APPENDIX B
SEPA CHECKLIST

REPORT

FINAL DRAFT

STATE ENVIRONMENTAL POLICY ACT (SEPA) ENVIRONMENTAL CHECKLIST

Landsburg Mine Site
MTCA Remediation Project
Ravensdale, Washington

Submitted To: Washington Department of Ecology
3190 – 160th Avenue SE
Bellevue, WA 98008

Submitted By: Golder Associates Inc.
18300 NE Union Hill Road, Suite 200
Redmond, WA 98052 USA

Submitted On Behalf Of: The Landsburg Mine Site PLP Group

July 31, 2013

Project No. 923-1000-002.R154

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The State Environmental Policy Act (SEPA) Environmental Checklist For The Landsburg Mine Site MTCA Remediation Project Ravensdale, Washington

INTRODUCTION

The State Environmental Policy Act (SEPA), chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. This checklist has been prepared based on the checklist (*indicated in italics below*) contained in WAC 197-11-960.

However, the reader must be aware that the proposed project is the remediation of the former Landsburg Mine Site (Site), a State of Washington Priority Listed site under the auspices of the Model Toxics Control Act (MTCA), and this Remediation Project (defined below) is intended to increase the protection of the environment and human health. The Site is being remediated by the Landsburg Mine Site Potentially Liable Parties (PLPs) under the oversight of the Washington Department of Ecology (Ecology). The PLPs for the Landsburg Site consist of Palmer Coking Coal Company, LLP; PACCAR Inc; Plum Creek Timberlands Company, L.P.; Browning-Ferris Industries of Illinois, Inc.; TOC Holdings Co.; and the BNSF Railway Company. Significant environmental information has previously been collected and reviewed as part of the multi-year Remedial Investigation and Feasibility Study (Golder Associates Inc., 1996). Additional associated engineering reports and studies are currently being prepared for the Site. Consideration of environmental impacts including impacts to the local communities has been an integral part of the investigative and remedial design and selection process for the preferred remedial alternative.

BACKGROUND

The Site consists of a former underground coal mine located approximately 1.5 miles northwest of Ravensdale in southeast King County, Washington. The Site is located directly south and east of the S.E. Summit-Landsburg Road and north of the Kent-Kangley Road. The location of the Site in the Seattle, Washington area is shown in Figure 1. Figures 2 and 3 depict the immediate Site vicinity. The Site occupies property owned by Palmer Coking Coal Company, LLP (PCC) and is located within sections 24 and 25, Township 22 N., Range 6 E. The actual areas of impact due to remedial construction are referred to as the Remediation Project Site throughout the SEPA checklist and are shown on Figure 6.

The Landsburg Mine consisted of two adjacent coal seams: the Landsburg Seam and the Rogers Seam. Mining began in the Landsburg Seam in the late 1930s and continued until 1959. In 1959, mining of the Landsburg Seam ceased and mining began on the Rogers Seam. The Rogers Seam was mined from

1959 until 1975. The two seams are separated by about 600 feet. In addition to these two seams, mining has also been conducted at the nearby Frasier seam in an area historically called Danville. This seam, located approximately 800 feet northwest of the Rogers Seam, was mined intermittently from the late 1800s to the mid-1940s.

The mined section of the Rogers coal seam has a near vertical dip and consists of coal and interbedded shale approximately 16 ft wide. The mined section is about a mile in length. Mining occurred at depths of up to 750 feet below the ground surface using a mining method locally termed “booming” which followed the coal seam vertically. As a result of underground mining of the Rogers Seam, a series of subsidence trenches developed on the land surface above the mine workings. The dimensions of these trenches vary, from about 60 to 100 feet wide, between 20 to 60 feet in depth and about 3/4 mile in length.

A portion of the trenches was used in the late 1960s to the late 1970s for disposal of various industrial wastes, construction materials, and land-clearing debris. Drums, liquid from tanker trucks and other industrial materials were disposed of in the northern portion of the trenches. Disposal of land clearing debris continued until the early 1980s when all waste disposal at the Site stopped.

The Landsburg Mine Site PLPs, under the oversight of Ecology, conducted a remedial investigation to assess the nature and extent of chemical constituents in environmental media at the Site. The primary purpose of this evaluation was to identify the chemical compounds potentially posing a human or environmental health risk and/or which exceed potential regulatory criteria and which are the result of prior waste disposal activities at the Site. The remedial investigation determined that the contamination at the Site was confined to within the northern portion of the subsistence trenches in the area of known prior waste disposal activities. No hazardous compounds related to prior disposal activities at the Site above background levels were detected in soil outside of the trenches, or in groundwater and surface water emanating from the Site. Currently, the northern portion of the trenches where disposal occurred is secured by a fence and locked gate .

This SEPA checklist has been prepared for remedial construction activities selected for the Site. The remedy selected for the Site is a low permeability soil cap installed over backfilled material (Remediation Project). The goal of the overall Remediation Project is to backfill the northern portion of the mine subsidence trenches which were used for past waste disposal with clean fill material. Once the trenches have been backfilled to the engineered level, a low permeability cover and surface water diversion system will be constructed over the backfill. The area will be reseeded and replanted following the construction operations. The Remediation Project will provide an increased level of protection for the environment and humans. Ecology is the lead agency and will provide oversight of the remediation program and long-term compliance-monitoring program for the life of the Remediation Project.

The State Environmental Policy Act (SEPA) Environmental Checklist

A. BACKGROUND

1. Name of proposed project, if applicable:

Landsburg Mine Site MTCA Remediation Project

2. Name of applicant:

Landsburg Mine Site Potentially Liable Parties (PLPs) . The PLPs for the Landsburg Site consist of Palmer Coking Coal Company, LLP; PACCAR Inc; Plum Creek Timberlands Company, L.P.; Browning-Ferris Industries of Illinois, Inc.; TOC Holdings Co.; and the BNSF Railway Company.

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

Landsburg Mine Site PLP Contact:

Doug Morell,
Golder Associates for the Landsburg Mine Site PLP Group
18300 NE Union Hill Road, Suite 200
Redmond, WA 98052-3333
(425) 883-0777fax: (425) 882-5498
e-mail: doug_morell@golder.com

4. Date checklist prepared:

February 2002

Revised August 22, 2013

5. Agency requesting checklist:

The Washington Department of Ecology (Ecology) is the lead agency providing oversight of the remediation of the Landsburg Mine MTCA site (Site). Information concerning the Site should be directed to the Ecology contact.

Ecology Contact:

Jerome Cruz, Ph.D.
Washington Department of Ecology
Toxics Cleanup Program, Northwest Regional Office
3190 160th Ave SE
Bellevue, WA 98008-5452
(425) 649-7094
fax: (425) 649-7098
e-mail: JCRU461@ecy.wa.gov

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

Initial construction activities associated with backfilling the subsidence trench areas 7, 8 and 9 (Figure 5) on the Site are currently scheduled to begin in the summer of 2012 and be completed by late 2013. The final implementation schedule will be defined in the Consent Decree. The construction activities will be conducted in two primary phases (described in Item 7 below). Several minor ongoing activities will occur prior to actual construction. These activities will involve interim monitoring of groundwater, geotechnical testing, surveying, source material testing and evaluation, general maintenance and monitoring of the Site. Post-construction activities will consist of general maintenance and compliance groundwater monitoring of the Site for as long as MTCA cleanup or remediation levels are exceeded, and as prescribed in the Cleanup Action Plan.

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

The Remediation Project is currently designed to be completed in two primary phases. The first phase would consist of backfilling the subsidence trench areas 7, 8 and 9 (Figure 5). A limited second phase will be required for final grading of the low permeability soil cap, if significant settlement has occurred in the backfilled material. Long-term confirmational groundwater monitoring and site inspections and maintenance will continue until residual hazardous substance concentrations no longer exceed cleanup or remediation levels as described in the CAP resulting from either (1) the application of new remediation technologies currently unavailable or (2) other circumstances or conditions that affect residual concentrations such that they no longer pose a risk to human health or the environment.*8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.*

A significant amount of environmental information has been generated and prepared for the Site. A Bibliography is attached to this report that provides a list of environmental related reports that have been prepared during the multi-year investigative and remedial design phases of the MTCA process. Several significant sources of information the reader is referred to are: the Remedial Investigation and Feasibility Study for the Landsburg Mine Site (Golder Associates Inc., 1996), the Draft Cleanup Action Plan (CAP) (Golder Associates Inc., 2002) and the Compliance Groundwater Monitoring Plan (Golder Associates Inc., 2002).

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

No other proposals are currently known to be pending affecting the Remediation Project Site (defined in Item 12 below) covered by the MTCA remediation program at the Site.

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

Ecology is providing oversight of the Site Model Toxics Control Act (MTCA) project. MTCA is the key governmental regulation governing the conduct of the overall investigation and cleanup process for the Site. MTCA describes the requirements for selecting cleanup actions, preferred technologies, policies for use of permanent solutions, the time frame for cleanup, and the process for making decisions.

RCW 70.105D.090 exempts remedial actions conducted pursuant to an Agreed Order or a Consent Decree from the procedural requirements of several state laws although substantive compliance with these laws is still required. These include the State Clean Air Act (RCW 70.94), Solid Waste Management - Reduction and Recycling Act (RCW 70.95), Hazardous Waste Management Act (RCW 70.105), Water Pollution Control Law (RCW 90.48), Shoreline Management Act (RCW 90.58), and Construction Projects in State Waters (RCW 75.20). The exemption only applies to the procedural requirements of any laws requiring or authorizing local governmental permits or approval for the remedial action. Therefore, while substantive compliance is necessary, permits and approvals are not required for remedial actions at the Site.

WAC 173-340-700 establishes three cleanup levels for environmental media, including groundwater, soil, surface water: Method A (routine, using tables), Method B (standard), and Method C (conditional, primarily for industrial sites).

SEPA is applicable to remedial actions at the Site. Ecology is the lead agency for MTCA remedial actions performed under a Consent Decree or an Agreed Order pursuant to WAC 197-11-253. The SEPA process is triggered when a governmental action is taken on a public or private proposal. According to WAC 197-11-784, a proposal includes both regulatory decisions of agencies and actions proposed by applicants. If the proposal is not "exempt," Ecology requires the submission of a SEPA checklist which provides information regarding how the proposal will affect elements of the environment, such as air, water, etc. A public comment period is required for the SEPA determination. In order to expedite and streamline public input, the SEPA public comment period is combined with the comment period associated with the Cleanup Action Plan.

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

Landsburg Mine Site MTCA Remediation Project

The remedy selected for the Site is a low permeability soil cap installed over backfilled material. A conceptual design of this alternative is shown in Figure 4. The goal of the overall Remediation Project is

backfilling the northern portion of the subsidence trenches which were used for disposal of industrial waste in the past with suitable clean fill material.

Once the trenches have been backfilled to the engineered level, a low permeability cover and surface water diversion system will be constructed over the backfill.

The area will be reseeded and replanted following the construction operations. No additional structures are proposed. The major steps in the Remediation Project involve:

1. Backfilling the trenches as required for capping (as described below).
2. Allow the backfill to consolidate.
3. Place a low-permeability soil cap over the backfill of the trenches, including grading and surface water management (as described below).
4. Prepare a Contingent Groundwater Treatment Plan incase groundwater contamination is detected in Site compliance wells.
5. Maintain the cap until residual hazardous substance concentrations no longer exceed cleanup or remediation levels as described in the CAP resulting from either (1) the application of new remediation technologies currently unavailable or (2) other circumstances or conditions that affect residual concentrations such that they no longer pose a risk to human health or the environment.
6. Implement and maintain institutional controls and monitoring programs until residual hazardous substance concentrations no longer exceed cleanup or remediation levels as described in the CAP resulting from either (1) the application of new remediation technologies currently unavailable or (2) other circumstances or conditions that affect residual concentrations such that they no longer pose a risk to human health or the environment.

The portion of the subsidence trenches that will be capped (areas 7, 8 and 9) is shown on Figure 5. This capped area is based on the areas of suspected waste disposal activities identified in the remediation investigations. The cap would extend slightly beyond the trenches on both sides to provide anchor zones and “overhang”. Fill material may be extended into area 6 if necessary and as appropriate to provide a buttress to the narrow pillar wall separating areas 6 and 7. Surface water runoff from the cap would be collected in drainage ditches.

The major benefit of capping this Site would be to reduce infiltration through any waste remaining on-Site. Another common benefit of capping, prevention of direct human contact and off-Site migration in stormwater or dust, is also provided by the backfill of the trenches.

The cap will need periodic inspection and maintenance and, if damage did occur, repair of a soil cap would be relatively easy, requiring only removal of the vegetative soil, addition of more low-permeability soil and regrading to the proper contour.

The cap design will include a top layer of vegetated topsoil to promote evapotranspiration and decrease the potential for erosion. Root zones of the vegetation will not compromise the cap. While it is still to be determined during final design stage of the project, this material may be obtained from the area immediately adjacent to the trenches. No moisture conditioning is expected, and this soil would not be compacted, in order to provide a loose medium for establishing the vegetative cover. To establish vegetation, the topsoil would be seeded with vegetation suitable for the local climate. The low-permeability soil cap consists of 24 inches of compacted low-permeability soil (permeability of 1 x 10^{-6} cm/sec) beneath 6 inches of vegetated topsoil. The suitability of potential sources of cap material, in terms of both quality and quantity, will need to be confirmed in the final design. Installation of this cap could be performed readily using standard earth-moving equipment. A large number of qualified contractors are available.

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 Site consists of a former underground coal mine located approximately 1.5 miles northwest of Ravensdale in a rural area of southeast King County, Washington. The Site is situated directly south and east of the S.E. Summit-Landsburg Road and north of the Kent-Kangley Rd (State Highway 516). Downtown Seattle is approximately 20 miles to the northwest. The Cedar River passes within approximately 700 ft. of the Site to the north. The location of the Site is shown in Figures 1, 2 and 3. The topography of the Site and general Site features are depicted in Figure 3.

The Site occupies property owned by PCC and is located within sections 24 and 25, Township 22 N., Range 6 E. The Site is located in the northwest corner of the Cumberland 7.5 minute quadrangle along the boundary with the Hobart quadrangle.

The *Landsburg Mine site* was defined in the Work Plan (Golder 1992a) and Remedial Investigation (RI) and Feasibility Study (FS) (Golder Associates Inc., 1996) as land extending 400 feet on either side of the mine trench lineation and bounded by the S.E. Summit-Landsburg Rd. to the north and the Bonneville Power Administration electrical transmission line easement to the south (Study Area). The actual area impacted by the Remediation Project is referred to herein as the Remediation Project Site and is much smaller than the Study Area (depicted in DCAP Figure 5 of Exhibit B). The Study Area is shown on Figure 2. Since the production of the RI/FS, the PCC owned land in this area was readjusted through a boundary line adjustment, such that the Site lies within one parcel of land. The Remediation Project occurs in three areas depicted on Figure 6 (Remediation Project Site): The South Contingent Groundwater Treatment Areas, the haul roads (constructed over existing roads and trails) and the trenches where activities associated with the actual backfilling and cap construction occur.

Apart from the Site, the only developments in the Study Area are a junior high school and residential dwellings with approximately 130 residences contained within the Study Area. The school is located about 0.65 miles northwest of the Site. The nearest residences to the Site are to the southwest approximately 800 ft. from the Site. Drinking water for area residences is supplied by groundwater, either through private wells or small community water supply systems. Domestic sewage disposal throughout the Study Area is provided by residential septic systems.

Several gravel roads access the Site from public thoroughfares and trails run parallel to the east and west sides of the trenches. The primary access road to the Site begins near S.E. Summit-Landsburg Road and follows along the northern portion of the trenches. A locked gate secures the Site at the access road entrance, and the portion of the trenches where disposal occurred is currently enclosed by a locked 6 ft. tall chain link security fence. Dense vegetation covers the Site and includes blackberry, alder, cedar, hemlock, cottonwood, maple and fir.

Electrical transmission lines and a Bonneville Power Administration property easement cross the southern portion of the Site in an east-west direction. Approximately 3/4 mile upstream of the Site along the Cedar River at Landsburg, the City of Seattle Water Department maintains a drinking water supply intake known as the Landsburg Diversion. Water is conveyed from the intake through a 96-in diameter pipeline to the Lake Youngs Reservoir, located some 5 miles to the northwest of Landsburg (Brown and Caldwell 1978a). The pipeline passes just to the north of the Site and is located near the bottom of the slope between the S.E. Summit-Landsburg Rd. and the Cedar River. An unpaved service road (Pipeline Road) parallels the pipeline right-of-way. A meteorologic data collection and river gauging station, operated by the City of Seattle, are located at the water intake structure. The location of the supply intake is shown in Figure 2. Approximately 1 mile upstream from the Landsburg Diversion on the Cedar River, a river gauging station is maintained by the USGS (Landsburg Gauging Station).

The City of Kent Clark Springs Facility is located approximately a 3/4 mile to the southwest of the south portal of the Landsburg Mine. The Clark Springs Facility was built in the 1950s and consists of a lateral gravity drainage collection system installed approximately 13 to 15 ft. below the ground surface in the Rock Creek alluvium.

B. ENVIRONMENTAL ELEMENTS

1. Earth

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

The property owned by PCC sits atop a gently sloping hill which reaches a maximum elevation of approximately 800 ft. mean sea level (MSL) near the central portion of the Site. At the Site's northern end (Figure 3), this hill slopes steeply downwards towards the S.E. Summit-Landsburg Rd. (elevation of approximately 615 ft.) and continuing to the Cedar River (elevation approximately 500 ft.). The southern

portion of the Site slopes more gradually downwards to the south toward the Kent-Kangley Rd. and Rock Creek drainage located at an elevation of approximately 600 ft. The Site is bounded to the east by a somewhat larger hill which rises to a maximum elevation of approximately 940 ft.

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

Slopes range from vertical (>90 percent) in the side walls of the subsidence trenches to very gently sloping at the base of the hill in the northern portion of the property owned by PCC. Geotechnical engineering evaluations of the slopes and subsidence trenches' stability have been considered in the design of the Remediation Project.

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.

The soils at the Site are derived from glacial drift materials primarily consisting of till and recessional outwash. The till which mantles the hills in the Remediation Project Site consists of a compact mixture of gravel and occasional boulders in a clayey, silty sand matrix. Isolated swamp deposits consisting of peat and lacustrine deposits are scattered around the perimeter of the Study Area but do not occur in the specific Remediation Project Site. No prime farmland will be affected by the Remediation Project. A 1972 soil survey by the U.S. Department of Agriculture lists the soils on Site as Everett and Alderwood series.

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

Coal extraction in this near vertical coal seam (Rogers), and associated caving at the outcrop, has produced intermittent subsidence trenches up to 100 feet wide and 70 feet deep. The walls of the trenches are typically steep sided and composed of massive sandstone. However, in some areas the sandstone bed forming the eastern side of the trenches (mine footwall) has failed exposing the shale material behind. Areas where the shale has been exposed are not as steep as those where the sandstone is still intact because the shale is weaker and less able to support steep slopes. In most areas, the sandstone-hanging wall forming the western side of the trenches remains intact.

The strata forming the sidewalls of the trenches were mapped in trenches that were excavated perpendicular to the rim of the trenches in areas 8 and 9. The mapped sequence included interbedded sandstone, shale, and siltstone; no evidence of sidewall instability was observed. However, slabbing failure, similar to that observed by retired PCC personnel, may occur if material is removed from the bottom of the trenches or if further subsidence occurs.

Areas outside of the immediate trenches appear to be stable, are mantled with a cover of glacial till and gravels. Geotechnical engineering evaluations of the slopes have been considered in the design of the Remediation Project.

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

The Remediation Project involves the backfilling of a portion of the subsidence trenches and the construction of a low permeability cap over the constructed backfill. Suitable clean on-Site and off-Site sources of material may be used to backfill the trenches and construct the low permeability cap. The potential on-Site source materials consist of waste rock and coal refuse that were produced from the portals and mine operations at the southern end of the Rogers and Landsburg coal seams The total quantity of fill required is currently estimated at 60,000 cubic yards, for areas 7, 8, and 9. The suitability or potential sources of cap and fill material, in terms of both quality and quantity, would need confirmation during final design.

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

Engineering and operational practices will be utilized to minimize the impacts of the limited erosion that will occur during the actual construction of the Remediation Project. Construction is currently scheduled for the driest part of the season and regrading and reseeding will be performed once the construction is completed. Following construction and establishment of the vegetation, the erosion will actually be reduced from pre-Remediation Project conditions.

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

The Remediation Project includes the construction of a vegetated low permeability cap that will cover about 132,000 square feet (approximately 3.03 acres). Some existing gravel roads will be widened and improved with a gravel surface. There are no paved roads or buildings planned for the cleanup action; therefore, the cleanup action has 0 percent of the Site covered with impervious surfaces after construction.

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

Water runoff and erosion control is a primary engineering design element in the construction of the cap and containment structure. Earthwork and diversion structures will be used to divert surface water runoff away from the capped trenches. Water control structures, ditches and piping may be used to control surface water and allow infiltration with minimal erosion. Routine periodic maintenance and monitoring will be performed looking for signs of erosion. Corrective actions will be quickly implemented to prevent further erosion. Specific surface water flow design drawings are being prepared as part of the CAP engineering design reports for the Remediation Project.

Cap monitoring would consist primarily of visual inspections for erosion, damage and subsidence. The cap would be periodically examined for the presence of offsets, settlement or subsidence scarps, low-points, ponded water, odd changes in grade, excessive erosion, and the condition of the vegetative layer.

Additionally, the cap will be monitored for the growth of deeply rooted vegetation that may harm the integrity of the cap. If deeply rooted vegetation is observed during cap monitoring, it will be removed as per the Operations and Maintenance Plan (Exhibit E, Part B). For the first year, such inspections may be performed on a quarterly basis and would eventually be reduced to once a year.

The chain-link fence currently surrounding the northern portion of the trenches will be kept in place for five years after the Remediation Project. The fence will protect the soil cap from trespassers and will allow time for the vegetative cover to be established.

2. Air

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

Short-term emissions to the air may result during the construction of the backfill and cap. These emissions would be from uncontaminated materials and would be similar to those associated with any earth moving/ construction project which would primarily consist of dust emissions that were produced during dry summer periods by excavation and haulage of the backfill and capping materials. Standard engineering and operational practices will be used as needed to control fugitive dust from excavation and hauling the clean backfill and cap materials and during placement of the materials within the trenches. An Air Monitoring Program will provide monitoring and documentation of air emissions from the Site. No long-term emissions would result from the Remediation Project.

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

There are no off-Site sources of emissions or odor that would affect the Remediation Project.

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

Standard engineering and operational practices will be used as needed to control fugitive dust from source material, excavation, hauling the clean backfill and cap materials and placement of the materials within the trenches. An Air Monitoring Program will provide monitoring and documentation of air emissions from the Site. The air-monitoring program will monitor volatile organics as well as dust and particulates. Specific guidelines will be established in the Health and Safety Plan for the Remediation Project.

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.

The major surface water features at the Study Area are the Cedar River along the Study Area's northern boundary and Rock Creek along the southern boundary. A tributary of Rock Creek, Upper Georgetown Creek, is located to the east of the Site within the Study Area. The Study Area is situated along a drainage divide separating the Cedar River mainstem and the Rock Creek Sub-basins. Drainage from the northern half of the Site eventually enters the Cedar River mainstem, while drainage from the southern half of the Site eventually enters into the Rock Creek sub-basin. Rock Creek ultimately drains into the Cedar River approximately 2 miles downstream of the Site. In addition to these major features, the Site itself contains a number of small minor unnamed and primarily ephemeral drainages and shallow depressions. However, no surface water from the Site directly flows into either the Cedar River or Rock Creek. These features of the Study Area are discussed below. Figure 7 depicts the primary surface water flow pattern and surface water features of the Study Area.

Cedar River

The major surface water in the Study Area vicinity is the Cedar River which is located approximately 900 feet from the northern end of the trenches. The Cedar River valley drainage system extends from the south end of Lake Washington to the crest of the Cascade Range. Major features of the system include Lake Washington, the Rock Creek tributary (City of Kent Clark Springs Facility), and the City of Seattle water intake structure at Landsburg.

The largest lake in the system is Lake Washington which is presently the endpoint for water flowing westward from the Cedar River. The Cedar River supplies approximately 54% of Lake Washington's supply. The river is considered a significant regional water supply providing 70% of the water needs for the City of Seattle and surrounding areas (King County Dept. of Public Works 1993).

The Cedar River is of A (excellent) quality from Lake Washington to the State Highway 169 overpass in Renton, Washington. Nearer to the Site, the river has been rated AA (extraordinary) which is described as "markedly and uniformly exceeding the requirements for all or substantially all beneficial uses." Water quality in the Cedar River mainstem is considered excellent (King County Dept. of Public Works, 1993).

Flow data for the river are available for two gauging stations located in the Study Area vicinity (Hydrosphere Data Products, 1993b). The USGS maintains a gauging station approximately 1 mile upriver of the diversion. Data for this station are available for the period 1895 to 1994. Below the diversion structure, a gauging station is operated by the City of Seattle. Data for this period are available only for 1992 to 1994. Table 3-7 summarizes the daily average flows in the river by month for each of these two stations. As seen in the table, above the diversion structure the daily average flow varies from a low of approximately 322 cubic feet per second (cfs) in September to a maximum of about 975 cfs in January. A long, relatively wet season is indicated from November through June where average daily

flows vary between approximately 700 and 975 cfs. The dry season is July to September with average daily flows of about 300 to 500 cfs. Below the diversion, data compiled from 1992 to 1994 indicate the daily average flow in the river varies from a high of only 591 cfs in December to a low of 160 cfs in September. The difference between daily average flows at the two gauging points is generally in the 150 to 450 cfs range. This presumably represents the approximate diversion taking place at the City of Seattle diversion structure.

Rock Creek

Rock Creek is located in the southern portion of the Study Area and is tributary to the Cedar River. The creek represents the only perennial creek or stream within the Study Area boundaries. The creek becomes ephemeral in the south-central portion of the Study Area approximately where one branch crosses under the Kent-Kangley Rd. (Figure 7). The relatively high flow rate which is generated within several hundred ft. of this point indicates the creek is gaining in the portion located within the Study Area (i.e. sustained by groundwater discharge). Presumably the source of flow in the creek is groundwater inflow from the east through the permeable glacial outwash deposits.

The Rock Creek sub-basin drains over 7,000 acres and is considered to be the least disturbed and most pristine of the five tributary sub-basins of the Cedar River (King Co. Dept. of Public Works 1993). Based on the pristine, rural nature of the area, the water quality in the creek is thought to be very good although few data are available.

Flow data for Rock Creek near the City of Kent diversion was available for the years 1945 through 1948. The average daily flow for this time was 29 cfs. Daily averages for the creek over this period varied from a minimum of 6.3 cfs in August to 56 cfs in December (Hydrosphere Data Products 1993b).

Rock Creek has been diverted by the City of Kent since the 1950s for use as a municipal water source. The diversion by the City of Kent represents approximately 26% of the mean annual flow of the Creek and the majority of the creek's flow during the low-flow months of September and October (King County Department of Public Works 1993). The existing diversion structure, referred to as the Clark Springs Facility, was built in the 1950s and consists of a lateral gravity drainage collection system installed 13 to 15 ft. below ground surface in the Rock Creek alluvium.

Site Drainage Features

The Site itself has only ephemeral drainages which discharge during prolonged or intense periods of rainfall. The southern portion of the Site drains towards Rock Creek and the northern half drains to the Cedar River. The generalized surface water flow patterns at the Site and the locations of major features are shown in Figure 7.

The lower elevations around the perimeter of the Study Area are covered by relatively permeable outwash sands and gravels at the land surface without defined drainage patterns. Rainfall is expected to readily infiltrate these materials. The elevated portions of the Site either have surface outcrops of bedrock or a thin veneer of glacial drift (till) which will inhibit infiltration relative to the permeable outwash deposits. In general then, surface water flow at the Site is expected to run-off the hills, collect in ephemeral drainages and flow to the lower elevations where it infiltrates into the outwash deposits and drains as groundwater towards Rock Creek or the Cedar River. Some run-off also flows into the trenches, depending on the local topography and drainage patterns. Run-off flowing into the trenches collects in several ephemeral pools where it infiltrates or evaporates.

Field reconnaissance by Golder Associates personnel confirmed ten wet areas within the trenches or immediate vicinity (Figures 7 and 8). Two of these consist of the mine portals #2 and #3. Water occurrence at these locations is expected to represent natural groundwater discharge. Another, pond within trench area #5 that is located just to the north of well LMW-1, had water present every time it was inspected. The other areas consist of localized pools which are ephemeral and have been observed to go dry during the months of June through November. These pools are not believed to represent groundwater, but rather are more accurately characterized as ephemeral pools of surface run-off which flows into the trenches and into low areas due to local topography and is then temporarily retained.

The water present at portal #2 sometimes occurs as a pool that is completely retained and enclosed as a shallow depression. Drainage from portal #2 at the north end of the mine was reported during earlier investigations by Ecology and Environment in February 1991, but was not observed by Golder Associates at any time during the RI. Portal #3 occurs as seepage where water emanates along a sloping seepage face, flows along the ground surface for a short distance, and gradually re-infiltrates back into surficial soils. Surface water run-off from portal #3 was never observed to extend beyond the Kent-Kangley Rd. Flow rates measured at the portal during this RI varied from about 2 gpm to 100 gpm with the minimum flow occurring in late summer and the maximum flow occurring in winter.

Other localized pools or shallow ponds also occur in the Study Area. These are shown in Figures 7 and 8. One is located along the southwest side of the hill located to the east of the trenches. This pond is perennial and is located along one of the major ephemeral drainages at the Site. Discharge from the pond occurs through a culvert which passes beneath the adjacent gravel road. Discharge through the culvert apparently ceases during the summer months. Two other shallow ponds, which are also associated with the major ephemeral drainages at the Site are present along the north side of this hill. Miscellaneous occurrences of standing water at the higher elevations are common in the wetter months.

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.

The Remediation Project will not require any work over, in or adjacent (within 200 feet) to either the Cedar River or Rock Creek and as such a Shoreline Permit is not anticipated.

During construction of the remedial action, means of restricting access to the waters discharging from Portal's #2 and #3 will be engineered, in a manner acceptable to Ecology, to prevent exposure to those waters by humans. The engineered restriction will keep Portals #2 and #3 groundwater discharge from surfacing, thereby eliminating access and direct contact by humans. These access restrictions shall remain in force indefinitely.

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.

The Remediation Project involves the backfilling of the subsidence trenches and the construction of a low permeability cap over the constructed backfill. Although sources for the backfill and low permeability cap are not finalized, suitable clean on-Site and off-Site sources of material may be used to backfill the trenches and construct the low permeability cap. The potential on-Site source materials consist of waste rock and coal refuse that was produced from the portals and mine operations at the Frasier, Rogers and Landsburg coal seams. Approximately 60,000 cubic yards of fill material may be required for areas 7, 8, and 9 of the Remediation Project. Several small wetland areas created by past mining operations occur within the potentially contaminated portion of the subsidence trenches and in several cases are small wetland areas sitting on top of landfill waste. These small wetlands within the waste disposal trenches are isolated from surface waters and infiltrate only into the groundwater or evaporate into the atmosphere. These small wetland areas will be backfilled as part of the Remediation Project. These areas are shown on Figure 8. No other surface water or wetland areas would be affected by placement or removal of fill material. The major wetland area identified by the King County Sensitive Area map (Figure 10) is south of the Remediation Project Site is outside the cleanup action and support areas and will not be impacted by remediation construction activities.

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

No surface water withdrawals or diversions will be required for the Remediation Project.

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

The Remediation Project Site occurs above the 100-year flood plain.

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 waste materials will be discharged to surface waters.

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.

It is currently anticipated that groundwater will not be withdrawn as part of the Remediation Project. Water used for dust suppression/control will be from off-Site sources. However routine groundwater monitoring will be performed and in the unlikely event that groundwater contamination should be detected at levels above MTCA Method B cleanup levels, a contingency groundwater treatment system would be implemented that would withdraw groundwater at a rate that would prevent off-Site migration of contaminants and would treat (as necessary) the groundwater prior to discharge to an existing Metro sewer. The contingency groundwater treatment system is presented in the Contingency Groundwater Treatment Plan (Exhibit E, Part C). The anticipated withdrawal rate varies from 10 gpm to approximately 40 gpm. Treated groundwater would be sampled prior to discharge to the Metro sewer system. Contingency groundwater extraction and treatment would continue until groundwater at the points of compliance meets MTCA Method B cleanup levels. The compliance monitoring frequency of treatment system inflow and outflow, in the event that the contingency groundwater extraction and treatment system is implemented, will be determined by the Metro discharge permit.

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 material will be discharged from septic tanks.

Areas 7, 8, and 9 of the subsidence trenches will be filled with approximately 60,000 yd^3 of clean fill soils/materials. These clean fill soils/materials may be obtained from off-Site imported sources or from borrow areas on the Site that currently contain fill soils/materials from the former coal mining operations.

c. Water runoff (including stormwater):

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

All surface runoff is from precipitation events and/or groundwater seeps and springs in the area affected by the Remediation Project. The trench areas 7, 8 and 9 to be backfilled and capped (see Figure 5) would be graded to provide proper stormwater drainage. At the present time, runoff from the area surrounding the trenches flows into the trenches. Thus, backfill of the trenches and grading would decrease the stormwater flow into the trenches, and thereby significantly decrease the infiltration even without a cap.

Final ditch configurations, locations, and details would be determined using standard hydraulic design methods as part of final engineering design. It is anticipated that drainage ditches will discharge to engineered stormwater retention/detention and/or infiltration facilities.

If on-Site materials are used for trench backfill or cap materials, the borrow areas will be disturbed during excavation and removal of the fill soils/materials. Excavation will be bermed to control water runoff and erosion during the excavation. After the subsidence trenches are filled in accordance with the Landsburg Mine Cleanup Action Plan, any on-Site borrow areas will be graded and blended to conform with the natural topography and stabilized with revegetation.

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

Backfilling the trenches could increase the load on the buried drums in the bottom of the trenches and thus creates the potential for collapse of any intact drums that may be in the trenches. However, because the drums have now been in place for over 40 years, significant stable bridging has possibly occurred that would prevent rapid loading collapse. Drum rupture induced by such loading, if it were to occur, would be expected to occur quickly. Drum rupture, should it occur, would not impact surface waters because a chemical release from the drums would be within the mine trenches, but could migrate vertically to underlying groundwater. As an additional precautionary measure, a period of groundwater "Protection Monitoring" during and after completion of backfill has been included in the short-term groundwater-monitoring program to address the possibility of intact drum collapse leading to release of chemicals to groundwater. In addition, surrounding soil would provide containment and some adsorption of any released liquid. Therefore, drum failure would not necessarily lead to groundwater impacts.

Short-term "protection monitoring" will commence when the trench backfilling begins, and will continue throughout the trench backfilling and cap construction (estimated duration 16-20 weeks). Monitoring wells included in the short-term protection groundwater monitoring program consist of the 10 existing wells LMW-2 through LMW-11. As a rapid screening tool, samples will be collected from the above listed wells bi-weekly (twice every month) and analyzed in the field for pH and specific conductance (as an indicator for metals and other inorganic compounds), dissolved oxygen, and turbidity. The confirmation sampling test parameters will be expanded on a monthly basis to include total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs). Other mine waste contaminants including metals, semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and pesticides, will only be analyzed in specific monitoring wells during protection groundwater monitoring, if TPH or VOCs are detected and confirmed to be present.

Long-term confirmational groundwater monitoring will continue until residual hazardous substance concentrations no longer exceed cleanup or remediation levels as described in the CAP resulting from either (1) the application of new remediation technologies currently unavailable or (2) other circumstances

or conditions that affect residual concentrations such that they no longer pose a risk to human health or the environment.

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

Surface water controls, in particular, controls to reduce surface runoff into the subsidence trenches are an integral part of the remedial design for the Site. As described above, drainage ditches would be constructed at the margins of the cap to intercept surface runoff and convey it away from the backfilled trenches. Surface water diversion structures will discharge to the permeable recessional outwash sands and gravels at the north portal areas or into a newly constructed stormwater pond in the same area.

Long-term compliance monitoring is proposed for the Remediation Project to evaluate groundwater impacts that are attributable to contamination by waste materials. As prescribed in the Cleanup Action Plan, if groundwater emanating from the Site becomes impacted, the contingent groundwater extraction and treatment system will be installed and operated to eliminate impacted groundwater from migrating off-site.

4. Plants

a. Check or circle types of vegetation found on the site:
deciduous tree: ***alder***, ***maple***, *aspen, other:*
evergreen tree: ***fir***, ***cedar***, *pine, other:*
shrubs, **grass**
pasture:
crop or grain: **None**
wet soil plants: ***cattail***, *buttercup, bullrush, skunk cabbage, other*
water plants: water lily, eelgrass, milfoil, other
other types of vegetation

Dense vegetation covers a majority of the Site and includes blackberry, alder, cedar, hemlock, cottonwood, maple and fir. Vegetation is sparse in certain areas, primarily associated with areas of recent activity, and roads and coal mine waste rock piles where the rocky conditions and poor soil development retards plant development.

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

Outside the trenches, the ground surface would be cleared and grubbed to remove organic debris for vehicle/equipment access during the Remediation Project. The topsoil would be stockpiled for use in the vegetative cover layer of the cap. In the trenches, trees and large brush would be removed to prevent vertical transmissive zones through the backfill, when the trees eventually decay. Removal would also prevent excessive settlement of the backfill, which might occur if backfill is placed on a “mat” of trees and brush. Vegetation will also be removed for removal of borrow source materials (if on-Site materials are used for backfill and cap), construction of the haul road and at a staging area adjacent to the trenches for

placement of the materials. All areas affected by the construction operation will be reseeded and replanted following the construction operations. Once the vegetation has been reestablished by seeding and replanting, the total percentage of vegetative covered area should not be decreased from pre-Remediation Project conditions.

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

The United States Fish and Wildlife Service (USFWS) did not identify any plant species as threatened or endangered near the Study Area. The USFWS of Western Washington identified golden paintbrush as a listed threatened/endangered plant species for King County, however it is unknown whether this plant is located within the Study Area. The search area for this determination represented an approximately one mile search radius extending from the Study Area and included Sections 23 to 26 of Township 22 North, Range 06 East, and Sections 19 and 20 of Township 22 North, Range 07 East.

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

Vegetative cover is an integral part of the engineering design for the low permeability cap that will be constructed over the subsidence trenches. The vegetative cover on the trench cap will , not jeopardize the integrity of the cap. Reseeding and replanting will also be completed as appropriate on all areas affected by the construction activities following the construction of the backfill and cap. The lower, flatter portions of the hill including potential on-Site material source areas and the cap will be reseeded as appropriate with suitable vegetation. Affected areas on the hillside as well as areas adjacent to the capped trenches will also be replanted.

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.

Endangered and threatened species are categorized as listed, proposed, and candidate. Listed endangered species are defined as those species known to be experiencing or that have experienced failing or declining populations due to factors such as limited numbers, disease, predation, exploitation, or loss of suitable habitat. Proposed endangered species are under consideration for protection. Candidate species are species that may be proposed and listed in the future.

The USFWS did not identify any listed endangered or threatened species sighted near the Study Area. The search area for this determination represented an approximately one mile search radius extending

from the Study Area and included Sections 23 to 26 of Township 22 North, Range 06 East, and Sections 19 and 20 of Township 22 North, Range 07 East. Listed threatened and endangered species in King County include bull trout, Canada lynx, gray wolf, grizzly bear, marbled murrelet, and northern spotted owl. It is believed that none of these species are present in the Study Area; however some species (spotted owl and bull trout) may be located nearby the Study Area in the Cedar River watershed.

The USFWS did not identify any proposed species in the Study Area vicinity; however, the Washington Department of Fish and Wildlife has the bald eagle listed as a sensitive species of concern. Several candidate species were also identified by the USFWS as potentially occurring in the Study Area. These include the Oregon spotted frog and the yellow-billed cuckoo. A number of species of concern reside in King County, some of which may be located within the Study Area. The list of species of concern can be obtained from the USFWS (http://www.fws.gov/wafwo/speciesmap/KING.html).

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

No evidence of the Site being part of a migration route was noted during the multi-year investigations that have been carried out at the Site. Salmonids are known to migrate up the Cedar River for spawning, but this does not occur on the Site.

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

The long-term conditions at the Site for wildlife should remain similar to current conditions at the Site. Short-term impacts to wildlife (primarily temporary displacement) will result during the actual construction of the Remediation Project. Again, the Remediation Project provides an overall, long-term net benefit to wildlife due to the removal of potential exposure pathways for hazardous chemicals and by eliminating a portion of the subsidence trenches that may currently impact migration in and around the local area.

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.

A source of energy is currently not anticipated once construction at the Site has been completed. Portable generators and equipment will be used during construction and subsequently during routine maintenance and monitoring activities.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.
The Remediation Project will not affect the potential use of solar energy by 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:

Not applicable. No energy impacts are currently anticipated.

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 selected remedial option for the Site is inherently designed to reduce the possibility of long-term human and environmental exposure to toxic and hazardous substances. The selected remedy of backfill and capping provides an additional benefit of lower potential short-term exposure for workers and surrounding communities over other remedial options such as excavation and off-Site haulage of the hazardous waste.

1) Describe special emergency services that might be required.

Potential emergency services required for the Remediation Project are consistent with those required for other construction and remediation projects. No special emergency services are anticipated for the Remediation Project. Local hospital medical personnel will be contacted and briefed prior to the Remediation Project. Work will be conducted in accordance with a Site Health and Safety Plan which will be established prior to construction activities. All personnel on Site will be briefed on the location of medical services and will be required to participate in on-Site health and safety meetings that are designed to emphasize worker and environmental safety.

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

The Remediation Project will be performed under a Health and Safety Plan by workers that are properly trained for hazardous waste work. A specific worker and environmental monitoring program will be implemented during the construction activities. Specific actions levels will be established in the Health and Safety Plan that will require protective clothing and respiratory protection for workers once these levels are reached.

b. Noise

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

Current noise levels in the area are consistent with a rural relatively undeveloped area. Local traffic and other currently existing noises will not affect the Remediation Project.

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

No additional noise will be created by the Remediation Project on a long-term basis. Short-term construction activities will produce noise similar to that of most earth excavation/ construction activities. These construction activities are not anticipated to occur for a period in excess of 6 to 8 months. The

construction activities will be conducted during daylight hours. If on-Site sources of backfill are used, only minimal impact to public traffic is anticipated due to the majority truck traffic being primarily confined to the Site. If off-Site material is used for backfill during the first construction phase, it is estimated that approximately 50 to 60 trucks will be hauling fill to the Site per day on public roads for 100 to 120 days over approximately 20 to 25 weeks during the first phase of construction. The amount of truck traffic during the second construction phase would be much less and should not pose a significant impact on public traffic.

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

A specific work schedule will be maintained that will confine any noise impacts to surrounding properties to daylight hours. All equipment will be properly maintained and equipped with suitable mufflers and other sound suppression equipment. Off-Site noise impacts will be routinely evaluated during the Remediation Project.

8. Land and shoreline use

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

A portion of the Site has been used for forestry practices; however the majority of the Site including the subsidence trenches is a closed coal mining operation that was partially used for waste disposal for a brief period of time in the past, but has not had active use for several decades. Adjacent properties are used for forestry and low-density rural housing.

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

The Site has not been used for agriculture. The Site has historically been used for mineral extraction and forestry.

c. Describe any structures on the site.

The only remaining structure left on the Site is a wood frame structure that was used as a changing/shower room for the miners as they came on and off their shifts. The building is located to the south of the Rogers Seam south portal (Portal #3).

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

The structure will not be demolished or impacted by the remediation activities.

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

The Study Area zoning was determined by reviewing zoning maps at the King County Department of Development and Land Services. The zoning codes from the maps were updated to reflect the new Title 21A Zoning Code adopted in June 1993 and revised in 2009. The Site zoning is shown on Figure 9. In

general, zoning in the Study Area vicinity is intended to protect the forest resources of the area, to encourage moderate rural development and to protect water quality in the Cedar River and Rock Creek watersheds.

The bulk of the Study Area, including much of the central portion of the Site and the former mine workings, has been assigned an RA, Rural Area Zone classification. This zoning, formerly classified as G-5 under KCC Title 21, indicates that land use will maintain an area-wide rural character, will prevent urban developments in areas without adequate urban services, preserve environmentally sensitive areas, and minimize land use conflicts with nearby agricultural, forest, or mineral extraction production districts. In addition, permitted uses will limit residential density to be compatible with rural character and which can be supported by rural service levels.

In addition, to these zoning classifications, the City of Kent and City of Seattle maintain municipal watershed lands along the western and eastern boundaries of the Study Area, respectively, for the protection of drinking water supplies associated with Rock Creek and the Cedar River.

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

The current comprehensive plan for the Site is RA-5, Rural Area Zone classification.

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

Under the Shoreline Management Plan of King County, the Cedar River shoreline throughout the Study Area vicinity has been designated a “Conservancy” environment. The Conservancy designation objective is to conserve, protect and manage existing areas of irreplaceable natural or aesthetic features in their native state while providing for limited shoreline use at public sites (King County Dept. of Public Works 1993). The Conservancy designation for the Cedar River extends from river mile 3.4 to the river’s headwaters. The Remediation Project Site is located approximately 1,000 ft. south of the Cedar River.

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

Sensitive areas as defined by the King County Sensitive Areas Ordinance (Ordinance 9614) consist of land areas described as environmentally sensitive or that are subject to natural hazards, and lands that support unique, fragile, or valuable natural features. These areas include wetlands, areas prone to stream and flood hazards, erosion hazards, seismic hazards, and coal mine hazards. The purpose of the Sensitive Areas Ordinance was to implement the goals and policies of the Washington State Environmental Policy Act and the King County Comprehensive Plan which call for protection of the natural environment and the public health and safety by establishing development standards to protect defined sensitive areas.

Development of land within identified sensitive areas requires special development standards as well as special studies to assess impacts and to propose adequate mitigation, maintenance, monitoring and contingency plans for those areas.

Sensitive Areas Maps based on the ordinance from King County were reviewed to determine what sensitive areas exist within the Study Area. These areas are shown on Figure 10.

A wetland area is defined as being inundated or saturated by ground or surface water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Small isolated wetlands have developed within the trenches. The area of all wetlands within the trenches is less than 0.1 acre. Water from wetlands within the trenches either evaporates or infiltrates to groundwater. Several small potential wetland areas exist adjacent to the trenches outside of the fenced trench area (Figure 8). Construction activities will avoid and not impact these potential wetland areas outside the security fence. There is a wetland area within the southern Study Area boundary identified in the King County Sensitive Areas map. This wetland is shown on Figure 10 and is a potential tributary of Rock Creek. This area is also depicted on the Washington WDW priority habitat and species map as a palustrine (swampy) environment that is part of the Cedar River wetlands. Currently, a number of residences are situated within this area. This wetland is located over 1,000 ft. from the trenches.

Streams are considered sensitive areas because of their esthetic values, their ability to provide recreation, support wildlife, and moderate flooding and erosion. The Cedar River is identified as a Class I stream for its length from Landsburg to Renton. This indicates the river is inventoried as a Shoreline of the State under the King County Management Plan. Portions of the Cedar River Basin are designated as Regionally Significant Resource Areas (RSRA) by the Watershed Management Committee - Proposed Lower Cedar River Basin (King County Code Title 20.14.070).

Rock Creek to the south of the Site is a Class II stream that flows year-round during years of normal rainfall and is used by salmonids. The creek is ephemeral to the east of where it crosses beneath the S.E. Kent-Kangley Road. The King County Department of Transportation replaced the old pipe culverts with a large box culvert under S.E. Kent-Kangley Road during the summer of 2012.

Erosion hazards areas are described as areas where soils are susceptible to erosion as a result of development. Factors affecting erosion include the physical and chemical characteristics of the soil, the presence or absence of vegetative cover, slope length and gradient, the intensity of rainfall and velocity of runoff. Two large areas of the Site are described as susceptible to erosion. The first is the steep northern slope along the Cedar River. The second is the steep hillside in the eastern portion of the Study Area between the trenches and eastern Study Area boundary. These areas are shown in Figure 10.

Landslide hazard maps delineate areas where the topographic and geologic conditions indicate a potential for hill-slope failure. There are no landslide hazard areas identified for the Site. Seismic hazards are defined as areas subject to severe risk of earthquake damage as a result of seismically induced settlement or soil liquefaction. There are no such potential areas identified at the Site.

Coal mine hazard areas are mapped because of their potential for gradual or sudden collapse of underground mine workings leading to surface ground failure. Surficial ground collapse can cause damage to structures, as well as personal injury. Additional risk may be posed by the presence of unstable mine spoils piles that are subject to failure. As expected, the portions of the Site where coal removal occurred are mapped as coal mine hazard areas. These are shown in Figure 10.

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

No new residences are proposed as a part of the Remediation Project. Following completion of the Remediation Project, workers would only visit the Site on an infrequent basis for routine maintenance and monitoring.

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

No one would be displaced by the Remediation Project at the Site.

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

No displacement impacts are anticipated from this Remediation Project.

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

Under the selected remedy, contaminated material will remain on-Site. Under WAC 173-340-440(1)(a) institutional controls are therefore required. Institutional controls are a key component of the alternatives for maintaining long-term effectiveness of the Remediation Project.

Deed restrictions will be instituted to ensure that Site use restrictions remain in force regardless of the property owner, and to notify any prospective purchasers of the presence of subsurface waste. Site use restrictions will prohibit using the Site for purposes incompatible with a waste disposal site. For the selected remedy, these restrictions will prohibit penetrating the cap and Site use that could damage the cap or significantly reduce its effectiveness. Warning signs would be used to provide notice of the presence of a waste site. Site use restrictions would remain in force indefinitely.

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 as a result of the Remediation Project.

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:

Under the selected remedy, contaminated material will remain on-Site. Under WAC 173-340-440(1)(a) institutional controls are therefore required. Institutional controls are a key component of the alternatives for maintaining long-term effectiveness of the Remediation Project.

Deed restrictions will be instituted to ensure that Site use restrictions remain in force regardless of the property owner, and to notify any prospective purchasers of the presence of subsurface waste. Site use restrictions will prohibit using the Site for purposes incompatible with a waste disposal site. For the selected remedy, these restrictions will prohibit penetrating the cap and Site uses that could damage the cap or significantly reduce its effectiveness. Warning signs would be used to provide notice of the presence of a waste site. Site use restrictions would remain in force indefinitely.

Permanent fencing is not needed for capping alternatives because the trench backfill would provide a very thick barrier against contact with any waste material, such that incidental trespass (which fencing is designed to prevent) or limited utilization of the Site would not present a health risk.

Periodic Site inspections and maintenance of a cap, fencing, signs, and any other physical components of the institutional controls will be conducted until residual hazardous substance concentrations that are attributable to contamination by waste materials no longer exceed cleanup or remediation levels under MTCA.

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 will be constructed at the Site. The constructed backfill and cap will be constructed at approximate ground surface.

b. What views in the immediate vicinity would be altered or obstructed?
No views will be altered.

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

Construction activities associated with the placement of the backfill and construction of the low-permeability cap might be visible from some parts of the property boundary for the duration of the construction phase. However, following construction and revegetation, the completed Remediation Project will not be visible from the property boundary.

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 completed Remediation Project. Construction activities will be conducted during daylight hours and light augmentation is not anticipated.

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

No light or glare will be produced by the completed Remediation Project.

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

No off-Site sources of light or glare have been identified that would affect the Remediation Project.

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

No light or glare impacts are anticipated for the Remediation Project . Construction operations will be conducted during daylight hours.

12. Recreation

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

The Remediation Project Site is located on a fairly rural hilltop. Recreational opportunities in the immediate vicinity include activities on or along the Cedar River such as fishing as well as hunting, horseback riding and hiking.

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

The completed Remediation Project should not displace any existing recreational users who obtain property owner permission to use the private property. The portion of the subsidence trenches used for past waste disposal is currently secured by a locked chain-link security fence and not made available for recreational use. During the period of construction activities at the trenches, access to the Site will be limited to authorized, health and safety-trained personnel. The locked fence surrounding the backfilled trenches would remain for a period of five years after construction of the cap.

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

The Site is private property owned by PCC and public recreational facilities do not currently exist and are not anticipated at the Site following completion of the Remediation Project.

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.

There are no known places or objects listed on or proposed for national, state or local preservation registers on or adjacent to the Site.

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

No landmarks or evidence of historic, archaeological, scientific or cultural importance were noted during the remedial investigation of the Site. The Site is primarily occupied by the remnants of mining (subsurface and surface) activities that occurred on three coal seams. A monument is erected on the southern end of the Landsburg seam to miners that perished in an underground mine disaster. The monument will not be disturbed by the Remediation Project.

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

No landmarks of historic, archaeological, scientific or cultural importance will be disturbed by the Remediation Project.

14. Transportation

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

Public roads in the vicinity of the Site are shown on Figure 11. The Remediation Project will only require limited short-term access for construction workers during the limited remediation construction period. If off-Site fill material is imported to the Site, 50 to 60 trucks per day may be needed for delivery along public roads for a period of 100 to 120 days. Access to the Site is provided by the Summit-Landsburg Rd. on the northern side of the Remediation Project Site, by the Kent-Kangley Rd. on the southern side of the Remediation Project Site and SE 256th Street to the eastern side of the Remediation Project Site. Existing private, gravel roads will be used for access throughout the Site. These private roads will be improved as necessary to facilitate truck haulage.

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

Limited public transportation is available in some of the neighboring communities. The Remediation Project Site itself is not served by public transportation. Public transportation is not a requirement for the Remediation Project.

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

Not applicable to this Remediation Project. No additional parking spaces will be required for the Remediation Project.

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).

Access to the Site is provided by the Summit-Landsburg Rd. on the northern side of the Remediation Project Site, by the S.E. Kent-Kangley Rd. on the southern side of the Remediation Project Site and SE 256th Street to the eastern side of the Remediation Project Site. Existing private, gravel roads will be used for access within the Site. These private gravel roads will be improved as necessary to facilitate truck haulage for either on-Site or off-Site sources of fill materials.

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

Water, rail or air transportation does not occur in the immediate vicinity of the Remediation Project and is not required for the Remediation Project.

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

Not applicable to the Remediation Project. The completed Remediation Project will not generate any additional vehicular trips per day. The Site will only be routinely maintained and monitored.

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

Short-term minimal impacts will occur for mobilization to and demobilization from the Remediation Project Site and for limited, short-term worker access. Carpooling of workers is anticipated and will be encouraged. Operations will primarily be carried out within the boundaries of the Remediation Project Site with only very limited truck haulage on public roads. There will be no long-term transportation impacts once the construction is completed.

15. Public services

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

Not applicable to the Remediation Project. There will be no increased need for public services.

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

Not applicable to the Remediation Project.

16. Utilities

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.

Not applicable to the Remediation Project. The Site is rural undeveloped land with limited utilities (telephone, electricity) available at the northern and southern property boundaries.

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

Not applicable to the Remediation Project. No utilities are proposed at this time. The contingency groundwater treatment plan (if implementation is ever required) may require a minimal electric service (similar to a residential electric service) for operation of pumps and the treatment system.

C. SIGNATURE

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

_____
Signature:

_____
Date Submitted:

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FIGURES

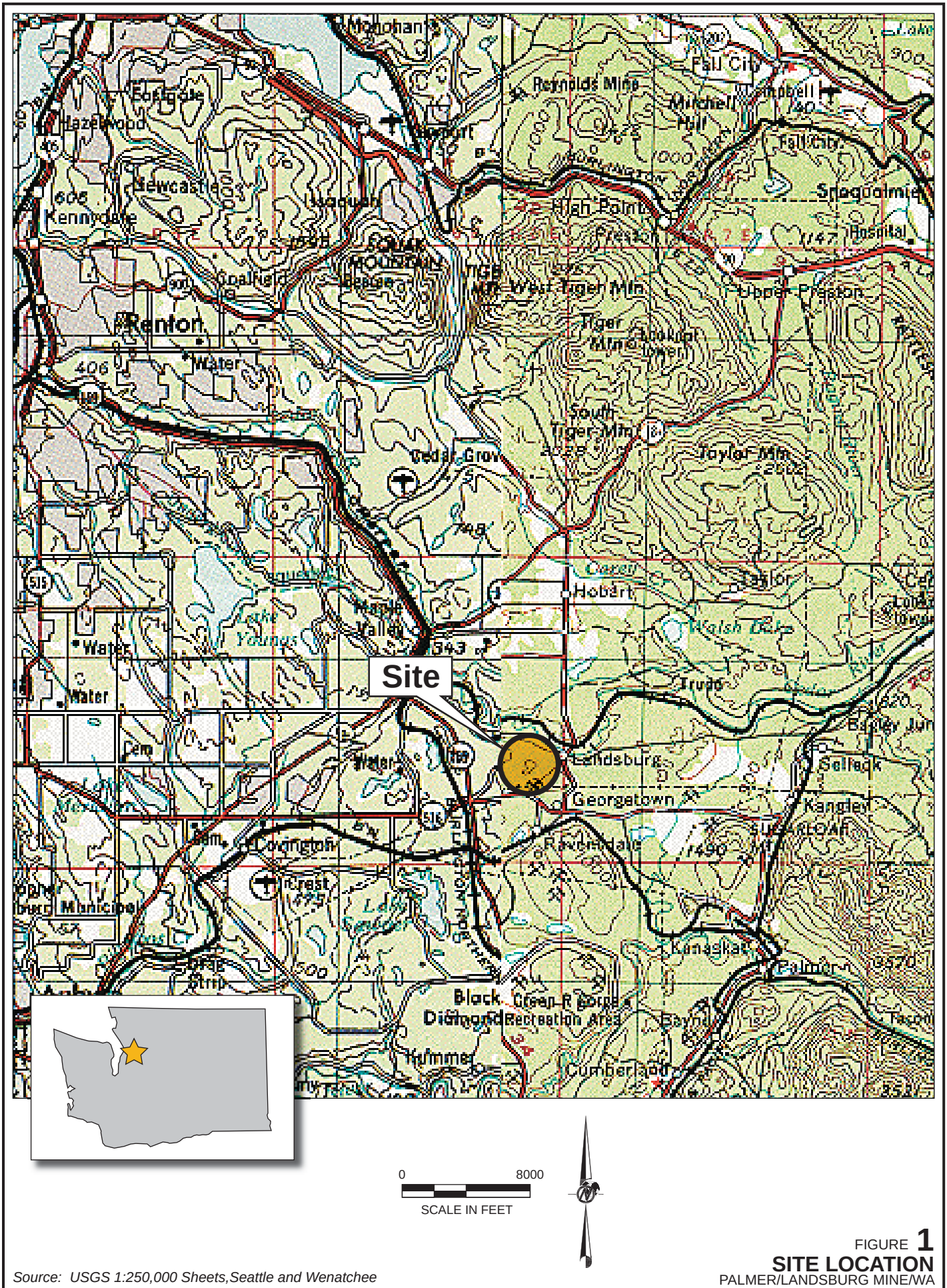

FIGURE **1**
SITE LOCATION
PALMER/LANDSBURG MINE/WA

Source: USGS 1:250,000 Sheets,Seattle and Wenatchee

9231000002R154fig01_SEPA.ai | Mod: 04/27/10 | AMP

FINAL DRAFT

Golder Associates

122° 00'

7° 22' 50"

47° 22' 50"

Subsidence Trench of Rogers Seam

Landsburg Mine Site

Landsburg Mine Site RI/FS Study Area

Base map from USGS 7.5' topographic quadrangles "Cumberland" and "Hobart".

0 2000

SCALE IN FEET

FIGURE **2**

STUDY AREA BOUNDARY

PALMER/LANDSBURG MINE/WA

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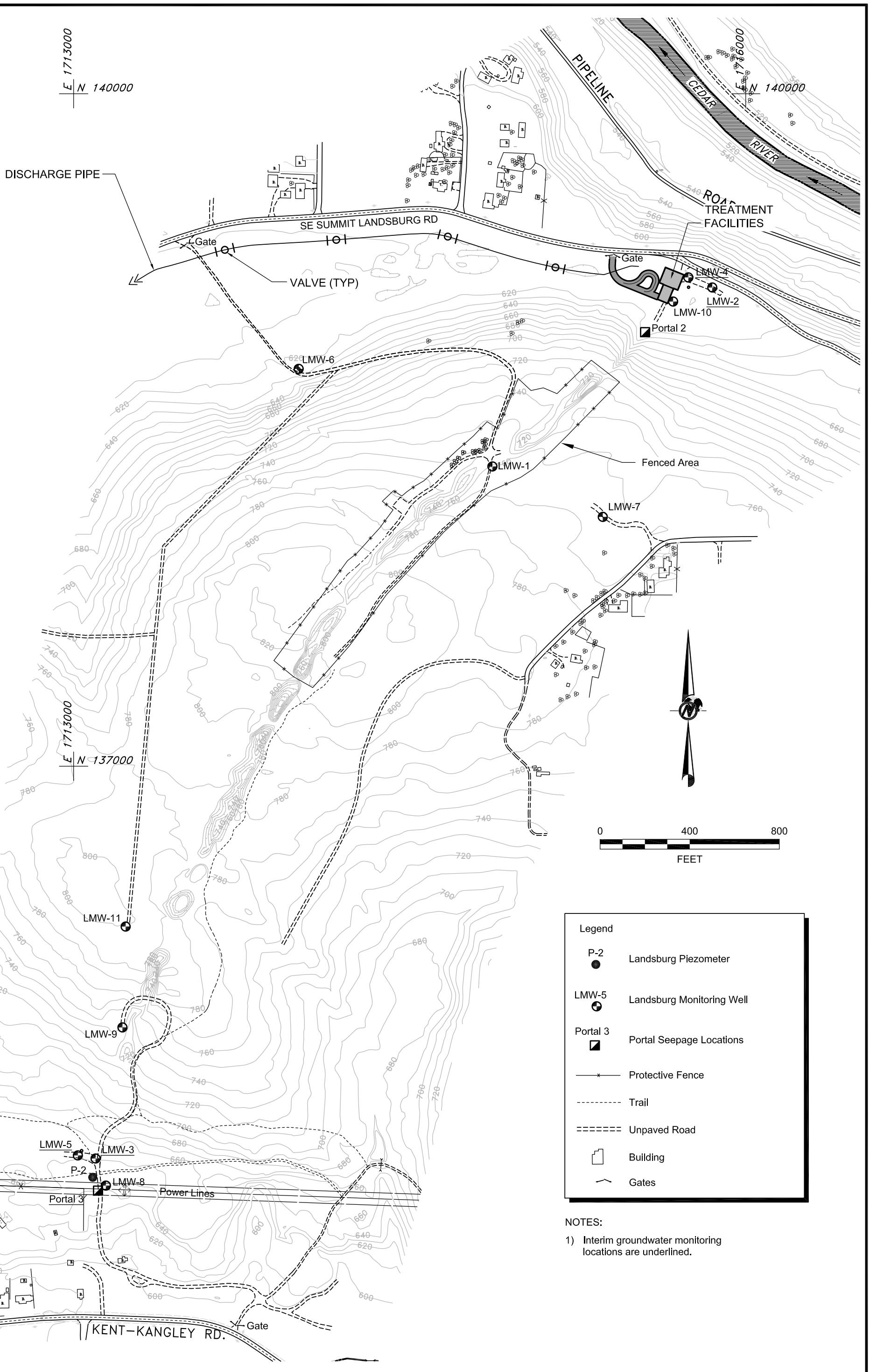
DRAFT

Golder Associates



NOTES:

1) Interim groundwater monitoring locations are underlined.

FIGURE **3**

SITE FEATURES AND TOPOGRAPHY

PALMER/LANDSBURG MINE/WA

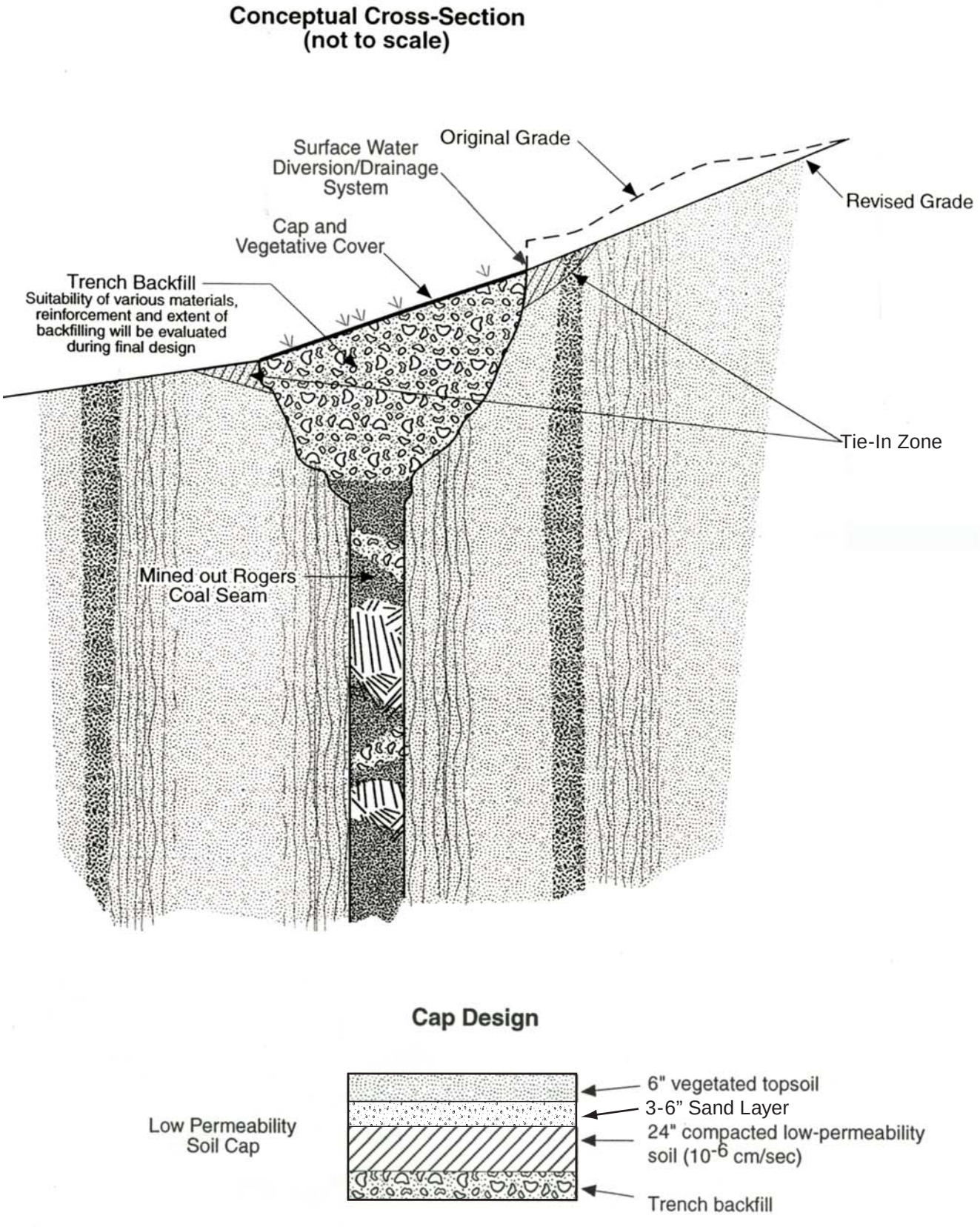


FIGURE **4**
CAP DESIGN
PALMER/LANDSBURG MINE/WA

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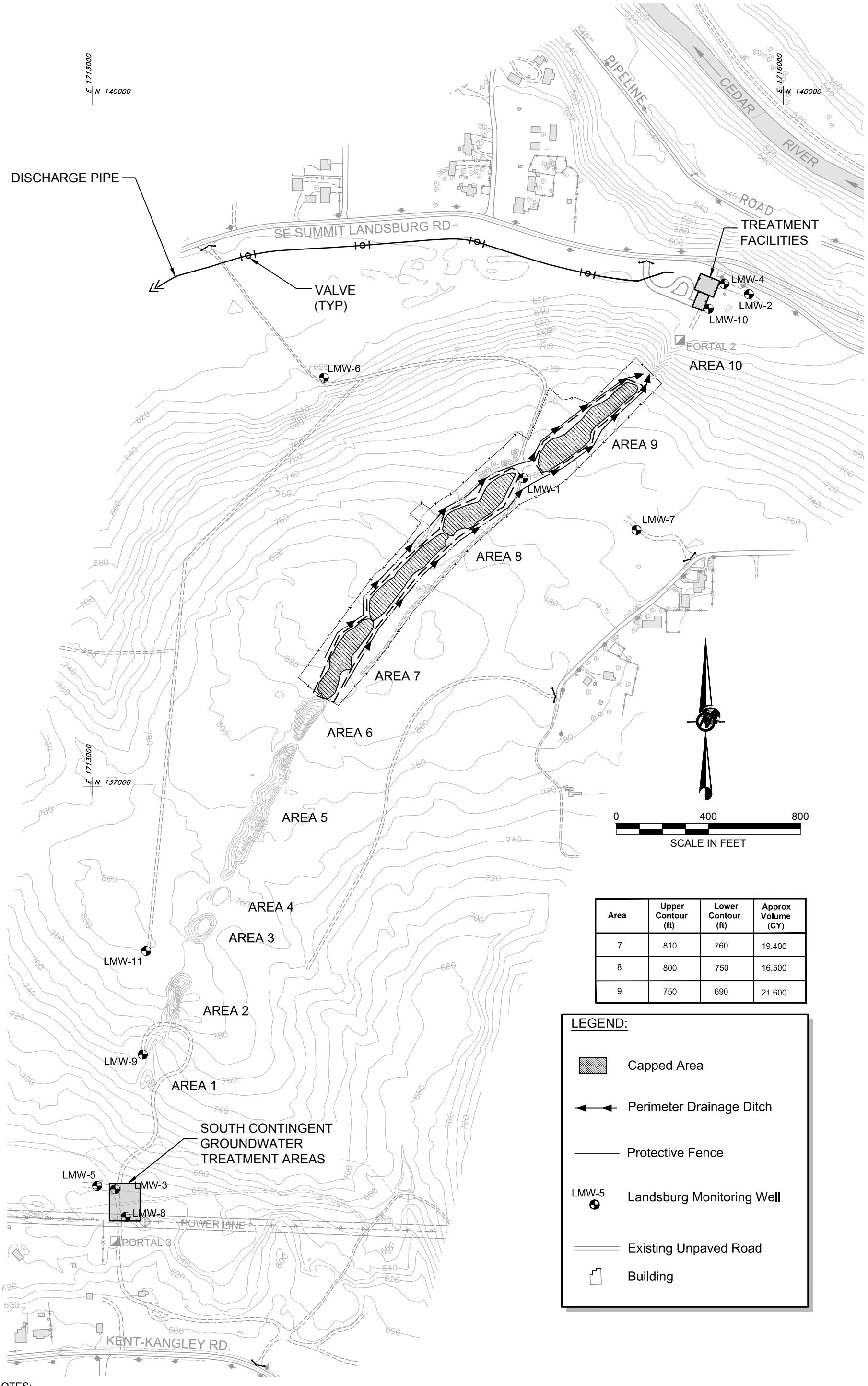
Golder Associates



Area	Upper Contour (ft)	Lower Contour (ft)	Approx Volume (CY)
7	810	760	19,400
8	800	750	16,500
9	750	690	21,600

LEGEND:

- Capped Area
- Perimeter Drainage Ditch
- Protective Fence
- LMW-5 Landsburg Monitoring Well
- Existing Unpaved Road
- Building

NOTES:

1. TOPOGRAPHY IN VICINITY OF TRENCHES WILL BE MODIFIED AS NECESSARY TO ACCOMMODATE CAP AND DITCHES.
2. ONLY TRENCH AREAS 7,8, AND 9 WILL BE BACKFILLED AND CAPPED

FINAL DRAFT

FIGURE **5**

CAPPED AREA AND DRAINAGE DITCHES

PALMER/LANDSBURG MINE/WA

Golder Associates

E 1713000
N 140000

E 1716000
N 140000

DISCHARGE PIPE

VALVE
(TYP)

SE SUMMIT LANDSBURG RD

PIPELINE

CEDAR RIVER

ROAD

TREATMENT
FACILITIES

LMW-4

LMW-2

LMW-10

PORTAL 2

LMW-6

LMW-1

LMW-7

TRENCH CLOSURE
AREA

E 1713000
N 137000

LMW-11

LMW-9

SOUTH CONTINGENT
GROUNDWATER
TREATMENT AREAS

LMW-5

LMW-3

LMW-8

POWER LINE

PORTAL 3

KENT-KANGLEY RD.

0 400 800
FEET

Legend

LMW-5 Landsburg Monitoring Well

Portal 3 Portal Seepage Locations

Protective Fence

Trail

Unpaved Road

Building

Areas Impacted by Remediation Activities

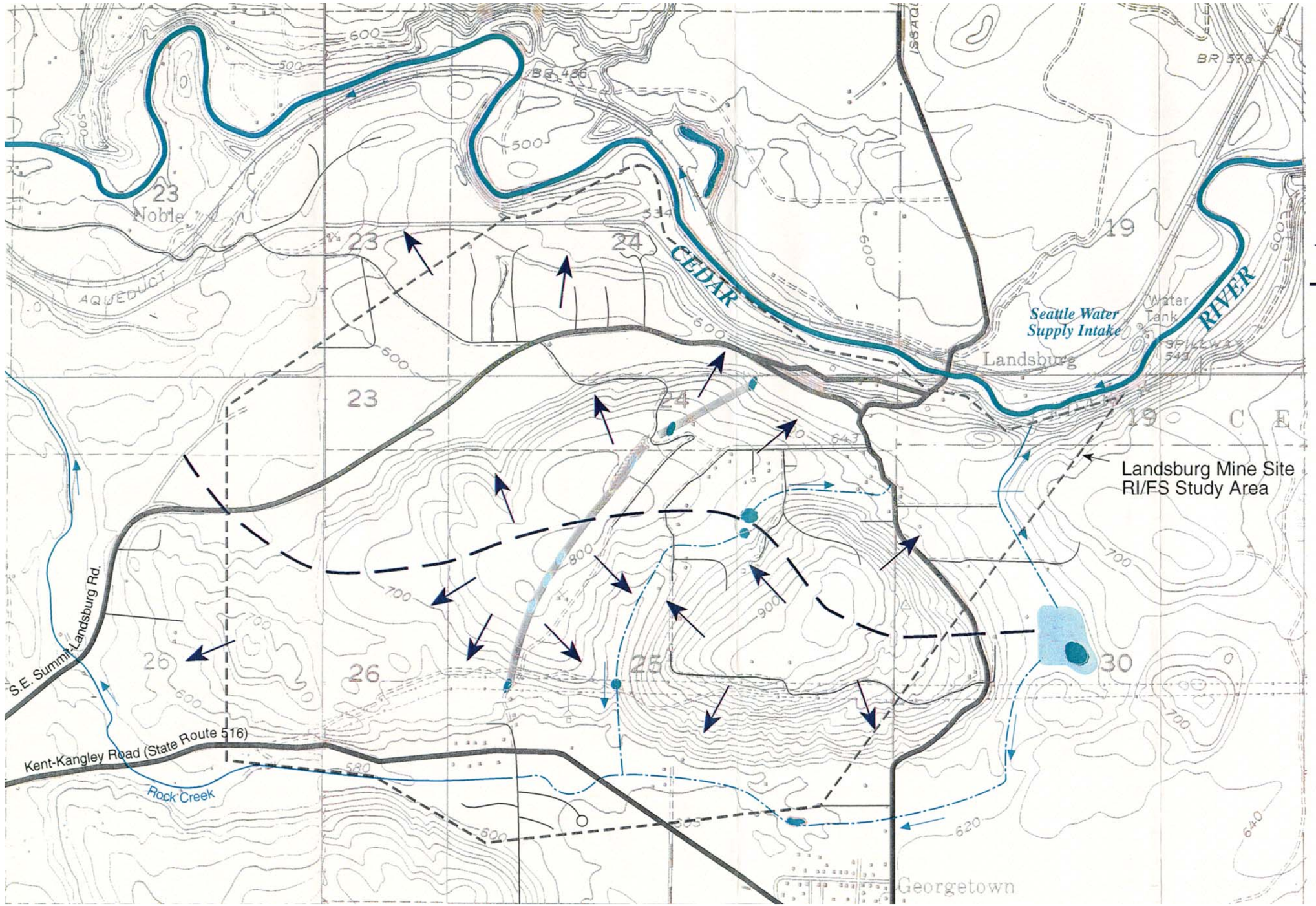
FIGURE **6**

AREAS IMPACTED BY REMEDIATION ACTIVITIES

PALMER/LANDSBURG MINE/WA

FINAL DRAFT

Golder Associates



Base map from USGS 7.5' topographic quadrangles "Cumberland" and "Hobart".

FIGURE **7**

MAJOR STUDY AREA SURFACE WATER FEATURES

PALMER/LANDSBURG MINE/WA

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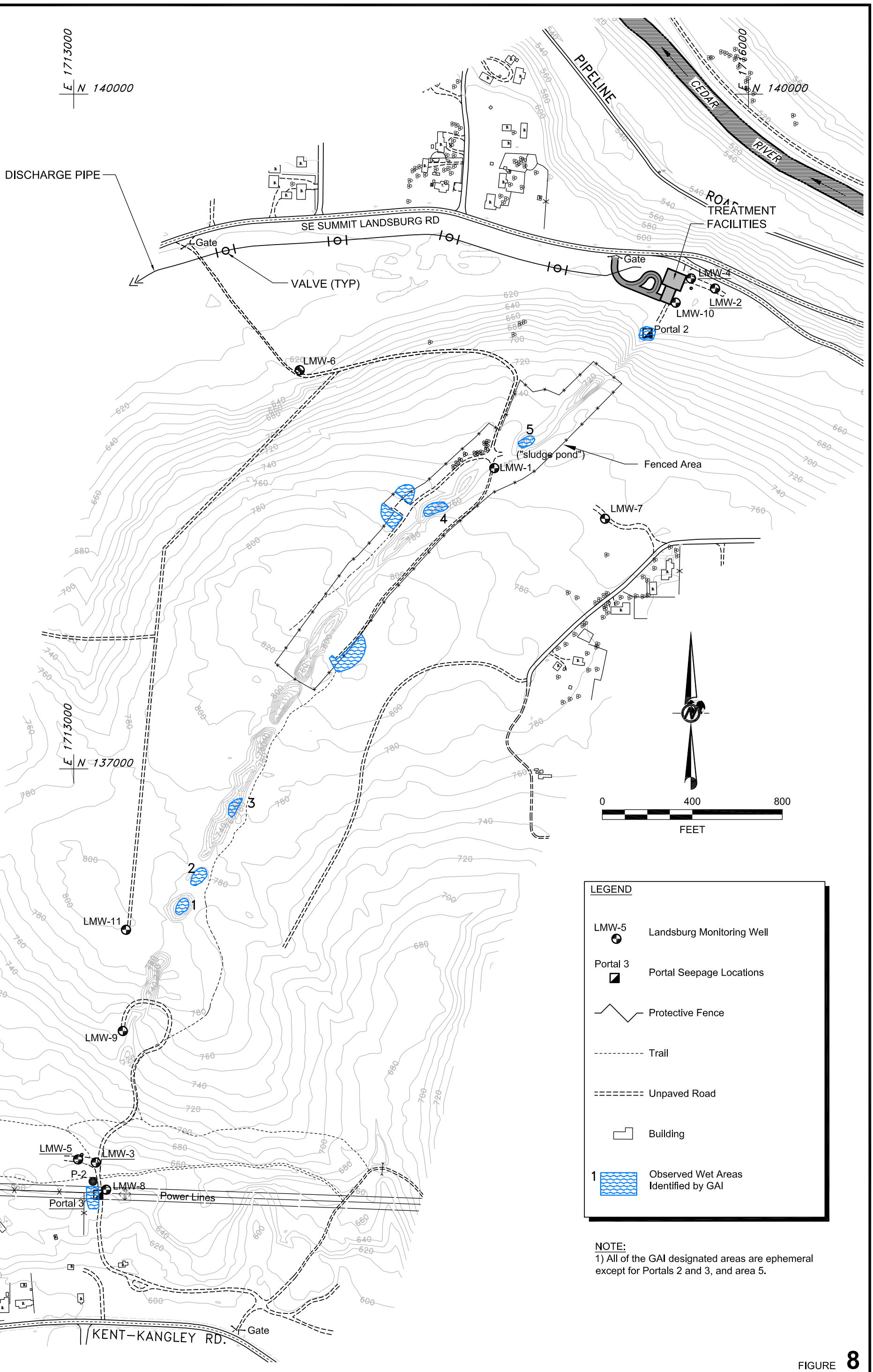
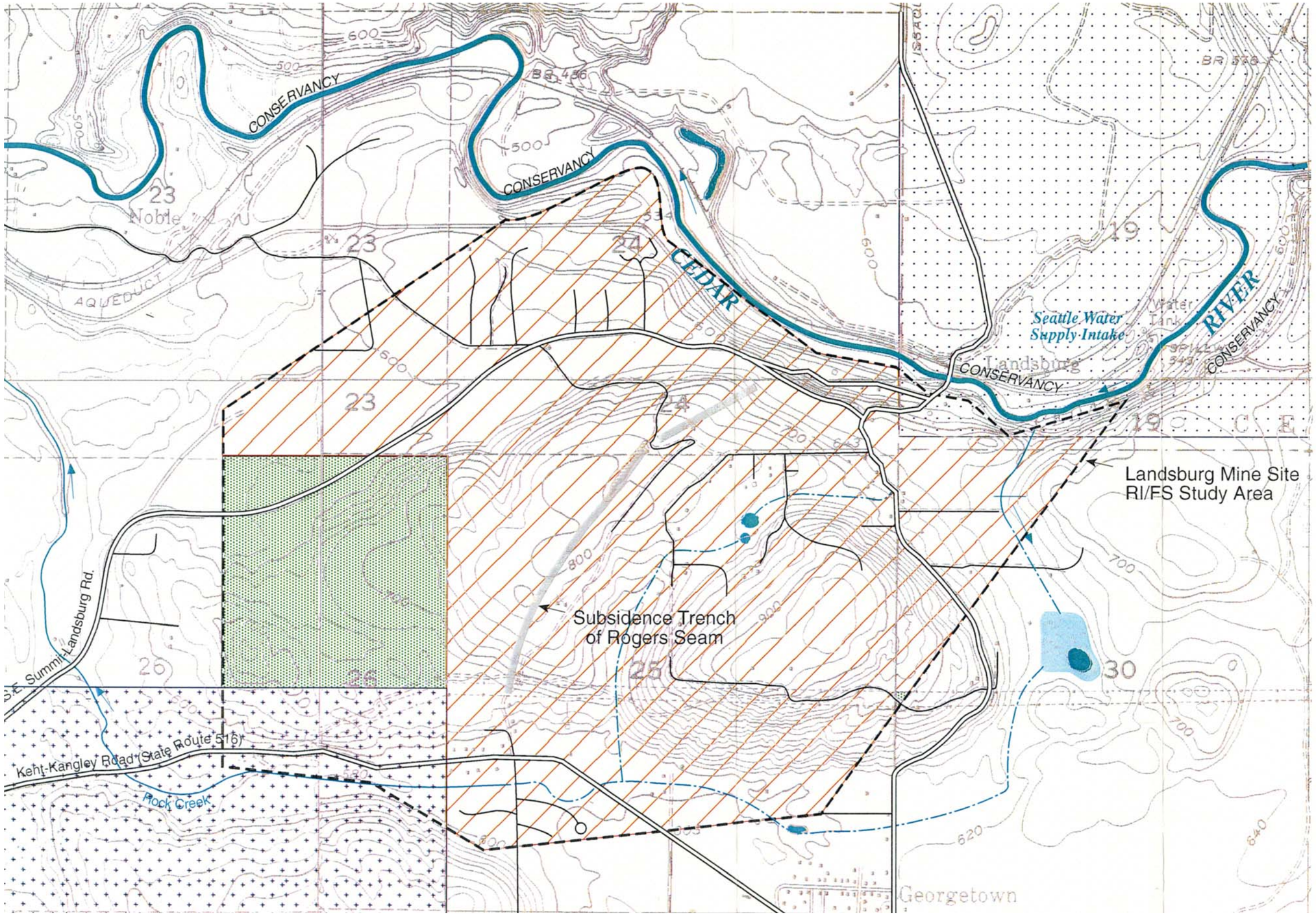


NOTE:
1) All of the GAI designated areas are ephemeral except for Portals 2 and 3, and area 5.

FIGURE **8**

DETAIL PLAN OF THE SURFACE WATER BODIES IDENTIFIED WITHIN THE TRENCH BOUNDARIES

PALMER/LANDBURG MINE/WA



Landsburg Mine Site
RI/FS Study Area

Portion of Study Area
Zoned RA
Rural Area

Portion of Study Area
Zoned F
Forest

City of Kent
Watershed

City of Seattle Cedar
River Watershed

Conservancy area extends from River Mile 3.4 to the headwaters of the Cedar River.

Zoning codes shown here reflect the new Title 21A Zoning Code which is expected to be fully implemented in mid-1995.

0 2000

APPROXIMATE
SCALE IN FEET

Base map from USGS 7.5' topographic quadrangles "Cumberland" and "Hobart".

FIGURE **9**
STUDY AREA ZONING
PALMER/LANDSBURG MINE/WA

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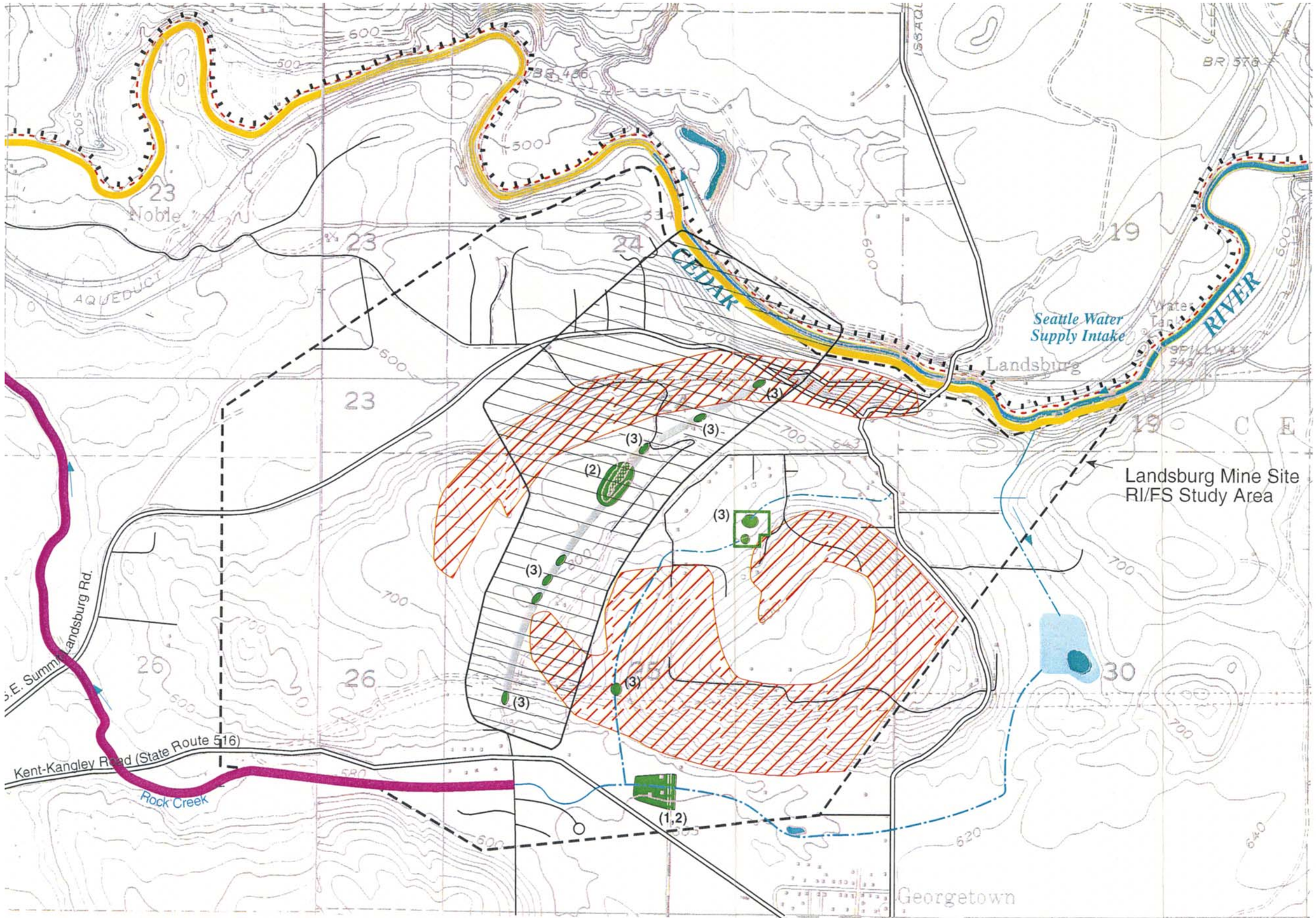
DRAFT

Golder Associates



Base map from USGS 7.5' topographic quadrangles "Cumberland" and "Hobart".

FIGURE **10**

POTENTIAL WETLANDS, SENSITIVE AREAS AND PRIORITY HABITATS WITHIN THE STUDY AREA

PALMER/LANDSBURG MINE/WA

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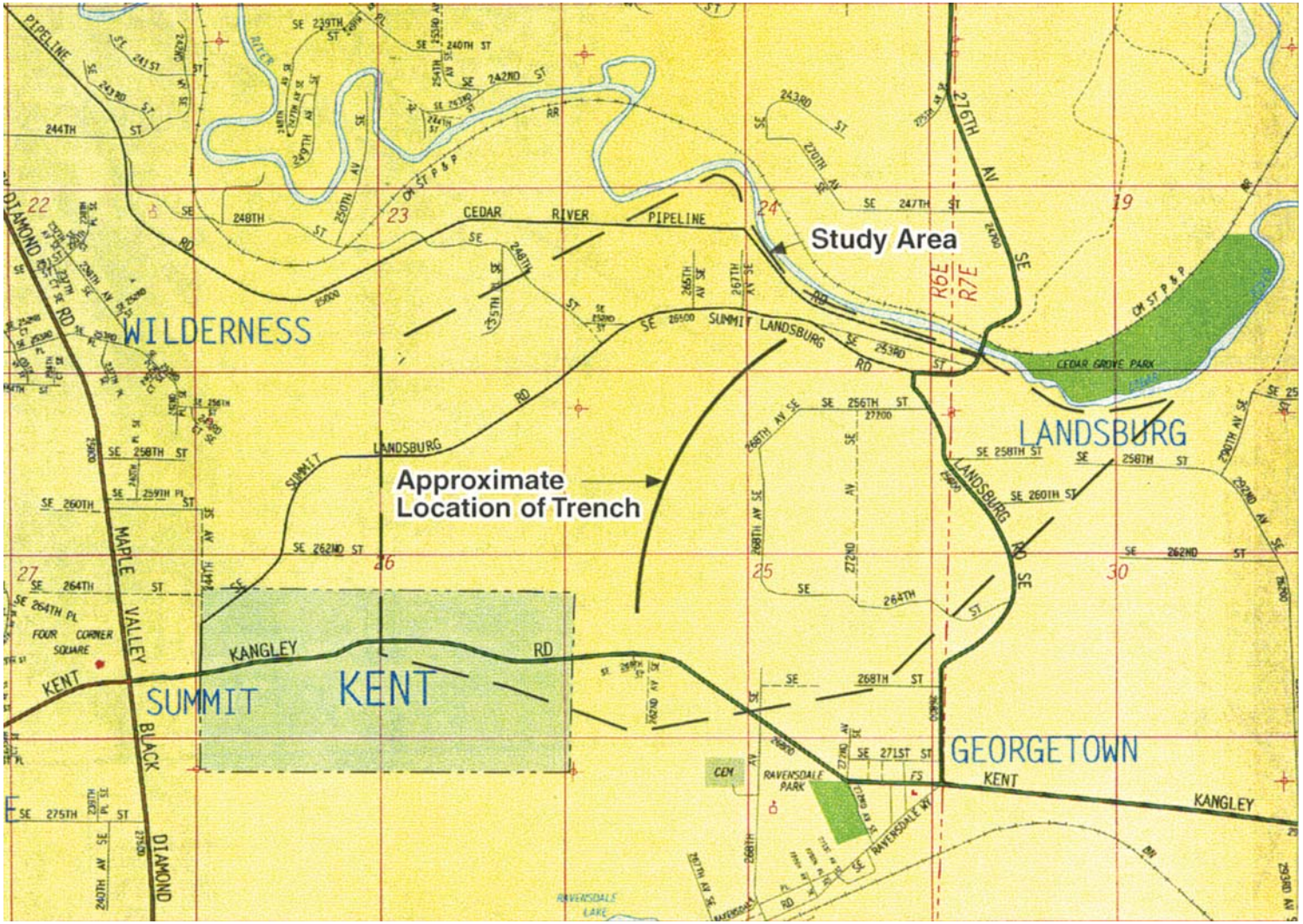
Golder Associates



0 0.5

APPROXIMATE
SCALE IN MILE

FIGURE **11**

STREET MAP OF STUDY AREA VICINITY

PALMER/LANDSBURG MINE/WA

9231000002R154fig11.ai | Mod: 04/27/10 | AMP

DRAFT

Golder Associates