APPROPRIATE FACILITY.
2. CONTAMINATED SOIL SHALL NOT BE STOCKPILED ONSITE OVERNIGHT.

N

APPROVAL

PROJECT

DGI RAINIER AVENUE FACILITY
4058 RAINIER AVENUE SOUTH
SEATTLE, WA

APPROXIMATE SCALE IN FEET

DATE	4/22/2011
REVISED BY	SCC
CHECKED BY	DAH
CAD FILE	0396-001-09_2008GP_TESC
PROJECT NAME	DARIGOLD RAINIER
PROJECT NO.	090066-004-01

SHEET TITLE

DGI RAINIER PROJECT
TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) PLAN

Aspect CONSULTING
ASPECT CONSULTING, LLC
401 2ND AVENUE SOUTH, SUITE 201
SEATTLE, WA 98104
ASPECTCONSULTING.COM

#	DATE	REVISION
1	12/30/08	PER CITY COMMENTS DATED 7/9/2008 RE: PROJECT #6175969
2		GENERAL REVISION

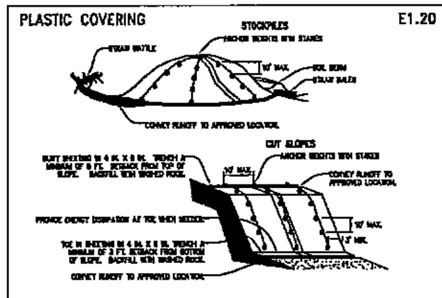
SHEET NO. 5 OF 9

C-5

TESC NOTES

1. A PRE-CONSTRUCTION MEETING IS REQUIRED BETWEEN OWNER'S REPRESENTATIVES (GEOTECHNICAL SPECIAL INSPECTOR, GENERAL CONTRACTOR, AND EXCAVATION CONTRACTOR) AND DPD SITE INSPECTOR. CONTACT (206)684-8860 TO ARRANGE MEETING.
2. CONSTRUCTION EROSION CONTROL MEASURES MUST BE IN PLACE AND APPROVED BY DPD PRIOR TO ANY EARTH DISTURBANCE. CALL (206) 684-8860 TO SCHEDULE AN INSPECTION APPOINTMENT FOR THIS ITEM.
3. NO SEDIMENT SHALL BE TRACKED ONTO PAVED STREETS OR ROADWAYS. SEDIMENT SHALL BE REMOVED FROM TRUCKS AND EQUIPMENT BEFORE LEAVING THE CONSTRUCTION SITE. IN THE EVENT OF FAILURE OF THE TESC SYSTEM RESULTING IN SEDIMENT TRACKING ONTO PAVEMENT, THE CONTRACTOR SHALL IMPLEMENT MEASURES IMMEDIATELY TO CORRECT THE SITUATION.
4. THE EROSION AND SEDIMENT CONTROL DETAILS SHOWN IN THESE PLANS ADDRESS PROCEDURES, EQUIPMENT, AND MATERIALS NECESSARY TO MINIMIZE EROSION, AND CONTROL LOSS OF SEDIMENT FROM THE PROJECT SITE DURING REMEDIATION WORK.
5. EROSION AND SEDIMENT CONTROL BMPS SHALL BE ESTABLISHED, AS CONSTRUCTION PHASING REQUIRES, PREVENTING TRANSPORT OF SEDIMENTS OFF SITE OR TO THE SURROUNDING ENVIRONMENT.
6. DUST GENERATION SHALL BE MINIMIZED OR ELIMINATED BY SPRAYING ALL ACTIVE AND INACTIVE AREAS WITH WATER AS NEEDED.
7. THE IMPLEMENTATION OF THESE TESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE TESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS APPROVED.
8. DURING EXCAVATION OF CONTAMINATED SOIL, ASPECT CONSULTING, LLC, SHALL BE THE DESIGNATED ORGANIZATION RESPONSIBLE FOR OVERSIGHT OF THE TESC/CONTAMINATION CLEANUP.
9. THE TESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL WORK SO AS TO ENSURE THAT THE TRANSPORT OF SEDIMENT TO SURFACE WATERS, DRAINAGE SYSTEMS, AND ADJACENT PROPERTIES IS MINIMIZED.
10. THE TESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE TESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS.
11. THE TESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED TO ENSURE CONTINUED PROPER FUNCTIONING. WRITTEN RECORDS SHALL BE KEPT OF WEEKLY REVIEWS OF THE TESC FACILITIES DURING THE WET SEASON (OCT. 1 TO MARCH 31) AND OF MONTHLY REVIEWS DURING THE DRY SEASON (APRIL 1 TO SEPT. 30).
12. THE TESC FACILITIES ON INACTIVE AREAS SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN 48 HOURS FOLLOWING A STORM EVENT.

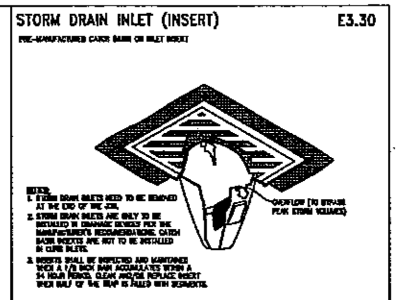
PLASTIC COVERING E1.20



REASON:

SYMBOL:

STORM DRAIN INLET (INSERT) E3.30



REASON:

SYMBOL:

2. STORMWATER SHALL BE PUMPED FROM THE EXCAVATION CAVITY, PRETREATED ON SITE, AND DISCHARGED TO SANITARY SEWER UNDER A SIDE SEWER PERMIT FOR TEMPORARY DEWATERING (SSPTD).

TESC MEASURES

1. EXPOSED SOILS WILL BE LIMITED TO ACTIVE AREAS OF DISTURBANCE WITHIN THE EXTENT OF THE EXCAVATION. ANY STORMWATER RUNOFF CONTACTING EXPOSED SOILS WILL ~~TRAVEL DOWNGRADIENT~~ DRAIN INTO THE EXCAVATION CAVITY, SERVING AS A TEMPORARY STORMWATER DETENTION FACILITY.
2. ~~IN THE EVENT THAT THE EXCAVATION CAVITY CANNOT INFILTRATE STORMWATER AT A RATE NECESSARY FOR CONSTRUCTION TO PROCEED, A VACUUM TRUCK WILL BE AVAILABLE TO DISPOSE OF THE STORMWATER TO A LICENSED DISPOSAL FACILITY.~~ △2
3. CLEARING LIMITS WILL BE MARKED WITH CONSTRUCTION FENCING. THE EXTENT OF THE CONSTRUCTION FENCING WILL BE ADJUSTED AS NECESSARY TO REPRESENT ACTIVE AREAS OF DISTURBANCE.
4. SOIL STOCKPILES SHALL BE STABILIZED AT THE END OF EACH WORKDAY.
5. ALL CATCH BASINS IN THE VICINITY OF CONSTRUCTION ACTIVITIES WILL BE PROTECTED WITH FILTER FABRIC AND CLEANED PRIOR TO COMPLETION OF THE WORK. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT-LADEN WATER INTO THE DOWNSTREAM SYSTEM.
6. TRUCK LOADING ROUTES WILL SHIFT AS THE EXCAVATION PROGRESSES SO AS TO MINIMIZE CONTACT WITH EXPOSED SOILS.
7. A TEMPORARY CONSTRUCTION WHEEL WASH WILL BE PLACED AT THE CONSTRUCTION EGRESS SO AS TO PREVENT SEDIMENT TRANSPORT FROM TRUCK TIRES.
8. DECONTAMINATION WATER GENERATED FROM THE TEMPORARY WHEEL WASH WILL BE ~~STORED IN A HOLDING TANK AND DISPOSED OF BY WAY OF VACUUM TRUCK AS STORAGE CAPACITY WARRANTS.~~ PRETREATED ON SITE AND DISCHARGED TO SANITARY SEWER UNDER A SIDE SEWER PERMIT FOR TEMPORARY DEWATERING (SSPTD).

DEWATERING NOTES:

1. EXCAVATION SHALL OCCUR IN PHASES TO ALLOW NORMAL OPERATIONS AT THE FACILITY.
2. IN THE EVENT THAT GROUND WATER IS ENCOUNTERED, THE WATER SHALL BE PUMPED ~~DIRECTLY TO TRUCKS AND HAULED TO A LICENSED DISPOSAL FACILITY.~~ FROM THE EXCAVATION CAVITY, PRETREATED ON SITE, AND DISCHARGED TO SANITARY SEWER UNDER A SIDE SEWER PERMIT FOR TEMPORARY DEWATERING (SSPTD). △2

APPROVAL	
PROJECT	DGI RAINIER AVENUE FACILITY 4058 RAINIER AVENUE SOUTH SEATTLE, WA
	NOT TO SCALE
DATE	3/17/2011
REVISED BY	SCC
CHECKED BY	DAH
CAD FILE	0309-001-09_2008GP_TESC NOTE
PROJECT NAME	DARIGOLD RAINIER
PROJECT NO.	090066-004-01
SHEET TITLE	DGI RAINIER PROJECT TESC NOTES AND DETAILS

Aspect CONSULTING

ASPECT CONSULTING, LLC
401 2ND AVENUE SOUTH, SUITE 201
SEATTLE, WA 98104
ASPECTCONSULTING.COM

#	DATE	REVISION
△		
△		
△2	1/XX/09	PER SPU COMMENTS DATED 1/7/09 RE: PROJECT #6175999
△1	12/XX/08	PER CITY COMMENTS DATED 7/3/2008 AND 7/11/2008 RE: PROJECT #6175969
△A		GENERAL REVISION

SHEET NO. 6 OF 8

C-6

Aspect CONSULTING

Project: Darigold Soil Removal Action
Date: 6/3/11
Subject: KCIW Construction Dewatering Request

Project No: 090066
By: D. Heffner
Page: _____ of _____

Exhibit D

- Table 1 - Summary of Groundwater Analytical Results (5 pages)
- Table 2 - Summary of Soil Analytical Results (4 pages)
- Site Plan showing sampling locations.

SoundEarth Strategies

Table 1
Summary of Groundwater Analytical Results
Darigold, Inc. Rainier Avenue Facility
4058 Rainier Avenue South
Seattle, Washington

Well ID	Sample Date	Groundwater Elevation (feet)[1]	Analytical Results (micrograms per liter)							
			DRPH[2]	ORPH[2]	GRPH[3]	Benzene[4]	Toluene[4]	Ethyl-benzene[4]	Total Xylenes[4]	MTBE[4]
MW01	05/08/04	81.37	520	--	6,100	1,300	3	2	<3	--
	11/24/04	81.48	360	--	3,000	520	<1	6	7	--
	04/12/05	82.04	--	--	--	--	--	--	--	--
	06/21/05	NM	270	70 [6]	<100	<1	<1	<1	<3	--
	12/07/06	82.73	350	<250	460	120	<1	<1	<3	--
	02/26/07	82.31	430	<250	150	33	<1	<1	<3	--
	05/15/07	82.20	420	<250	150	46	<1	<1	<3	--
	08/28/07	81.93	<50	<250	600	190	<1	10	14	--
	11/14/07	82.43	<50	<250	170	66	<1	<1	<3	--
	02/11/08	82.14	<50	<250	<100	<1	<1	<1	<3	--
	05/19/08	81.87	<50	<250	<100	2	<1	<1	<3	--
	08/20/08	81.47	<50	<250	<100	7	<1	<1	<3	--
	11/24/08	81.78	310[x]	<250	<100	2	<1	<1	<3	--
	02/24/09	82.00	330[x]	<250	<100	<1	<1	<1	<3	--
	05/19/09	82.13	69[x]	550 [6]	<100	<1	<1	<1	<3	--
	08/25/09	81.46	<50	<250	<100	<1	<1	<1	<3	--
	10/28/09	81.63	<50	<250	<100	<1	<1	<1	<2	140
	02/22/10	82.15	<50	<250	<100	<1	<1	<1	<2	92
	05/24/10	82.05	<50	<250	<100	<0.35	<1	<1	<3	87
	08/23/10	81.51	<50	<250	<100	<0.35	<1	<1	<3	100
	12/14/10	82.45	<50	<250	<100	<0.35	<1	<1	<3	96
MW02	05/08/04	79.26	700	--	980	160	<1	6	80	--
	11/24/04	81.14	1,500	--	2,000	230	2	6	140	--
	04/12/05	79.93	--	--	--	--	--	--	--	--
	06/21/05	NM	410	90 [6]	110	15.0	<1	<1	4	--
	12/07/06	79.76	360	<250	110	2	<1	<1	<3	--
	02/26/07	80.32	480	<250	150	<1	<1	<1	<3	--
	05/15/07	80.23	340	<250	<100	<1	<1	<1	<3	--
	08/28/07	79.98	<50	<250	<100	<1	<1	<1	<3	--
	11/14/07	80.92	<50	<250	<100	<1	<1	<1	<3	--
	02/11/08	80.21	<50	<250	<100	<1	<1	<1	<3	--
	05/19/08	79.82	53[x]	<250	<100	<1	<1	<1	<3	--
	08/20/08	81.70	<50	<250	<100	<1	<1	<1	<3	--
	11/24/08	80.97	220[x]	<250	<100	<1	<1	<1	<3	8.0
	02/24/09	82.18	340[x]	<250	<100	<1	<1	<1	<3	--
	05/19/09	82.47	130[x]	530 [6]	<100	<1	<1	<1	<3	--
	08/25/09	81.61	<50	<250	140	<1	<1	<1	18	--
	10/28/09	81.98	<50	<250	<100	<1	<1	<1	<2	5.4
	02/23/10	82.40	<50	<250	<100	<1	<1	<1	<2	9.6
	05/25/10	82.33	<50	<250	<100	<0.35	<1	<1	<3	7.2
	08/23/10	81.67	<50	<250	<100	<0.35	<1	<1	<3	4.5
	12/14/10	83.90	<50	<250	<100	<0.35	<1	<1	<3	5.8
MW03	05/08/04	83.12	1,000	--	2,100	360	110	55	190	--
	11/24/04	82.33	8,900	--	36,000	9,700	600	1,200	3,200	--
	04/12/05	82.89	--	--	--	--	--	--	--	--
	06/21/05	NM	12,000	<250	100,000	7,500	5,200	3,500	17,000	--
	12/07/06	82.22	SPH (sheen)							
	02/26/07	82.85	SPH (sheen)							
	05/15/07	82.86	10,000[x]	310[y,6]	92,000	10,000	86	2,100	3,300	--
	08/28/07	82.55	3,200[x]	<250	60,000	6,400	160	1,800	8,800	--
	11/14/07	82.64	4,600[x]	<250	28,000	1,100	42	1,300	6,500	--
	02/11/08	83.81	500[x]	<250	1,600	9	2	28	170	--
	05/19/08	82.97	2,400[x]	<250	7,900	1,000	7	310	1,100	--
	08/20/08	84.19	2,300[x]	<250	18,000	2,100	15	800	2,700	--
	11/24/08	83.31	3,100[x]	480 [6]	15,000	1,400	13	660	2,700	--
	02/24/09	84.20	2,700[x]	410 [6]	12,000	880	<40	530	2,100	--
	05/19/09	84.11	1,500	1000 [6]	4,600	360	<1	240	699	--
	08/25/09	82.81	2,000[x]	<250	19,000	2,800	<40	690	2,100	--
	10/28/09	82.97	1,500[x]	<250	22,000	2,800	4.9	890	2,910	1,600
	02/22/10	83.93	1,400[x]	<250	10,000	1,100	<100	510	<1,500	520
	05/24/10	83.98	450[x]	<250	3,100	160	<10	99	260	75
	08/23/10	83.03	590[x]	<250	6,000	950	<10	360	900	260
	12/14/10	84.22	330[x]	570	1,100	67	<1	47	<111	20
MTCA Method A Cleanup Levels[5]			500	500	800	5	1,000	700	1,000	20

SoundEarth Strategies

Table 1
Summary of Groundwater Analytical Results
Darigold, Inc. Rainier Avenue Facility
4058 Rainier Avenue South
Seattle, Washington

Well ID	Sample Date	Groundwater Elevation (feet)[1]	Analytical Results (micrograms per liter)							
			DRPH[2]	ORPH[2]	GRPH[3]	Benzene[4]	Toluene[4]	Ethyl-benzene[4]	Total Xylenes[4]	MTBE[4]
MW04	05/08/04	84.01	160	--	670	8	<5	45	150	--
	11/24/04	83.78	2,500	--	3,500	330	<50	190	92	--
	04/12/05	84.31	--	--	--	--	--	--	--	--
	06/21/05	NM	5,800	300 [6]	11,000	1,800	27	700	1,200	--
	12/07/06	83.99	3,500	360 [6]	13,000	1,700	<10	610	610	--
	02/26/07	84.13	3,800[x]	430[y,6]	14,000	1,700	<40	810	850	--
	05/15/07	83.96	3,200[x]	400[y,6]	9,100	1,100	<100	440	590	--
	08/28/07	83.58	1,100[x]	<250	15,000	2,700	<40	1,000	1,400	--
	11/14/07	83.63	1,600[x]	<250	12,000	1,800	<40	970	1,400	--
	02/11/08	84.16	950[x]	<250	7,000	1,000	<10	540	440	--
	05/19/08	81.00	730[x]	<250	5,600	1,300	3	520	440	--
	08/20/08	82.71	1,000[x]	<250	6,000	870	2	430	510	--
	11/24/08	83.07	3,200[x]	480 [6]	5,000	1,600	4	120	200	6,100
	02/24/09	83.39	3,200[x]	410 [6]	3,900	670	<10	140	200	--
	05/19/09	83.91	3,200[x]	1100 [6]	4,400	770	1.3	160	180	--
	08/25/09	82.60	980[x]	<250	6,900	1,700	<10	97	240	--
	10/28/09	83.12	850[x]	<250	4,000	920	<1	94	<210	2,700
	02/22/10	83.68	870[x]	<250	2,800	550	<100	<100	<300	2,600
	05/24/10	83.76	1,300[x]	<250	5,500	1,200	<10	30	44	3,600
	08/23/10	82.73	570[x]	<250	5000[lp]	1,300	<50	63	110	4,200
	12/14/10	84.15	940[x]	<250	3000[lp]	400	<50	<50	<150	1,900
MW05	05/08/04	84.29	730	--	<50	<1	<1	<1	<3	--
	11/24/04	83.90	350	--	<50	<1	<1	<1	<3	--
	04/12/05	84.36	--	--	--	--	--	--	--	--
	06/21/05	NM	400	110 [6]	<100	<1	<1	<1	<3	--
	12/07/06	84.15	310	<250	<100	<1	<1	<1	<3	--
	02/26/07	84.48	300	<250	<100	<1	<1	<1	<3	--
	05/15/07	84.16	260	<250	<100	<1	<1	<1	<3	--
	08/28/07	84.03	<50	<250	<100	<1	<1	<1	<3	--
	11/14/07	84.04	<50	<250	<100	<1	<1	<1	<3	--
	02/11/08	84.49	<50	<250	<100	<1	<1	<1	<3	--
	05/19/08	84.08	<50	<250	<100	<1	<1	<1	<3	--
	08/20/08	83.30	<50	<250	<100	2	<1	2	6	--
	11/24/08	83.70	190[x]	<250	<100	<1	<1	<1	<3	--
	02/24/09	84.28	190[x]	<250	<100	<1	<1	<1	<3	--
	05/19/09	84.47	<50	450 [6]	<100	<1	<1	<1	<3	--
	08/25/09	83.38	<50	<250	<100	<1	<1	<1	<3	--
	10/28/09	84.05	<50	<250	<100	<1	<1	<1	<2	63
	02/23/10	84.53	<50	<250	<100	<1	<1	<1	<2	56
	05/25/10	84.45	<50	<100	<100	<0.35	<1	<1	<3	62
	08/23/10	83.65	<50	<250	<100	<0.35	<1	<1	<3	63
	12/14/10	85.51	<50	<250	<100	<0.35	<1	<1	<3	58
MW06	05/08/04	79.75	520	--	<50	<1	<1	<1	<3	--
	11/24/04	79.97	510	--	<50	<1	<1	<1	<3	--
	04/12/05	80.47	--	--	--	--	--	--	--	--
	06/21/05	NM	410	110 [6]	<100	<1	<1	<1	<3	--
	12/07/06	80.64	550	270 [6]	<100	<1	<1	<1	<3	--
	02/26/07	80.95	740	390 [6]	<100	<1	<1	<1	<3	--
	05/15/07	80.96	630	250[y,6]	<100	<1	<1	<1	<3	--
	08/28/07	80.51	<50	<250	<100	<1	<1	<1	<3	--
	11/14/07	80.69	<50	<250	<100	<1	<1	<1	<3	--
	02/11/08	80.72	<50	<250	<100	<1	<1	<1	<3	--
	05/19/08	80.58	<50	<250	<100	<1	<1	<1	<3	--
	08/20/08	82.02	<50	<250	<100	<1	<1	<1	<3	--
	11/24/08	82.13	520[x]	300 [6]	<100	<1	<1	<1	<3	--
	02/24/09	82.58	540[x]	290 [6]	<100	<1	<1	<1	<3	--
	05/19/09	82.96	210	840 [6]	<100	<1	<1	<1	<3	--
	08/25/09	82.10	<50	<250	<100	<1	<1	<1	<3	--
	10/28/09	82.30	<50	<250	<100	<1	<1	<1	<2	4.6
	02/22/10	83.05	<50	<250	<100	<1	<1	<1	<2	6.0
	05/25/10	83.04	<50	<250	<100	<0.35	<1	<1	<3	5.7
	08/23/10	82.28	<50	<250	<100	<0.35	<1	<1	<3	4.9
	12/14/10	83.40	<50	<250	<100	<0.35	<1	<1	<3	5.8
MTCA Method A Cleanup Levels[5]			**500**	**500**	**800**	**5**	**1,000**	**700**	**1,000**	**20**

SoundEarth Strategies

Table 1
Summary of Groundwater Analytical Results
Darigold, Inc. Rainier Avenue Facility
4058 Rainier Avenue South
Seattle, Washington

Well ID	Sample Date	Groundwater Elevation (feet)[1]	Analytical Results (micrograms per liter)							
			DRPH[2]	ORPH[2]	GRPH[3]	Benzene[4]	Toluene[4]	Ethyl-benzene[4]	Total Xylenes[4]	MTBE[4]
MW07	05/08/04	79.75	8,600	--	62,000	6,900	4,600	2,400	9,300	--
	11/24/04	NM	SPH (thickness not measured)							
	04/12/05	80.42	--	--	--	--	--	--	--	--
	05/23/05	80.70	--	--	--	--	--	--	--	--
	06/21/05	NM	SPH (thickness not measured)							
	12/07/06	NM	SPH (approximately 0.1 feet)							
	02/26/07	NM	SPH (approximately 0.1 feet)							
	05/17/07	80.59	SPH (0.66 feet)							
	08/28/07	80.31	SPH (0.33 feet)							
	11/14/07	80.94	SPH (0.17 feet)							
	02/11/08	80.44	SPH (0.44 feet)							
	05/19/08	80.29	SPH (0.06 feet)							
	08/20/08	81.55	SPH (0.02 feet)							
	11/24/08	81.81	SPH (sheen)							
	02/24/09	82.10	SPH (sheen)							
	05/19/09	82.03	SPH (0.1 feet)							
	08/25/09	81.56	SPH (0.4 feet)							
	10/27/09	81.70	SPH (sheen)							
	02/22/10	82.06	SPH (0.05 feet)							
	05/24/10	82.10	SPH (0.04 feet)							
	08/23/10	81.91	SPH (0.01 feet)							
	12/14/10	82.41	SPH (0.01 feet)							
MW08	05/08/04	79.13	270	--	<250	<5	<5	<5	<15	--
	11/24/04	79.57	<250	--	<50.0	3	<1	<1	<3	--
	04/12/05	80.03	--	--	--	--	--	--	--	--
	06/21/05	NM	64	<250	<100	2	<1	<1	<3	--
	12/07/06	79.99	230	<250	<100	<1	<1	<1	<3	--
	02/26/07	80.61	<50	<250	<100	<1	<1	<1	<3	--
	05/17/07	80.34	<50	<250	<100	<1	<1	<1	<3	--
	08/28/07	79.94	<50	<250	<100	<1	<1	<1	<3	--
	11/14/07	80.78	<50	<250	<100	<1	<1	<1	<3	--
	02/11/08	79.85	<50	<250	<100	<1	<1	<1	<3	--
	05/19/08	79.84	<50	<250	<100	<1	<1	<1	<3	--
	08/20/08	81.36	<50	<250	<100	<1	<1	<1	<3	--
	11/24/08	81.59	<50	<250	<100	<1	<1	<1	<3	--
	02/24/09	81.89	<50	<250	<100	<1	<1	<1	<3	--
	05/19/09	82.01	<50	290[6]	<100	<1	<1	<1	<3	--
	08/25/09	81.39	<50	<250	<100	<1	<1	<1	<3	--
	10/28/09	82.47	<50	<250	<100	<1	<1	<1	<2	<1
	02/22/10	82.01	<50	<250	<100	<1	<1	<1	<2	1.4
	05/25/10	81.88	<50	<250	<100	<0.35	<1	<1	<3	2.0
	08/23/10	81.38	<50	<250	<100	<0.35	<1	<1	<3	1.0
	12/14/10	83.38	<50	<250	<100	<0.35	<1	<1	<3	1.3
MW09	05/08/04	NM	270	--	<50.0	<1	<1	<1	<3	--
	11/24/04	84.75	700	--	<50.0	<1	<1	<1	<3	--
	06/21/05	NM	100	<250	<100	<1	<1	<1	<3	--
	12/07/06	87.18	740	320[6]	<100	<1	<1	<1	<3	--
	02/26/07	86.38	<50	<250	<100	<1	<1	<1	<3	--
	05/17/07	86.07	<50	<250	<100	<1	<1	<1	<3	--
	08/28/07	85.84	<50	<250	<100	2	<1	<1	5	--
	11/14/07	NM	<50	<250	<100	<1	<1	<1	<3	--
	02/11/08	86.18	<50	<250	<100	<1	<1	<1	<3	--
	05/19/08	85.95	<50	<250	<100	<1	<1	<1	<3	--
	08/20/08	82.90	<50	<250	<100	<1	<1	<1	4	--
	11/24/08	83.70	170[x]	<250	<100	<1	<1	<1	<3	--
	02/24/09	84.06	<50	<250	<100	<1	<1	<1	<3	--
	05/19/09	84.29	<50	<250	<100	<1	<1	<1	<3	--
	08/25/09	81.47	<50	<250	<100	<1	<1	<1	<3	--
	10/27/09	82.23	<50	<250	<100	<1	<1	<1	<2	<1
	02/23/10	84.41	<50	<250	<100	<1	<1	<1	<2	<1
	05/24/10	84.17	<50	<250	<100	<0.35	<1	<1	<3	<1
	08/23/10	82.87	<50	<250	<100	<0.35	<1	<1	<3	<1
	12/14/10	84.58	<50	<250	<100	<0.35	<1	<1	<3	<1
MTCA Method A Cleanup Levels[5]			**500**	**500**	**800**	**5**	**1,000**	**700**	**1,000**	**20**

SoundEarth Strategies

Table 1
Summary of Groundwater Analytical Results
Darigold, Inc. Rainier Avenue Facility
4058 Rainier Avenue South
Seattle, Washington

Well ID	Sample Date	Groundwater Elevation (feet)[1]	Analytical Results (micrograms per liter)							
			DRPH[2]	ORPH[2]	GRPH[3]	Benzene[4]	Toluene[4]	Ethyl-benzene[4]	Total Xylenes[4]	MTBE[4]
MW10	02/11/08	82.14	1,100[x]	<250	1,200	83	2	140	59	--
	05/19/08	81.92	840[x]	<250	1,100	86	2	140[ve]	38	--
	08/20/08	81.36	710[x]	<250	1,100	75	3	90	26	--
	11/24/08	81.45	2,200[x]	480 [6]	1,100[lp,7]	93[lp,7]	2[lp,7]	51[lp,7]	14[lp,7]	140
	02/24/09	81.88	2,200[x]	470 [6]	810	60	1	45	4	--
	05/19/09	82.01	1,900[x]	880 [6]	800	59	<1	36	<3	--
	08/25/09	81.38	870[x]	<250	440	20	<1	9	<3	--
	10/28/09	81.47	660	<250	450	15	<1	4.7	<2	64
	02/23/10	81.84	750[x]	<250	530	25	<1	11	<2	28
	05/24/10	81.90	730[x]	<250	810	12	<1	8.7	<3	24
	08/23/10	81.52	470[x]	<250	540	0.53	<1	2.0	<3	29
	12/14/10	82.33	630[x]	<250	740	1.50	<1	2.7	<3	23
MW11	02/11/08	82.28	3,100[x]	<250	21,000	680	120	1,200	4,500	--
	05/19/08	81.98	2,100[x]	<250	10,000	880	5	1,100	1,600	--
	08/20/08	81.56	1,300[x]	<250	15,000	1,400	13	1,800	1,700	--
	11/24/08	81.93	2,300[x]	<250	6,500	420	3	560	800	--
	02/24/09	82.16	1,000[x]	<250	2,700	150	<10	330	320	--
	05/19/09	82.41	1,600[x]	690 [6]	5,500	180	22	700	1,420	--
	08/25/09	81.61	1,400[x]	<250	8,500	280	<10	960	960	--
	10/28/09	81.80	1,200[x]	<250	7,600	230	2.0	950	1,486	27
	02/23/10	82.37	2,500[x]	<250	14,000	290	<10	1,000	2,247	27
	05/24/10	82.18	1,400[x]	<250	13,000	280	<10	860	2,024	29
	08/23/10	81.69	490[x]	<250	3,800	98	<10	230	520	15
	12/14/10	82.74	1,000[x]	<250	3,300	56	<1	50	<141	13
MW12	02/11/08	82.95	2,400[x]	<250	26,000	2,300	7	1,600	5,300	--
	05/19/08	82.67	4,800[x]	<250	60,000	4,800	14	4,100	15,000	--
	08/20/08	83.13	2,600[x]	<250	42,000	3,700	8	3,300	7,800	--
	11/24/08	83.74	4,300[x]	<250	28,000	2,600	7	2,500	5,400	--
	02/24/09	83.75	3,100[x]	<270	29,000	2,000	<40	2,500	5,500	--
	05/19/09	84.53	3,800[x]	590 [6]	28,000	2,400	1.5	2,700	5,756	--
	08/25/09	83.10	2,000[x]	<250	27,000	2,200	<40	2,200	3,700	--
	10/28/09	83.84	2,800[x]	<250	17,000	1,300	<1	1,800	2,510	110
	02/23/10	84.20	2,100[x]	<250	17,000	1,600	<100	1,800	<2,200	240
	05/24/10	84.17	1,800[x]	<250	21,000	1,800	<100	2,100	2,400	150
	08/23/10	83.06	1,400[x]	<250	18,000	1,600	<50	1,600	1,700	110
	12/14/10	84.67	1,800[x]	<250	11,000	940	<50	1,100	<1,250	74
MW13	02/11/08	83.36	<50	<250	<100	<1	<1	<1	<3	--
	05/19/08	82.94	310[x]	<250	4,300	410	1	300	1,100	--
	08/20/08	81.31	<50	<250	<100	1	<1	<1	3	--
	11/24/08	81.88	55[x]	<250	<100	<1	<1	<1	<3	--
	02/24/09	82.26	<50	<250	<100	<1	<1	<1	<3	--
	05/19/09	82.66	<50	<250	<100	<1	<1	<1	<3	--
	08/25/09	81.27	<50	<250	<100	<1	<1	<1	<3	--
	10/28/09	82.79	<50	<250	<100	<1	<1	<1	<2	20
	02/23/10	83.77	<50	<250	<100	<1	<1	<1	<2	3.4
	05/24/10	83.49	<50	<250	<100	0.51	<1	2.8	3.5	3.2
	08/23/10	82.50	<50	<250	<100	<0.35	<1	<1	<3	5.5
	12/14/10	83.97	<50	<250	<100	<0.35	<1	<1	<3	25
MW14	01/27/08	80.28	<50	<250	<100	2	<1	3	<3	--
	05/19/08	80.08	<50	<250	<100	<1	<1	<1	<3	--
	08/20/08	79.62	<50	<250	<100	<1	<1	2	5	--
	11/24/08	80.03	220[x]	<250	<100	<1	<1	<1	<3	--
	02/24/09	80.14	340[x]	<250	<100	<1	<1	<1	<3	--
	05/19/09	80.05	200[x]	360	<100	<1	<1	<1	<3	--
	08/26/09	79.63	<50	<250	<100	<1	<1	<1	<3	--
	10/27/09	79.85	<50	<250	<100	<1	<1	<1	<2	<1
	02/23/10	80.43	<50	<250	<100	<1	<1	<1	<2	<1
	05/25/10	80.23	<50	<250	<100	<0.35	<1	<1	<3	<1
	08/23/10	79.74	<50	<250	<100	<0.35	<1	<1	<3	<1
	12/14/10	80.89	<50	<250	<100	<0.35	<1	<1	<3	<1
MW15	01/27/08	80.38	<50	<250	<100	<1	<1	<1	<3	--
	05/19/08	79.79	<50	<250	<100	<1	<1	<1	<3	--
	08/20/08	79.68	<50	<250	<100	<1	<1	<1	<3	--
	11/24/08	79.95	210[x]	<250	<100	<1	<1	<1	<3	--
	02/24/09	80.18	130[x]	<250	<100	<1	<1	<1	<3	--
	05/19/09	80.40	<50	350	<100	<1	<1	<1	<3	--
	08/26/09	79.67	<50	<250	<100	<1	<1	<1	<3	--
	10/27/09	79.95	<50	<250	<100	<1	<1	<1	<2	<1
	02/23/10	80.40	<50	<250	<100	<1	<1	<1	<2	<1
	05/25/10	80.27	<50	<250	<100	<0.35	<1	<1	<3	<1
	08/23/10	79.77	<50	<250	<100	<0.35	<1	<1	<3	<1
	12/14/10	81.79	<50	<250	<100	<0.35	<1	<1	<3	<1
MTCA Method A Cleanup Levels[5]			**500**	**500**	**800**	**5**	**1,000**	**700**	**1,000**	**20**

SoundEarth Strategies

Table 1
Summary of Groundwater Analytical Results
Darigold, Inc. Rainier Avenue Facility
4058 Rainier Avenue South
Seattle, Washington

Well ID	Sample Date	Groundwater Elevation (feet)[1]	Analytical Results (micrograms per liter) DRPH[2]	ORPH[2]	GRPH[3]	Benzene[4]	Toluene[4]	Ethyl-benzene[4]	Total Xylenes[4]	MTBE[4]
MW16	01/27/08	81.00	<50	<250	<100	<1	<1	<1	<3	--
	05/19/08	81.88	<50	<250	<100	<1	<1	<1	<3	--
	08/20/08	79.67	<50	<250	<100	<1	<1	<1	<3	--
	11/24/08	79.91	<50	<250	<100	<1	<1	<1	<3	--
	02/24/09	80.34	<50	<250	<100	<1	<1	<1	<3	--
	05/19/09	81.01	<50	<250	<100	<1	<1	<1	<3	--
	08/26/09	79.67	<50	<250	<100	<1	<1	<1	8	--
	10/27/09	79.78	<50	<250	<100	<1	<1	<1	<2	<1
	02/23/10	81.18	<50	<250	<100	<1	<1	<1	<2	<1
	05/25/10	80.96	<50	<250	<100	<0.35	<1	<1	<3	<1
	08/23/10	79.83	<50	<250	<100	<0.35	<1	<1	<3	<1
	12/14/10	81.18	<50	<250	<100	<0.35	<1	<1	<3	<1
MW17	01/27/08	80.60	<50	<250	<100	<1	<1	<1	<3	--
	05/19/08	80.06	<50	<250	<100	<1	<1	<1	<3	--
	08/20/08	79.63	<50	<250	<100	<1	<1	<1	<3	--
	11/24/08	79.84	<50	<250	<100	<1	<1	<1	<3	<1
	02/24/09	80.09	<50	<250	<100	<1	<1	<1	<3	--
	05/19/09	80.42	<50	<250	<100	<1	<1	<1	<3	--
	08/26/09	79.62	<50	<250	<100	<1	<1	<1	<3	--
	10/27/09	79.73	<50	<250	<100	<1	<1	<1	<2	<1
	02/23/10	80.43	<50	<250	<100	<1	<1	<1	<2	<1
	05/25/10	80.23	<50	<250	<100	<0.35	<1	<1	<3	<1
	08/23/10	79.68	<50	<250	<100	<0.35	<1	<1	<3	<1
	12/14/10	81.06	<50	<250	<100	<0.35	<1	<1	<3	<1
MW18	08/20/08	80.56	<50	<250	<100	<1	<1	<1	<3	--
	11/24/08	80.84	330[x]	<250	<100	3	<1	<1	<3	--
	02/24/09	81.09	310[x]	<250	<100	<1	<1	<1	<3	--
	05/19/09	81.20	84[x]	280 [6]	<100	<1	<1	<1	<3	--
	08/26/09	80.53	<50	<250	<100	<1	<1	<1	<3	--
	10/27/09	80.50	84[x]	<250	<100	<1	<1	<1	<2	<1
	02/23/10	81.01	<50	<250	<100	<1	<1	<1	<2	<1
	05/24/10	81.11	<50	<250	<100	<0.35	<1	<1	<3	<1
	08/23/10	83.97	<50	<250	<100	<0.35	<1	<1	<3	<1
	12/14/10	81.73	<50	<250	<100	<0.35	<1	<1	<3	<1
MW19	10/27/09	81.81	<50	<250	<100	<1	<1	<1	<2	<1
	02/23/10	83.33	<50	<250	<100	<1	<1	<1	<3	<1
	05/24/10	82.23	<50	<250	<100	<0.35	<1	<1	<3	<1
	08/23/10	80.95	<50	<250	<100	<0.35	<1	<1	<3	<1
	12/14/10	85.13	<50	<250	<100	<0.35	<1	<1	<3	<1
MW20	10/27/09	81.29	<50	<250	<100	<1	<1	<1	<2	<1
	02/23/10	83.02	<50	<250	<100	<1	<1	<1	<2	<1
	05/24/10	81.82	<50	<250	<100	<0.35	<1	<1	<3	<1
	08/23/10	81.02	<50	<250	<100	<0.35	<1	<1	<3	<1
	12/14/10	85.72	<50	<250	<100	<0.35	<1	<1	<3	<1
MW21	10/27/09	84.55	<50	<250	<100	<1	<1	<1	<2	<1
	02/23/10	83.95	<50	<250	<100	<1	<1	<1	<2	<1
	05/24/10	83.76	<50	<250	<100	<0.35	<1	<1	<3	<1
	08/23/10	83.32	<50	<250	<100	<0.35	<1	<1	<3	<1
	12/14/10	84.66	<50	<250	<100	<0.35	<1	<1	<3	<1
PE01	05/19/08	80.86	**6,100**[x]	<250	**15,000**	**590**	17	**920**	**3,400**	--
	08/20/08	81.49	**2,100**[x]	<250	**6,200**	**550**	17	350	670	--
	11/24/08	81.76	**3,400**[x]	300 [6]	**17,000**	**1,300**	**1,100**	690	**2,400**	--
	02/24/09	82.07	**2,200**[x]	310 [6]	**6,600**	**1,100**	87	340	940	--
	05/19/09	82.19	**2,700**[x]	**980** [6]	**9,400**	**1,800**	50	630	**1,270**	--
	08/25/09	81.56	**670**[x]	<260	**3,800**	**580**	14	270	280	--
	10/28/09	81.64	**650**[x]	<250	**5,500**	**700**	73	370	600	9.9
	02/23/10	82.13	**1,200**[x]	<250	**14,000**	**1,400**	540	580	**1,810**	10
	05/24/10	82.06	**930**[x]	<250	**13,000**	**1,700**	170	680	**1,660**	10
	08/23/10	81.89	**530**[x]	<250	**2,600**	**450**[ve]	6	180	186[ve]	8.4
	12/14/10	82.46	71[x]	<250	410	**32**	<1	14	51	<1
MTCA Method A Cleanup Levels[5]			**500**	**500**	**800**	**5**	**1,000**	**700**	**1,000**	**20**

NOTES:

Red indicates concentration exceeding MTCA Method A cleanup levels for groundwater.

[1]Relative to an arbitrary site datum designated 100.00 feet.

[2]Analyzed by NWTPH Method NWTPH-Dx.

[3]Analyzed by NWTPH Method NWTPH-Gx.

[4]Analyzed by EPA Method 8021B or 8260C.

[5]MTCA Method A cleanup levels, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.

[6]Sample contains non-petroleum hydrocarbons attributed to organic soil conditions (silica gel cleanup procedure not specified).

[7]Originally tabulated with laboratory data qualifier 'j'.

LABORATORY DATA QUALIFIERS:

[ip] Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

[j] The result is below normal reporting limits. The value reported is an estimate.

[x] The pattern of peaks present is not indicative of diesel.

[y] The pattern of peaks present is not indicative of motor oil.

[ve] The value reported exceeded the calibration range established for the analyte and should be considered an estimate.

< = not detected at concentration exceeding the laboratory reporting limit
-- = not analyzed
DRPH = diesel-range petroleum hydrocarbons
EPA = United States Environmental Protection Agency
GRPH = gasoline-range petroleum hydrocarbons
MTCA = Model Toxics Control Act
NM = not measured
NWTPH = Northwest Total Petroleum Hydrocarbon
ORPH = oil-range petroleum hydrocarbons
SPH = separate-phase hydrocarbons

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Slotta Design & Construction, 1998 UST Removal (Closure Samples Only)													
EW-N	NA	UST Excavation	Sidewall Sample	08/28/98	--	--	**36**	<20	<50	<0.050	<0.050	<0.050	0.130
EW-NW	NA	UST Excavation	Sidewall Sample	08/28/98	--	--	<5.0	<20	<50	<0.050	<0.050	<0.050	<0.050
EW-NE	NA	UST Excavation	Sidewall Sample	08/28/98	--	--	<5.0	290	<50	<0.050	<0.050	<0.050	<0.050
EW-NE(2)	NA	UST Excavation	Sidewall Sample	08/28/98	--	--	<5.0	<20	<50	<0.050	<0.050	<0.050	<0.050
EW-W	NA	UST Excavation	Sidewall Sample	08/28/98	--	--	**2,200**	**38,000**	<50	<0.050	**19.000**	**17.000**	**97.000**
EB-N	NA	UST Excavation	Bottom Sample	08/28/98	--	--	<5.0	<20	<50	<0.050	<0.050	<0.050	0.140
EB-S	NA	UST Excavation	Bottom Sample	08/28/98	--	--	<5.0	<20	<50	<0.050	<0.050	<0.050	<0.050
EW-S	NA	UST Excavation	Sidewall Sample	08/28/98	--	--	<5.0	<20	<50	<0.050	<0.050	<0.050	<0.050
EW-SE	NA	UST Excavation	Sidewall Sample	08/28/98	--	--	<5.0	<20	<50	<0.050	<0.050	<0.050	<0.050
Slotta Design & Construction, 1998 Subsurface Investigation													
B-1	NA	North Yard	Investigation	08/21/98	6	--	<10	<20	<50	--	--	--	--
B-2	NA	North Yard	Investigation	08/21/98	6	--	<10	<20	<50	--	--	--	--
B-3	NA	North Yard	Investigation	08/21/98	6	--	<10	<20	<50	--	--	--	--
B-4	NA	North Yard	Investigation	08/21/98	4	--	<10	<20	<50	--	--	--	--
B-5	NA	North Yard	Investigation	08/21/98	4	--	<10	68	410	--	--	--	--
B-6	NA	North Yard	Investigation	08/21/98	5	--	<10	<20	<50	--	--	--	--
B-7	NA	North Yard	Investigation	08/21/98	7	--	<10	<20	54	--	--	--	--
B-8	NA	North Yard	Investigation	08/21/98	7	--	**45**	<20	<50	--	--	--	--
B-8	NA	North Yard	Investigation	08/21/98	11	--	25	<20	<50	--	--	--	--
B-9	NA	North Yard	Investigation	08/21/98	8	--	**500**	<20	<50	--	--	--	--
B-9	NA	North Yard	Investigation	08/21/98	11	--	**140**	<20	<50	--	--	--	--
B-10	NA	North Yard	Investigation	08/21/98	7	--	**100**	<20.0	<50.0	--	--	--	--
B-10	NA	North Yard	Investigation	08/21/98	11	--	<10	<20	<50	--	--	--	--
B-11	NA	North Yard	Investigation	08/21/98	3	--	12	<20	100	--	--	--	--
B-12	NA	North Yard	Investigation	08/21/98	7	--	<10	<20	<50	--	--	--	--

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Integral, 2003 Subsurface Investigation													
SB-1	NA	North Yard	Investigation	01/08/03	5	0	<5.00	17.9	52.9	<0.0300	<0.0500	<0.0500	<0.100
SB-2	NA	North Yard	Investigation	01/08/03	3	2,000	<5.00	<10.0	<25.0	<0.0300	<0.0500	<0.0500	<0.100
SB-2	NA	North Yard	Investigation	01/08/03	10	1,000	--	--	--	--	--	--	--
SB-2	NA	North Yard	Investigation	01/08/03	15	--	<5.00	<10.0	<25.0	<0.0300	<0.0500	<0.0500	<0.100
SB-3	NA	North Yard	Investigation	01/08/03	6	0	**157**	561	<25.0	**0.139**	<0.100	0.849	3.40
SB-4	NA	North Yard	Investigation	01/08/03	6	300	**2,240**	1,060	92.7	**7.09**	<0.500	**51.5**	**190**
SB-4	NA	North Yard	Investigation	01/08/03	15	30	--	--	--	--	--	--	--
SB-5	NA	North Yard	Investigation	01/09/03	6	--	**1,240**	**2,120**	<250	**1.90**	<0.500	**26.2**	**35.4**
SB-5	NA	North Yard	Investigation	01/09/03	10	400	--	--	--	--	--	--	--
SB-6	NA	North Yard	Investigation	01/09/03	8	150	**50.8**	157	302	**0.0359**	0.114	0.156	0.275
SB-7	NA	North Yard	Investigation	01/09/03	9	--	**99.6**	114	<25.0	**0.0642**	<0.0500	0.528	1.39
SB-7	NA	North Yard	Investigation	01/09/03	13	300	**88.3**	204	<25.0	**0.0726**	<0.0500	0.535	1.38
SB-7	NA	North Yard	Investigation	01/09/03	17	400[c]	--	--	--	--	--	--	--
SB-8	NA	North Yard	Investigation	01/09/03	12	--	<5.00	<10.0	<25.0	<0.0300	<0.0500	<0.0500	<0.100
SB-9	NA	North Yard	Investigation	01/09/03	5	2,000	**148**	743	1,530	**2.71**	<0.0500	0.819	1.32
SB-9	NA	North Yard	Investigation	01/09/03	10	800	--	--	--	--	--	--	--
SB-10	NA	North Yard	Investigation	01/09/03	6	400	**766**	**3,520**	265	**8.21**	<0.0500	**28.9**	**37.8**
SB-11	NA	North Yard	Investigation	02/06/03	5	0	<5.00	67.7	313	<0.0300	<0.0500	<0.0500	<0.100
SB-12	NA	North Yard	Investigation	02/06/03	8	0	5.62	<10.0	<25.0	<0.0300	<0.0500	<0.0500	<0.100
SB-13	NA	North Yard	Investigation	02/06/03	5	--	**70.3**	--	--	**0.31**	0.0726	0.757	1.70
SB-14	NA	North Yard	Investigation	02/06/03	5	20	13.0	--	--	**0.394**	<0.0500	0.346	0.690
SB-14	NA	North Yard	Investigation	02/06/03	10	0.10	**43.4**	--	--	**0.114**	0.275	0.316	1.73
Integral, 2003 Subsurface Investigation (cont'd)													
SB-15	NA	North Yard	Investigation	02/06/03	5	0	14.7	--	--	**0.140**	<0.0500	0.124	0.553
SB-15	NA	North Yard	Investigation	02/06/03	10	300	**64.1**	22.7	<25.0	**0.929**	3.62	1.48	**9.05**
SB-16	NA	North Yard	Investigation	02/06/03	8	--	25.4	--	--	**0.418**	0.0650	0.212	0.783
SB-16	NA	North Yard	Investigation	02/06/03	10	--	**767**	71.3	<25.0	**1.82**	**18.1**	**14.7**	**82.1**
SB-17	NA	North Yard	Investigation	02/06/03	5	0	<5.00	--	--	<0.0300	<0.0500	<0.0500	<0.100
SB-17	NA	North Yard	Investigation	02/06/03	10	0	<5.00	--	--	<0.0300	<0.0500	<0.0500	<0.100
SB-17	NA	North Yard	Investigation	02/06/03	13	0	21.5	--	--	<0.129	<0.215	<0.215	<0.430
SB-18	NA	North Yard	Investigation	02/06/03	5	12	<5.00	--	--	<0.0300	<0.0500	<0.0500	<0.100
SB-18	NA	North Yard	Investigation	02/06/03	10	0	<5.00	--	--	<0.0300	<0.0500	<0.0500	<0.100
SB-19	NA	North Yard	Investigation	02/06/03	5	--	<5.00	--	--	<0.0300	<0.0500	<0.0500	<0.100
SB-19	NA	North Yard	Investigation	02/06/03	10	--	<5.00	--	--	<0.0300	<0.0500	<0.0500	<0.100

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SES, 2004 UST Removal													
E-1	NA	UST Excavation	Sidewall Sample	01/15/04	6.5	>2,000	**190**	**2,900**	<50	**0.6**	0.8	2.4	3.8
E-2	NA	UST Excavation	Sidewall Sample	01/15/04	6.5	>2,000	**42**	**3,800**	<50	**0.03**	<0.02	0.16	0.46
E-3	NA	UST Excavation	Sidewall Sample	01/15/04	6.5	>2,000	**86**	**4,900**	64	**2.8**	0.06	0.83	0.38
E-4	NA	UST Excavation	Sidewall Sample	01/15/04	6.5	>2,000	**420**	**2,100**	<50	**2.1**	0.6	**14**	**32**
E-5	NA	UST Excavation	Bottom Sample	01/15/04	10	>2,000	3	<10	<50	**0.43**	<0.02	0.18	0.67
E-7	NA	UST Excavation	Sidewall Sample	01/15/04	6.5	400	<1	<10	<50	**0.06**	<0.02	0.04	0.07
E-8	NA	UST Excavation	Sidewall Sample	01/15/04	6.5	>2,000	**400**	770	280	**2.8**	0.6	**14**	6.3
E-9	NA	UST Excavation	Sidewall Sample	01/15/04	6.5	>2,000	**110**	55	<50	**0.27**	0.05	0.38	0.64
E-10	NA	UST Excavation	Bottom Sample	01/15/04	10	1,000	**520**	1,200	<50	**2.9**	1.0	**15**	**13**
E-11	NA	UST Excavation	Bottom Sample	01/15/04	10	1,200	**470**	280	<50	**2.9**	1.0	**13**	6.6
SES, 2008 Supplemental Remedial Investigation - North Yard													
B13-05	MW-10	North Yard	Monitoring Well	01/13/08	5	20.2	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
B13-08	MW-10	North Yard	Monitoring Well	01/13/08	8	12.1	3	<50	<250	<0.02	<0.02	<0.02	<0.06
B13-13	MW-10	North Yard	Monitoring Well	01/13/08	13	21.4	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
B14-09	MW-11	North Yard	Monitoring Well	01/13/08	9	92.2	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
B14-11	MW-11	North Yard	Monitoring Well	01/13/08	11	67.2	<2	<50	<250	<0.02	<0.02	<0.02	0.07
PE01-03	PE-01	North Yard	Pilot Well	05/18/08	3.0	0.0	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
PE01-08.5	PE-01	North Yard	Pilot Well	05/18/08	8.5	8.4	15	800	<250	**0.05**	0.02	1.3	15
PE01-13	PE-01	North Yard	Pilot Well	05/18/08	13.0	0.0	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
PE01-19	PE-01	North Yard	Pilot Well	05/18/08	19.0	0.0	<2	<50	<250	<0.02	<0.02	0.03	0.10
SES, 2008 Remediation Wells - North Yard													
B15-08.5	AS01	North Yard	Remediation Well	08/03/08	8.5	>2000	16	<50	<250	<0.02	<0.02	0.19	1.6
B15-14	AS01	North Yard	Remediation Well	08/03/08	14	>2000	**55**	73[x]	<250	**0.24**	0.32	1.3	6.4[ve]
B16-13.5	AS02	North Yard	Remediation Well	08/03/08	13.5	0.0	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
B17-03	AS03	North Yard	Remediation Well	08/03/08	3	0.0	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
B17-13	AS03	North Yard	Remediation Well	08/03/08	13	0.0	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
B18-02.5	MW18	North Yard	Remediation Well	08/03/08	2.5	0.0	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
B18-17.5	MW18	North Yard	Remediation Well	08/03/08	17.5	0.0	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
SES, 2008 Supplemental Remedial Investigation - South Andover Street Right-of-Way													
B15-04	MW-12	Andover Street	Monitoring Well	01/13/08	4	5.1	7	<50	<250	**0.18**	0.03	0.09	0.32
B15-06	MW-12	Andover Street	Monitoring Well	01/13/08	6	66.1	**43**	<50	<250	**0.56**	0.05	2.0	0.37
B15-10	MW-12	Andover Street	Monitoring Well	01/13/08	10	26.4	5	<50	<250	**0.31**	<0.02	0.38	0.47
B16-06	MW-13	Andover Street	Monitoring Well	01/14/08	6	0.0	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
B16-09	MW-13	Andover Street	Monitoring Well	01/14/08	9	0.0	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
B16-11	MW-13	Andover Street	Monitoring Well	01/14/08	11	0.0	<2	<50	<250	<0.02	<0.02	<0.02	<0.06

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SES, 2008 Supplemental Remedial Investigation - Basement of Dairy-Processing Facility													
HA01-01.5	MW14	Basement	Monitoring Well	01/27/08	1.5	0.0	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
HA01-03.5	MW14	Basement	Monitoring Well	01/27/08	3.5	0.0	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
HA02-01.5	MW15	Basement	Monitoring Well	01/27/08	1.5	0.0	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
HA02-05	MW15	Basement	Monitoring Well	01/27/08	5	0.0	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
HA03-01.5	NA	Basement	Investigation 01/	27/08	1.5	0.0	Organic peat soil sample was not submitted for analysis						
HA04-01.5	NA	Basement	Investigation	01/27/08	1.5	0.0	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
HA05-01.5	MW16	Basement	Monitoring Well	01/27/08	1.5	0.3	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
HA06-01.5	MW17	Basement	Monitoring Well	01/27/08	1.5	0.0	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
SES, 2009 Supplemental Remedial Investigation - South Andover Street Right-of-Way													
B17-05.5	MW19	Andover Street	Monitoring Well	10/20/09	5.5	17.9[c]	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
B17-11	MW19	Andover Street	Monitoring Well	10/20/09	11	26.2[c]	<2	--	--	<0.02	<0.02	<0.02	<0.06
B18-08	MW20	Andover Street	Monitoring Well	10/20/09	8	11.5[c]	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
B18-11	MW20	Andover Street	Monitoring Well	10/20/09	11	15[c]	<2	--	--	<0.02	<0.02	<0.02	<0.06
B19-08	MW21	Andover Street	Monitoring Well	10/20/09	8	6.7[c]	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
B19-13	MW21	Andover Street	Monitoring Well	10/20/09	13	3.2[c]	<2	--	--	<0.02	<0.02	<0.02	<0.06
MTCA Method A Cleanup Levels for Soil[4]							100/30[b]	2,000	2,000	0.03	7	6	9

NOTES:

Red denotes concentration exceeds MTCA Method A Cleanup Levels.

Results reported in mg/kg.

Chemical analyses conducted by Friedman & Bruya, Inc. of Seattle, Washington.

[1] Analyzed by Northwest Method NWTPH-Gx.

[2] Analyzed by Northwest Method NWTPH-Dx.

[3] Analyzed by EPA Method 8021 or EPA Method 8260B.

[4] MTCA Method A Cleanup Levels for Soil, Table 740-1 of Chapter 173-340-900 of the Washington Adminsitrative Code.

[a] 100 mg/kg when benzene is not present and 30 mg/kg when benzene is present.

[c] PID malfunctioning due to humidity.

LABORATORY DATA QUALIFIERS:

x = The pattern of peaks present is not indicative of diesel.

ve = The value reported exceeded the calibration range estblished for the analyte. The reported concentration should be considered an estimate.

-- = not analyzed

< = not detected at concentration exceeding the laboratory reporting limit

mg/kg = milligrams per kilogram

DRPH = diesel-range petroleum hydrocarbons

EPA = United States Environmental Protection Agency

GRPH = gasoline-range petroleum hydrocarbons

MTCA = Model Toxics Control Act

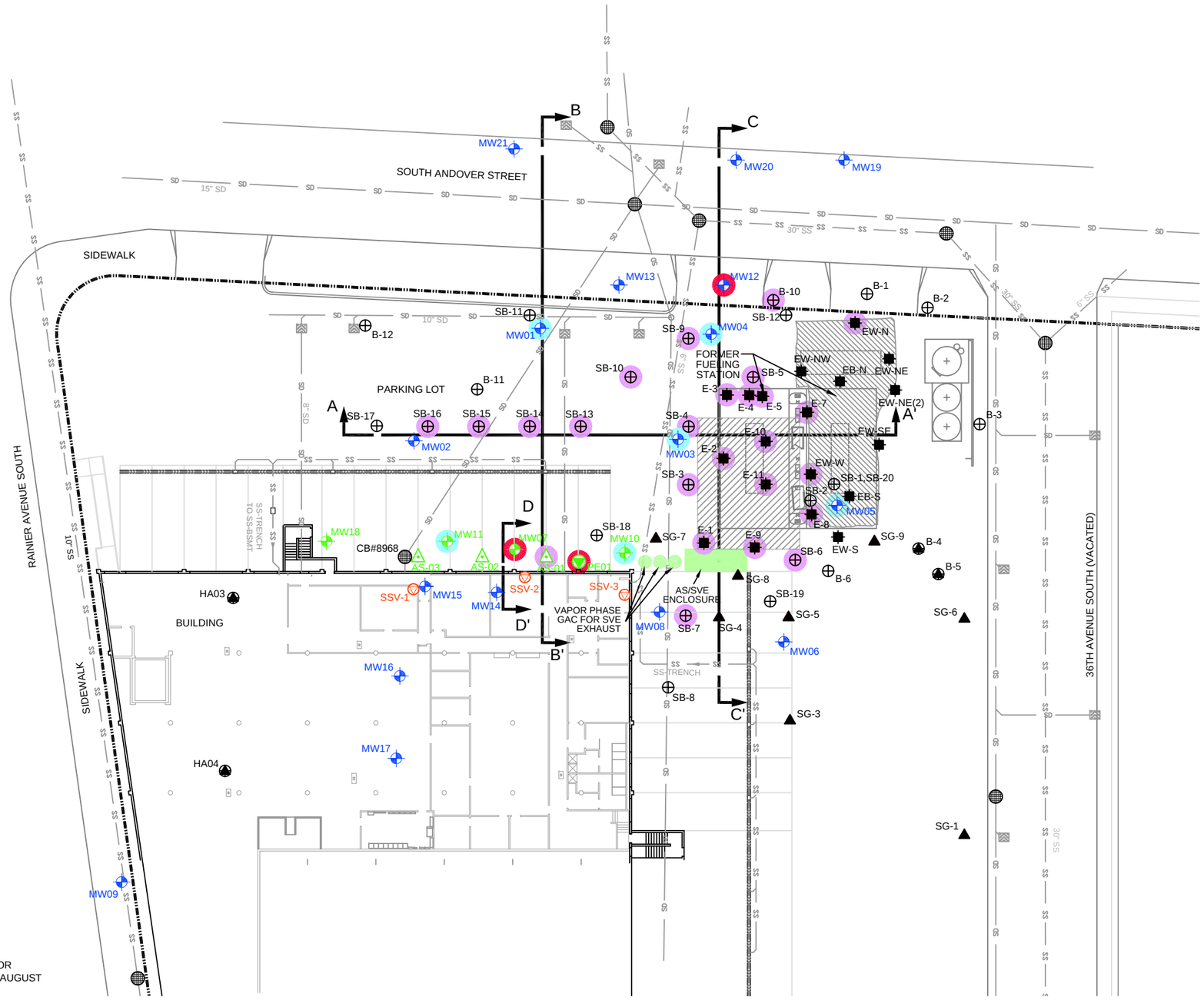
NA = Not applicable

ORPH = oil-range petroleum hydrocarbons

PID = photoionization detector

SES = Sound Environmental Strategies Corporation

UST = underground storage tank



LEGEND

B-1	SOIL BORING
E-1	SOIL EXCAVATION BASE OR SIDEWALL SAMPLE
SG-1	SOIL GAS SAMPLE
SSV-1	VAPOR PROBE (SUB-SLAB)
MW01	GROUNDWATER MONITORING WELL
PE01	PILOT TEST WELL
	NOTE: Green wells have been incorporated into the soil vapor extraction (SVE) system.
AS-01	AIR SPARGING WELL
	CATCH BASIN OR CURB INLET
	MANHOLE
	PROPERTY BOUNDARY
	APPROXIMATE PARCEL BOUNDARY
SS	SANITARY SEWER
SD	STORM SEWER
	ZIPPER DRAIN
	FORMER UST
	APPROXIMATE FORMER UST EXCAVATION (SES, 2004)
	APPROXIMATE FORMER UST EXCAVATION (SD&C, 1998)
UST	UNDERGROUND STORAGE TANK

DETECTION OF MTCA METHOD A CLEANUP LEVEL EXCEEDENCES

- SOIL ONLY
- GROUNDWATER ONLY
- SOIL AND GROUNDWATER

Note:
- Among the explorations, only the monitoring wells (MWs) and Well PE01 have groundwater sampling results.
- Groundwater cleanup level exceedences are based on the four monitoring rounds between August 2009 and May 2010.

NOTES:

1.) COMPONENTS OF THE AIR SPARGE/SOIL VAPOR EXTRACTION (AS/SVE) SYSTEM INSTALLED IN AUGUST 2008 ARE COLORED GREEN ON THIS FIGURE

REFERENCES: SES, FIELD MEASUREMENTS, 2004-2009
DARIGOLD, INC, FACILITY DRAWINGS, 2005.
CITY OF SEATTLE, SEWER CARD NOS. 1442, 1443, AND 5412, 2001.
SD&C, UNDERGROUND STORAGE TANK SITE ASSESSMENT REPORT, 1998.

N
0 40 80
Feet

Aspect CONSULTING

Site Plan Showing Cleanup Level Exceedences

Darigold - Rainier Avenue Facility
Seattle, Washington

DATE: June 2011	PROJECT NO. 090066
DESIGNED BY: DAH	
DRAWN BY: PMB	FIGURE NO. 2
REVISED BY: SCC	

Jun 01, 2011 12:09pm scudd

Q:\Darigold\090066 Rainier Avenue Facility\2011-06 CAP-EDR\090066-02.dwg Figure 1 (11 x 17)

APPENDIX D

Regenesis Quote and Product Information

Dave Heffner

From: Dave Heffner
Sent: Wednesday, June 01, 2011 9:06 AM
To: 'tech@regenesis.com'
Subject: ORC Quote for Darigold Soil Removal Action
Attachments: Regenesis Eval Form_01Jun11.pdf

Request for Quote

Aspect Consulting, LLC, is the design engineer and will be providing field oversight and performance monitoring for a soil removal action in July 2011 at the Darigold facility in Seattle. Please see attached *Remediation Project Evaluation Form*. Soil impacted by gasoline- and diesel-range petroleum hydrocarbons will be excavated down to the groundwater table at approx. 10 ft bgs. We expect some residual soil contamination, and are considering applying ORC® or ORC Advanced® on the excavation bottom prior to backfilling. Please provide a quote, including the following:

1) Product recommendation (ORC® or ORC Advanced®), with justification.
2) Recommended application rate.
3) Unit price (for a range of quantities) and estimated shipping cost.
4) Any special shipping requirements/considerations.
5) Product availability/order lead time.

Thanks for your help on this.

Dave Heffner \ Direct: 206.838.5831 \ dheffner@aspectconsulting.com

Aspect Consulting, LLC \ 401 Second Avenue S., Suite 201, Seattle, WA 98104 \ Fax: 206.838.5853 \ www.aspectconsulting.com

REMEDIATION PROJECT EVALUATION FORM

REGENESIS
Advanced Technologies for Contaminated Site Remediation

General Project Information

Project Name: Darigold Soil Removal Action
Project Street Address: 4058 Rainier Ave. S.
Project City, State, Zip: Seattle, WA
Lead Regulatory Agency: WA Dept. of Ecology
Regulatory Case Worker: none.
State Facility ID # (if any):
Project Number (if any): Aspect Consulting Project No. 090066

Project Contact Information

Main Project Contact: Dave Heffner
Contact Company: Aspect Consulting, LLC
Contact City/State: Seattle, WA
Phone: (206) 838-5831
E-mail: dheffner@aspectconsulting.com

Plume/Treatment Area Characteristics

Contaminants of Concern (COCs): Gasoline & diesel-range TPH & MTBE

Media to be Treated: [ ] Soil-Vadose [X] Soil-Saturated [ ] Groundwater

Previous Remediation (if any):

Planned Application Type: [ ] Source [ ] Barrier [ ] Plume [X] Excavation

Age of Plume: >20 yrs
Surface Area (sq ft): 4,000 to 5,000 ft²
Vertical Treat. Thickness (ft) (from __ to __ ft bgs): Bottom of Excavation
Max COC Concentrations Soil (mg/kg): GRPH ~ 500, DRPH ~ 1,000
Max COC Concentrations-GW (mg/L): GRPH ~ 10, DRPH ~ 2, MTBE ~ 2
Average COC Concentrations-soil (mg/kg): GRPH ~ 200, DRPH ~ 400
Average COC Concentrations-GW (mg/L): GRPH ~ 2, DRPH ~ 0.5, MTBE ~ 0.2
Is NAPL present: (yes/no) Thickness (in.):
If yes --Last Measured:

Soil Type(s): Silt, sandy clay, & clayey sand
Porosity (total/effective):
Total Organic Carbon (mg/kg): (low)
Depth to Groundwater (ft): 7 to 10 ft bgs; excavation will be to ~10 ft depth
Annual Groundwater Fluctuation (ft): ~2
Gradient (ft/ft and direction):
Hydraulic Conductivity (ft/day):
Seepage Velocity (ft/yr):

Other Natural Attenuation Parameters

Dissolved Oxygen (mg/L):
ORP (mV):
pH:
Nitrate (mg/L):
Iron (Total/Dissolved) (mg/L):
Manganese (Total/Dissolved) (mg/L):
Sulfate (mg/L):
BOD and/or COD (mg/L):

What is the deliverable?

Cost Option for RAP/CAP: [X]
Feasibility Estimate: [ ]
Other: Excavation scheduled for July 2011

Project Driver

Petro Reimbursement: [ ]
Dry Cleaner Reimburs.: [ ]
CERCLA/RCRA: [ ]
Real Estate Transaction: [ ]
Voluntary Cleanup: [X]

What other remedial technologies are being considered?

AS/SVE: [ ]
Dig & Haul: [X]
Other Bio: [ ]
Other ChemOx: [ ]
None: [ ]
Other:

Timing for implementation?

[X] 0-3 months
[ ] 3-6 months
[ ] >6 months

How will success be determined for this project?

Qtly GW monitoring ⇒ Achieve MTCA Method A Cleanup Levels

Will vapor intrusion need to be mitigated at this site (yes/no)?

Is development planned at this site (yes/no)?

Additional Information for Site Evaluation
(Please indicate if available (A) or included (I))

Site Map: A
Analytical Data Tables: A
Groundwater Plume Map: A
Groundwater Contour Map: A
Cross Sections: A
Boring/Monitoring Well Logs: A

PLEASE RETURN FORM TO:
Appropriate District Manager,
Technical Services Manager or,
REGENESIS Tech. Services Dept.
1011 Calle Sombra
San Clemente CA 92673
Phone: 949-366-8000 Fax: (8090)
E-mail: tech@regenesis.com
www.regenesis.com

Clearwater Contractors is the likely construction contractor for this job. They are the ones who will likely place the order for ORC® on ORC® Advanced.
D. Heffner 6/1/11

Dave Heffner

From: Brittain Griffiths [bgriffiths@regenesis.com]
Sent: Wednesday, June 08, 2011 8:39 AM
To: Dave Heffner
Cc: jpeabody@regenesis.com
Subject: Darigold Soil Removal

Dave,

The four thousand square foot treatment area requires 3,900 lbs of RegenOx and 1,200 lbs of ORC-Advanced. Thirty nine hundred pounds of RegenOx costs $9,750 and 1,200 lbs of ORC-Advanced costs $10,500. This leads to a total cost of $20,250 plus shipping and applicable sales tax.

RegenOx consists of two parts. Part A is an oxidant and Part B is the activator. For this site we recommend 2,790 lbs of Part A and 1,110 lbs of Part B.

Within the 4,000 square foot treatment area the more highly contaminated area is approximately 2,000 square feet. This area requires 3,900 lbs of RegenOx and 600 lbs of ORC-Advanced. The remaining 2,000 square feet simply requires 600 lbs of ORC-Advanced.

If you have any questions about this recommendation please contact Jack Peabody at 925.944.5566 or me at 916.409.9331.

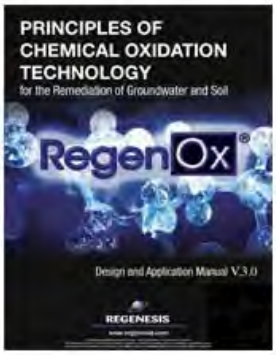
Thank you.

Brittain Griffiths
REGENESIS

RegenOx™ In-Situ Chemical Oxidation (ISCO)

Product

RegenOx is an advanced chemical oxidation technology that destroys contaminants through powerful, yet controlled chemical reactions and not through biological means. This product maximizes in situ performance while using a solid alkaline oxidant that employs a sodium percarbonate complex with a multi-part catalytic formula. RegenOx directly oxidizes contaminants while its unique catalytic component generates a range of highly oxidizing free radicals that rapidly and effectively destroy a range of target contaminants including both petroleum hydrocarbons and chlorinated compounds.



Download the Principles of RegenOx Chemical Oxidation Technology Design Manual

Purpose

To rapidly and effectively destroy target contaminants in high concentration source areas within the saturated and vadose zones. For petroleum hydrocarbon treatment, RegenOx also produces a fair amount of oxygen as a result of its reactions providing for an advantageous and seamless transition from in-situ chemical oxidation to enhanced aerobic bioremediation.

Functionality

A RegenOx application will remove significant amounts of contamination from the subsurface (both soil and groundwater) and is applied using direct-injection techniques or wells. The application process enables the two part product to be combined, then pressure injected into the zone of contamination and moved out into the aquifer media. Once in the subsurface, RegenOx produces a cascade of efficient oxidation reactions via a number of mechanisms including: surface mediated oxidation, direct oxidation and free radical oxidation. These reactions destroy a range of contaminants and can be propagated in the presence of RegenOx for periods of up to 30 days on a single injection. RegenOx produces minimal heat and is highly compatible with follow-on enhanced bioremediation application. Additionally RegenOx is a powerful yet relatively safe chemical oxidant that is safe for use in direct contact with underground utilities/infrastructure as it is non-corrosive and produces very low amounts of heat and pressure. As a result the material can be applied using a wide-range of standard field equipment (e.g. direct push injection rigs) or applied directly into excavations.

RegenOx Produces Beneficial Detergent-Like Contaminant Desorption Effects

This process occurs as a result of the powerful desorption-surfactant like effect of RegenOx (principally the catalyst) that draws the contaminant off the soil surface and into solution. The contaminant then reaches the catalytic surface where localized free-radical generation occurs leading to focused more efficient contaminant destruction. This also restricts the oxidant losses onto tightly bound and heavier soil organics such as humic, roots, and other natural or immobile fractions. As a result of the above processes, RegenOx-desorbed contaminant mass and partially oxidized (more soluble) organic species can be recovered via groundwater extraction using existing Pump &Treat (P&T) systems, while further contamination is destroyed in situ by via the primary oxidation mechanisms. Augmentation of P&T systems using RegenOx can allow for enhanced recovery of petroleum hydrocarbons from soil and groundwater. This process can also be utilized to enhance or optimize multi-phase extraction (MPE) activities during site remediation.

Product Specifications

- A two part product (Part A is the oxidizer powder, Part B is the liquid activator)
- Part A Composition: A mixture of sodium percarbonate [$2Na_2CO_3 \cdot 3H_2O_2$], sodium carbonate [Na_2CO_3], sodium silicate and silica gel
- Part B Composition: A mixture of sodium

Benefits of Use

- Rapid and sustained oxidation of target compounds
- Detergent-like, contaminant desorption effects
- Safety – generates minimal heat and pressure unlike other widely used chemical oxidants

Product Categories

- Enhanced Aerobic Bioremediation
- Enhanced Anaerobic Bioremediation
- In-Situ Chemical Oxidation (ISCO)
  - RegenOx™
- Bioaugmentation
- Metals Immobilization

Quick Links

- Technology Transfer Seminar
- Free Cost Estimate & Project Evaluation
- Online Application Software
- Case Studies
- Join our Mailing List
- Site Map

Additional Information:

- RegenOx MSDS (Part A)
- RegenOx MSDS (Part B)
- RegenOx Brochure
- RegenOx Monitoring Info
- RegenOx FAQ's
- RegenOx Application Instructions
- RegenOx Case Studies
- RegenOx Tech Bulletins
- Free Site Evaluation and Cost Estimate

RegenOx™ Remediation Technology Wins Coveted 2006 ICU Innovation Award for Regenesis (June 06)

Article on the use of RegenOx at the NASA Kennedy Space Center. “When Cleanup is Rocket Science,” Pollution Engineering Magazine (February 09)

RegenOx Injection Well Configuration

silicate solution, silica gel and ferrous sulfate
- Packaged and delivered in 30 lb. PVC buckets

Field Applications

- Applicable in Source Areas - ppm levels
- Petroleum, chlorinated or mixed plumes
- Vadose and saturated zone
- Ex-situ or in-situ
- Direct-injection (most common) for source areas and plumes
- Injection wells
- Straight application in excavations
- Soil mixing, milling and trenches

- Compatible with underground infrastructure, conduits, piping and tanks
- Easily applied with readily available equipment
- Destroys a broad range of contaminants
- More efficient than other solid oxidants
- Enhances subsequent bioremediation
- Avoids detrimental impacts to groundwater
- Longevity - lasts up to 30 days on a single injection
- No Operations and Maintenance
- Faster and more cost-effective than drawn out monitored natural attenuation (MNA)
- Complimentary product application design and site analysis from Regenesis

Application Considerations

- Contaminant type and mass
- Subsurface geology (distribution)
- Depth to groundwater
- Groundwater flow rates
- Free product (if present call Regenesis tech services to discuss options)

Post-Injection RegenOx Field Setup

RegenOx Soil Mixing Application

Post-Injection RegenOx Field Setup
RegenOx Soil Mixing Application
Field Operations Injection Setup

Oxygen Release Compound Advanced (ORC Advanced®)

Product

Advanced Formula Oxygen Release Compound (ORC Advanced®) is a proprietary formulation of food-grade, calcium oxy-hydroxide that produces a controlled-release of molecular oxygen for period of up to 12 months upon hydration.

Purpose

To supply controlled-release molecular oxygen to the subsurface environment where it will accelerate the rate of naturally occurring aerobic contaminant biodegradation in groundwater and saturated soils for periods of up to 12 months on a single application..

Functionality

ORC Advanced is typically applied using direct-injection techniques. This process requires ORC Advanced to be mixed with water to form an injectable slurry which is then pressure injected (using a pump) into the zone of contamination. Once in the aquifer, tiny ORC Advanced particles can sorb to and/or reside in the soil matrix and produce a controlled- release of oxygen for periods of up to 12 months.

ORC Advanced is also widely used in tank excavation applications where it is applied into the open pit and covered with backfill.

ORC Advanced is also available in 2", 4" and 6" filter socks that can be emplaced in wells and removed when exhausted. Upon removal the spent socks can be replaced to restore the oxygen supply and maintain aerobic biodegradation as needed.

ORC Advanced is available in a powder form and in replaceable filter socks

Original ORC Filter Sock Schematic

Click to Enlarge

Product Specifications

- A white to yellow, powdery material
- Composition - Calcium Oxyhydroxide [$CaO(OH)_2$], Calcium Hydroxide [$Ca(OH)_2$] and Calcium Carbonate [$CaCO_3$]
- Intercalated design allows for slow-release of oxygen without "lock-up"
- Releases 17% of its weight as oxygen when hydrated
- Packaged and delivered in 25 lb. PVC buckets
- (See detailed MSDS for full product specifications)
- Expected shelf-life of material = 2 years

Benefits of Use

- Controlled-release of molecular oxygen to support aerobic microbial biodegradation
- Long-term source of oxygen to the subsurface (up to 12 months)
- Clean, low-cost, non-disruptive application (direct-push, excavations or socks)
- Direct Injection not limited by presence of surface structures
- No Operations and Maintenance
- Faster and often lower cost than drawn out natural attenuation approaches
- Complimentary product application design and site analysis from Regenesis

Field Applications

Product Categories

- Enhanced Aerobic Bioremediation
  - Oxygen Release Compound Advanced (ORC Advanced®)
  - Oxygen Release Compound (ORC®)
  - Filter Socks/Canisters
- Enhanced Anaerobic Bioremediation
- In-Situ Chemical Oxidation (ISCO)
- Bioaugmentation
- Metals Immobilization

Quick Links

- Technology Transfer Seminar
- Free Cost Estimate & Project Evaluation
- Online Application Software
- Case Studies
- Join our Mailing List
- Site Map

Additional Information:

- ORC Advanced MSDS
- ORC Advanced Brochure
- ORC Advanced Application Instructions
- ORC Advanced FAQ's
- Controlled- Release Technology (CRT)
- ORC Advanced Case Studies
- ORC Advanced Tech Bulletins
- Free Site Evaluation and Cost Estimate

Filling a Pump with ORC Advanced Slurry for Direct Injection

Excavation Application of ORC Advanced via Slurry Delivery

- Injectable slurry for source area and permeable reactive barrier applications (most common)
- ORC Advanced and water mixture (slurry) application in excavations
- Dry powder application in soils and excavations
- Replaceable filter socks for single well and barrier applications

Application Considerations

- Existing aerobic or anaerobic conditions
- Contaminant type and mass
- Subsurface geology (distribution)
- Depth to groundwater
- Groundwater flow rates
- Competing electron acceptors (oxygen sinks)
- Free product (if present call Regenesis tech services to discuss options)
- Oxidizing material (shipping and storage)

Direct Push Injection of ORC Advanced

APPENDIX E

Field Sampling and Analytical Laboratory Procedures

Appendix E

This appendix outlines field sampling and laboratory quality assurance procedures to be implemented during the soil removal action in the North Yard of the Darigold facility located at 4058 Rainier Avenue South in Seattle, Washington.

E.1 Field Sampling Procedures

This section identifies sampling procedures to be followed for the performance monitoring program. As described in Section 5.2 of this CAP/EDR, performance monitoring includes both soil and water sampling and analysis. Soil sampling and analysis will be conducted to characterize both excavated and unexcavated (excavation bottom and sidewall) soils. Water sampling and analysis will be conducted to monitor water quality discharged to sanitary sewer (following on-site pretreatment).

E.1.1 Soil Sampling

Aspect will collect discrete grab soil samples as described in Section 5.2. For safety, soil samples from the excavation will normally be collected from the backhoe bucket. Care will be taken to avoid collecting soils in contact with the sides of the backhoe bucket. The soil samples will be removed from the backhoe bucket using a stainless steel spoon. Soil samples to be analyzed for gasoline-range TPH will be immediately preserved in the field in accordance with EPA Method 5035A, using sample preservation kits provided by the laboratory. Soil samples for other analyses will be placed in a stainless steel bowl for homogenization with the stainless steel spoon. Aspect will remove gravel-sized material greater than approximately 0.5 inch from the sample during mixing. A representative aliquot of the homogenized soil will be placed into certified-clean jars supplied by the analytical laboratory.

E.1.2 Water Treatment System Effluent Sampling

Aspect will collect treatment system effluent samples from a sample port located downstream of the lag GAC vessel. Water samples will be collected directly into laboratory-supplied bottles.

E.1.3 Sample Documentation and Handling Procedures

Field Documentation

While conducting field work, the field representative will document pertinent observations and events in a field notebook. Field notes will include a description of each field activity, sample descriptions and associated details such as the date, time and field conditions.

Sample Labeling and Nomenclature

The field representative will fill out sample labels using indelible ink to indicate the sample number, date, preservative added (if any) and any pertinent comments.

Sample Handling

Upon collection, samples will be placed upright in a cooler. Ice or Blue Ice will be placed in each cooler for sample preservation. Inert cushioning material will be placed in the remaining space of the cooler as needed to limit movement of the sample containers. The chain-of-custody form will be placed in a waterproof bag taped to the inside lid of the cooler for shipment. "Rush" samples will be delivered to the analytical laboratory within 24 hours of sample collection.

Upon sample receipt, the laboratory will fill out a cooler receipt form to document sample delivery conditions. A designated sample custodian will accept custody of the shipped samples and will verify that the chain of custody form matches the samples received. The laboratory will notify the Aspect project manager as soon as possible of any issues noted with the sample shipment or custody.

Sample Custody

After collection, samples will be maintained in Aspect's custody until formally transferred to the analytical laboratory. For purposes of this work, custody of the samples will be defined as follows:

- In plain view of the field representative;
- Inside a cooler that is in plain view of the field representative; or
- Inside any locked space such as a cooler, locker, car, or truck to which the field representative has the only immediately available key(s).

A chain-of-custody record provided by the laboratory will be initiated at the time of sampling for all samples collected. The record will be signed by the field representative and others who subsequently take custody of the sample. Couriers or other professional shipping representatives are not required to sign the chain-of-custody form. However, shipping receipts will be collected and maintained as a part of custody documentation in the project files. A copy of the chain-of-custody form with appropriate signatures will be kept by Aspect's project manager.

E.1.4 Decontamination of Sampling Equipment

All non-disposable sampling equipment (stainless steel spoons, bowls) will be decontaminated before collection of each sample. The decontamination sequence consists of a scrub with a detergent (Alconox) solution, followed by tap water (potable) rinse and finished with thorough spraying with deionized or distilled water. Decontamination water will be discharged to the ground.

E.2 Quality Assurance Project Plan

This Quality Assurance Project Plan (QAPP) defines the quality assurance (QA) and quality control (QC) objectives and functional activities associated with the analysis of soil and groundwater samples collected during this project.

E.2.1 Analytical Laboratory

F&BI of Seattle, Washington will be the analytical laboratory for this project. Contact information for the laboratory is:

Mike Erdahl
Friedman & Bruya, Inc
3012 16th Avenue West
Seattle, Washington 98119
(206) 285-8282

E.2.2 Data Quality Indicators

Data quality indicators (DQIs), including precision, accuracy, representativeness, comparability and completeness (PARCC parameters) and data RLs are dictated by the data quality objectives, project requirements and intended uses of the data. For this project, the analytical data for soil samples must be of sufficient technical quality to determine whether concentrations of contaminants are above or below Site cleanup levels. The analytical data for groundwater samples must be of sufficient technical quality to determine whether concentrations of contaminants are above or below the criterion for discharge to sanitary sewer.

An assessment of data quality is based upon quantitative (precision, accuracy and completeness) and qualitative (representativeness and comparability) indicators. Definitions of these parameters and the applicable QC procedures are presented below.

E.2.2.1 Precision

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared with their average values. Laboratory duplicates are evaluated for this purpose. For Methods NWTPH-Gx and NWTPH-Dx, duplicates will be run at a minimum frequency of 1 per 10 samples and no less than 1 per laboratory analysis group (defined as no more than 20 samples). For EPA Method 8021, the minimum frequency is 1 per 20 samples and no less than 1 per laboratory analysis group.

For EPA Method 8021, analytical precision is also measured through matrix spike/matrix spike duplicate (MS/MSD) samples and laboratory control samples/laboratory control sample duplicate (LCS/LCSD). These will be run at a minimum frequency of 1 per 20 samples and no less than 1 per laboratory analysis group. Methods NWTPH-Gx and NWTPH-Dx have no MS's or LCS's.

Analytical precision is quantitatively expressed as the relative percent difference (RPD) between the LCS/LCSD, MS/MSD, or lab duplicate pairs. Laboratory precision will be

evaluated against laboratory quantitative RPD performance criteria provided with the lab's analytical data report.

E.2.2.2 Accuracy

Accuracy measures the closeness of the measured value to the true value. The accuracy of chemical test results is assessed by "spiking" samples with known standards (surrogates, blank spikes or matrix spikes) and establishing the average recovery. Accuracy measurements on MS samples (for EPA Method 8021) will be carried out at a minimum frequency of 1 in 20 samples per matrix analyzed. Blank spikes will also be analyzed at a minimum frequency of 1 in 20 samples per matrix analyzed. Surrogate recoveries will be determined for each sample analyzed for organics. Laboratory accuracy will be evaluated against the lab's quantitative matrix spike and surrogate spike recovery performance criteria as provided with the lab's analytical data report.

E.2.2.3 Representativeness

Representativeness measures how closely the measured results reflect the actual concentration or distribution of the chemical compounds in the matrix sampled. The sampling plan design, sampling techniques and sample handling protocols (e.g., homogenizing, storage and preservation) have been developed to ensure representative samples. For example, soil samples to be analyzed for petroleum hydrocarbons in the diesel and heavy oil ranges (NWTPH-Dx analysis) will undergo silica gel cleanup as part of this analysis to reduce the chance for false positives due to analytical interference from natural organic compounds.

E.2.2.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. The use of standard techniques for both sample collection and laboratory analysis should make data collected comparable to internal data generated for this project as well as pre-existing analytical data that may exist.

E.2.2.5 Completeness

Completeness is defined as the percentage of measurements made that are judged to be valid measurements. Results will be considered valid if all the precision, accuracy and representativeness objectives are met and if RLs are sufficient for the intended uses of the data. The target completeness goal for this project is 95 percent.

Laboratory internal QC checks, preventive maintenance and corrective action, as described in other sections of this document, will be implemented to help meet the QA objectives established for these analyses.

E.2.3 Quality Control Procedures

Field and laboratory QC procedures are outlined below.

E.2.3.1 Field Quality Control

Field QC procedures for this project include use of standard field sampling procedures described above, and regular maintenance and calibration of field instrumentation (e.g., PID for monitoring vapor-phase VOC concentrations).

E.2.3.2 Laboratory Quality Control

The laboratory's QA officers are responsible for ensuring that the laboratory implements all routine internal QC and QA procedures.

The laboratory QC procedures used for this project will consist of the following at a minimum:

- Instrument calibration and standards as defined in the laboratory standard operating procedures (SOPs);
- Laboratory blank measurements at a minimum frequency of 5 percent or one per twenty samples; and
- Accuracy and precision measurements as defined above, at a minimum frequency of 5 percent or one per twenty samples per matrix.

E.2.4 Corrective Actions

If routine QC audits by the laboratory document unacceptable conditions or data, actions specified in the laboratory SOPs will be taken. Specific corrective actions are outlined in each SOP used and can include the following:

- Identifying the source of the violation;
- Reanalyzing samples if holding time criteria permit;
- Resampling and analyzing;
- Evaluating and amending sampling and analytical procedures; and/or
- Accepting but qualifying data to indicate the level of uncertainty.

If unacceptable conditions occur, the laboratory will contact Aspect Consulting's project manager to discuss the issues and determine the appropriate corrective action. All corrective actions taken by the laboratory during analysis of samples for this project will be documented by the laboratory in the case narrative associated with the affected samples.

E.2.5 Data Reduction, Quality Review and Reporting

All data will undergo two levels of QA/QC evaluation: one at the laboratory and one by a validator independent of the laboratory. Initial data reduction, evaluation and reporting at the laboratory will be carried out as described in the appropriate analytical protocols. Quality control data resulting from methods and procedures described in this document will also be reported.

E.2.5.1 Minimum Data Reporting Requirements

The following sections describe the minimum data reporting requirements necessary to allow proper QA/QC reporting.

Sample Receipt. Cooler receipt forms will be filled out for all sample shipments to document any problems in sample packaging, chain of custody or sample preservation.

Reporting. For each analytical method run, analytes for each sample will be reported as a detected concentration or as less than the specific reporting limit (RL). Soil data will be reported on a dry weight basis. The laboratories will report dilution factors for each sample as well as date of extraction (if applicable), date of analysis, extraction method, sample cleanup methods performed (silica gel) and confirmation results if required.

Internal Quality Control Reporting. Internal quality control samples will be analyzed at the rates specified in the applicable analytical method.

- **Laboratory Method Blanks**. Analytes will be reported for each laboratory blank. Non-blank sample results shall be designated as corresponding to a particular laboratory blank in terms of analytical batch processing.
- **Surrogate Spike Samples**. Surrogate spike recoveries will be reported with organic reports where specified in the laboratory SOP. The report shall also specify the control limits for surrogate spike results as well as the spiking concentration. Spike recoveries outside of specified control limits (as defined in the laboratory SOP) will result in the sample being rerun.
- **Matrix Spike Samples**. Matrix spike recoveries will be reported for organic and inorganic analyses. General sample results will be designated as corresponding to a particular matrix spike sample. The report will indicate which sample was spiked and the spike concentration. The report will also specify the control limits for matrix spike results for each method and matrix. Spike recoveries outside of specified control limits (as defined in the laboratory SOP) will result in the sample being rerun.
- **Laboratory Duplicate and/or Matrix Spike Duplicate Pairs**. Relative percent differences (RPD) will be reported for duplicate pairs relative to analyte/matrix-specific control limits defined in the laboratory SOP.
- **Laboratory Control Samples (LCS)**. LCS recoveries will be reported for organic analyses where specified in the laboratory SOP. LCS results and control limits will be reported with the corresponding sample data.

E.2.5.2 Data Quality Review

Reported analytical results will be qualified by the laboratory to identify QC concerns in accordance with the specifications of the analytical methods. Additional laboratory data qualifiers may be defined and reported by the laboratory to more completely explain QC concerns regarding a particular sample result. All additional data qualifiers will be defined in the laboratory's narrative reports associated with each case.