To: King County Counsel

RE: Cedar Hills Regional Landfill

From: Phil and Kathleen Saltmarsh

On behalf of the Saltmarsh family, at 21012 SE 159th St, Renton, WA 98059, we strongly urge King County to close this landfill.

We purchased our home knowing that we butted up to the Landfill, but we were told that it was going to be closing in the foreseeable future, not 40 years from now.

The first year we moved in we were amazed by the sight of the eagles that would land right in the trees in our backyard. What we were not aware of was all the trash they would be leaving behind. Monthly, we are filling a bag of all the trash the eagles are dropping. Also, when we moved in, the smell from the landfill was not that bad, however, it's progressively getting worse. The turning of the landfill and the gases emitted from it can not be healthy for us to be breathing, daily.

We have countless plastic bags hanging high in the trees, as well as, littering all over the ground. We have clothing that is hanging on a tree that is too high for us to remove. We have picked up surgical booties, gloves and now, we have the blue liners that are on hospital tables, hanging from a tree.

Our dogs are puking and pooping out trash from the landfill, daily. The things they are eating is disgusting. If we are lucky we can find the rotten chicken, pork, or beef or whatever type of meat that is being dropped in our yard, and throwing it away before our dogs eat it. Keep in mind, some of the rotten meat they are eating is still in the package, so they are also consuming the plastic trying to rip the packages open. Our dogs are constantly coming back with a bone in their mouth, rib bones, back bones, leg bones. I should mention, they are sawed bones, so not just a bone from an animal that was killed in the woods.

One raining morning, I went outside and found a bag of USED sanitary napkins. Recently, I found USED diapers. Thankfully I got a hold of those before our dogs did.

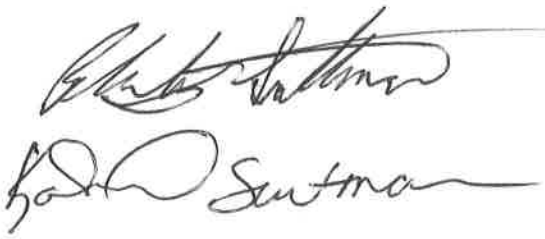
We get plastic jugs, plastic grocery bags, plastic lunch bags, carpet...all sorts of interesting things. We have pictures of it all.

The eagles are threatening the wildlife and our pets. We used to have ducks in our pond, they were killed. I watched them eat one. I thought it was my dog.

All of you are very well aware why this landfill needs to be closed. You have all received letters, emails, and phone calls as to why it needs to be shut down. Please listen and do the right thing.

Phil and Kathleen Saltmarsh

21012 SE 158th ST, Renton, WA



April 16, 2019

David and LaDonna Kiser
20905 Se 159th St
Renton WA 98059
425-228-8646

Re: King County Landfill and Cedar Grove Composting

We moved to Maple Hills in 1989. We first rented a home on 159th St, before purchasing our current home on 159th St in 1997.

Our home is in close proximity to the woods surrounding the landfill.

We have experienced the odor and noise at all times of the day and night. The odor and noise has increased over the years.

One of the biggest problems we are experiencing is the influx of the eagle population. We have witness several eagles flying overhead carrying white bags of garbage that they were able to get out of the landfill. They are dropping bags of garbage in the surrounds woods and residents property.

We live next to the home that found a bio hazard bag and a blood bag in their yard. These are the kind of things that the eagles and other animals are getting into.

Are other concern with the garbage being dropped in the woods is that our family dog and other neighborhood pets are eating this garbage and getting sick. Many families walk their small children and pets back in the woods. This is a health concern not only for the wild animals and domestic pets but to humans as well.

As the weather warms up families would like to enjoy opening their window in the mornings or evenings but are unable to because of the odor. We have a wonderful deck and would like to be outside and enjoy it. But most mornings the sour smell prevents that.

Thank you for listening to our concerns.

April 17, 2019

Subject: Comments/Amendment for 2019 Comprehensive Plan Expansion Cedar Hills

I don't think you understand the impacts of this comp plan. It's not right and it shouldn't be based on what is cheapest. The public wants the landfill to close and they want to be safe. We all want to be safe. **The question is how do you stop this problem from happening in the first place?** There are many complex valid and critical concerns left with this landfill regarding people, air, water, ground, seismic, geological, and environmental safety.

1. **It is vital to implement an emergency preparedness plan with safety provisions for the landfill including surrounding communities immediately. This needs to be in the comp plan.** Look at geological activity here. You have erected an ugly scar of a mansion on top of a faulty foundation. It is a ticking time bomb. The landfill is proximate to coal mines, a seismic fault line, aquifer, and documented liquefaction. Major contamination can happen in a couple of hours with an earthquake. Where is protection for our water supply? Cedar River? Air? Ground? Protection for people, elementary school, and the environment?

    a. A federal bill is being pushed to improve pipeline natural gas safety. It will close regulatory loop holes to increase safety standards. Increase penalties for companies to deter them from taking shortcuts on safety ($2M to now $200M).

2. **Before you make any decision on this landfill you need to see it.** I did a 3 hour detailed tour with Scott Barden, engineer Laura Belt, and other neighbors. We experienced and identified 3 different odor sources. All but one neighbor instantly got a headache, burning sinuses and throat. I was still sick and weakened through the next day. We smell combinations of this in our communities. We've told SW the landfill acts like it has digestion issues. Yet they say no problems found. I would like to arrange a tour and go with you to show you our concerns.

3. These are pictures from a SW contractor field report in the heat of August 15, 2018. Were you notified of this? If you were notified, what were your recommendations? The liner is compromised from leachate fluid pooling between layers or below both layers. A significant tear was also observed in the exposed geomembrane cover on the surface water berm in June. Disaster waiting! Do you know what is in it? Current standards don't even check for the vast majority of contaminants. Leachate from the ponds goes to a regular sewer pipe per a permit AND we breathe it?

4. **This is a catastrophic, inhumane, abusive misuse of power and money.** People, the environment, and even SW onsite employees are unknowingly affected by these heartless decisions. **You can't put a price on public and environmental safety.** Help us all become safe again. Please let me know how to best reach you so I can arrange a landfill tour with you.

Respectfully,

Maple Hills homeowner
Kim and Rick Brighton, 21105 SE 155thPL, Renton WA 98059, 425-226-6943, rnk1916@q.com

Honorable Committee members,

I want to thank you for considering the amendments for the Comp plan that Reagan Dunn and hope you also vote to approve them.
However, what would be even better is for you to rescind your approval of this Comp plan because it is poorly written, contains substantial errors and misinformation and is inadequate for making a decision of this nature.
SW's intention was to further advance the expansion alternative, while dismissing the other 2 alternatives.

Like I've said before:

1. Using a Cost comparison of a 12 year plan to a 20 year plan is a dereliction of fiduciary duty to the taxpayers.
2. There is no data showing what the cost to the taxpayer would be for each alternative.
    a. As a taxpayer, I want to know what it the cost to me will be.
3. After analyzing the comparisons of GHG emissions, it is found to be terribly flawed. A professional using the EPA's DST should be consulted to determine more accurate GHG emissions.
4. Claiming expansion is the best environmental choice by using skewed data is deceitful.
    a. No matter how many times they claim it or how many people from their circles claim it, the landfill expansion is NOT the best environmental choice. Their WARM calculations are a "best case scenario" with no basis in truth.
    b. SW thinks they are better than they are. They say they capture 95% of the landfill gas, using a calculation that is proven to be wrong.
    c. What they don't tell you is that they flare about 15% of the gas collected each year, that there is a candlestick flare that burns year round, and that they don't test for methane in the active areas – which includes areas 5, 6 and 7. As this map shops – it amounts to greater than a third of the landfill area.

Their Post Closure Maintenance fund reflects an attitude that it won't be needed for a while, with only, as of 2017, a $4.3 million balance of the $99+Million that it is expected to cost. The current plan was to close in 2028, yet they are nowhere near where they need to be in funding Post closure maintenance. Is this mismanagement or just lying?

The landfill should have closed after Area 7 was full, yet SWD decided to violate the buffer and put garbage, in the form of leachate ponds in the southern buffer so they could build area 8. Yes....leachate should be considered garbage – a by-product of landfill garbage – it is vile, odorous and toxic.

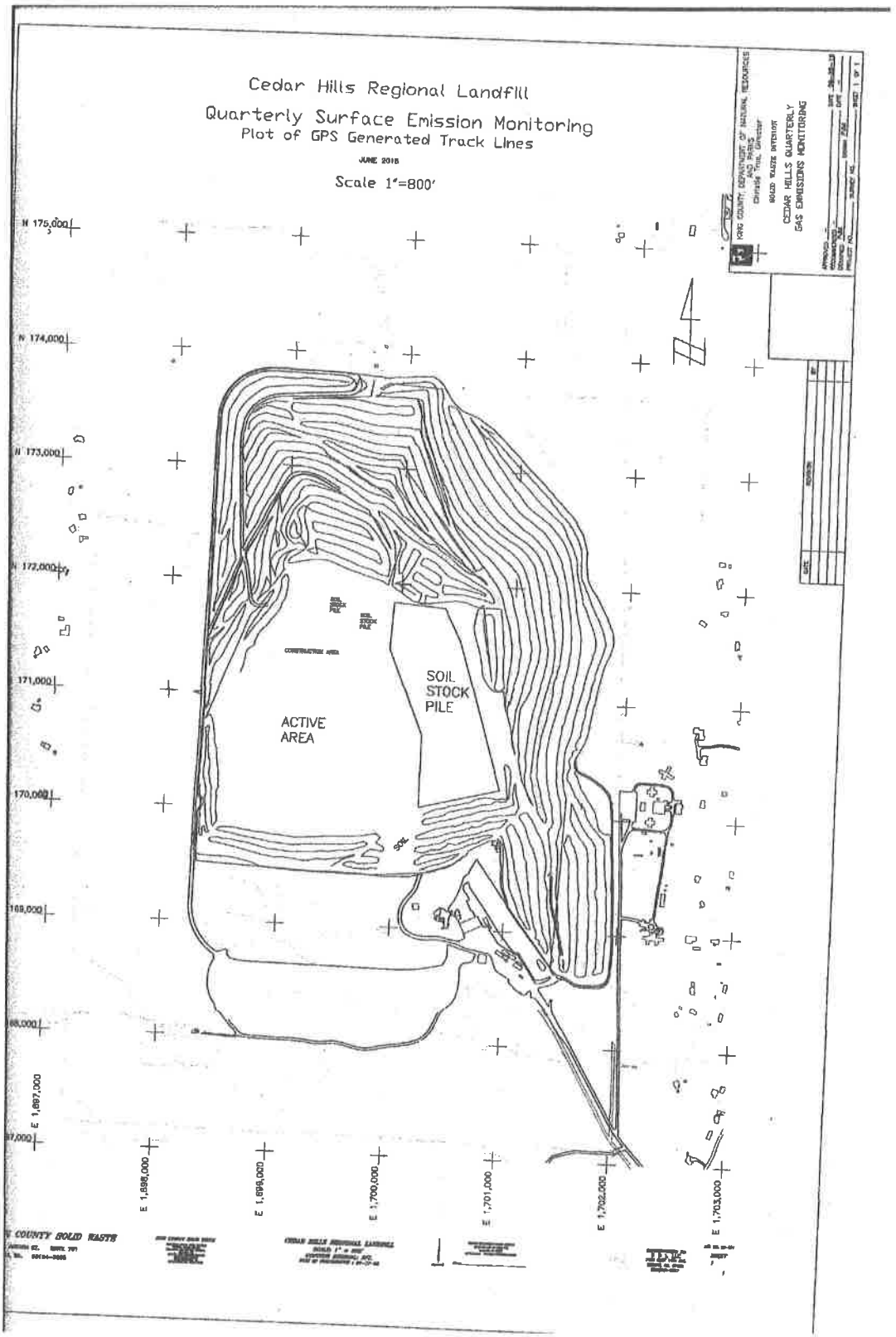
Finally

This landfill is not a "gold mine", it is a money pit. SWD continually sinks hundreds of millions of dollars into equipment, expansion, & facilities maintenance, just to keep it open. When it is finally closed, King County will have NOTHING TO SHOW FOR the millions it's invested except for an unusable mountain of garbage – a liability, not an asset. And for what? Garbage rates that are not low and will continue to rise? $3 million in rent? For a "business" that brings in $140+million, there's not much to show for our taxpayer money.
Is this the best you can do with taxpayer money?

Wouldn't it be better to invest into a facility that will be an ASSET and continue to be an ASSET for 50 years or more? One that is far better for the environment? That will provide electricity when we move away from coal plants? When dams are breached to save the salmon? One that has no post-closure expenses, leachate, odors, etc. ?

Be a good steward of the environment, taxpayer money, and the people and do the right thing. Build a WTE and close this landfill after area 8 is full.

Sincerely,
Janet Dobrowolski
21003 SE 155th Pl
Renton, WA 98059


Cedar Hills Regional Landfill
Quarterly Surface Emission Monitoring
Plot of GPS Generated Track Lines
JUNE 2015
Scale 1"=800'
N 175,000
N 174,000
N 173,000
N 172,000
171,000
170,000
169,000
168,000
167,000
E 1,697,000
E 1,698,000
E 1,699,000
E 1,700,000
E 1,701,000
E 1,702,000
E 1,703,000
ACTIVE AREA
SOIL STOCK PILE
CEDAR HILLS QUARTERLY
SAS EMISSIONS MONITORING

April 17th 2019

King County Regional Policy Committee

Good afternoon Honorable Representatives,

In reaction to the recent amendments posed by King County Councilmember Reagan Dunn and being discussed today, I urge you to look beyond. While Councilmember Dunn's amendments are indeed very appropriate, the discussion should be carried into the very substance of the proposed Solid Waste Management Plan.

The plan is based on the concept of landfilling and wishful recycling. It lacks technologic competence and following principals of the waste management hierarchy.
Landfilling has been recognized nationally (ex. US EPA) and internationally (ex. European Union) to be least preferable, least sustainable option when dealing with the waste we produce.

The true cost to landfill is much higher than the immediate economic perception for example the price per ton to landfill waste. The real impact and cost of landfilling can be found in the resources lost and the environmental impact of the landfill overall, any landfill, depending on the construction of the landfill sooner or later.

Discussion over the past year should have alerted you to the shortcomings of Solid Waste Management Plan and EIS. The continued focus of this plan is to landfill which is a growing burden and liability to King County with the biggest impact felt by residents of the Cedar Hills landfill that have been dealing with the issues not just for years but decades. However, the real impact affects all of the King County residents. Continued increases in cost through the dependence on the concept of landfilling.

While you might have heard of a 'recycling rate' of 52% the real recycling rate for King County is likely lower than 30%. Por quality through the single bin recycling concept as well as the missing local recycling infrastructure that could be employing many to produce high quality secondary resources made in Washington.

A couple of weeks ago you heard about Pyrolysis. Attached please find the updated (now includes pyrolysis) matrix of the 2017 WTE and Rail Export Study that took a very close look at the technologies available. Pyrolysis can be seen as a reaction of industry to our plastic pollution.
At the same time, the companies involved, such as Waste Management in Agilyx are 'reacting or even controlling' of a process directly affecting them, that yet has to actually work. Overall the process requires very specific preprocesses (and pre-shredded) to create homogeneous 'waste'/material input, the only one that Pyrolysis can handle.

There are a number of issues with the technology and no one has yet explained what happens to the end products (all of them). Needed are complete mass flow and energy flow balances as well as environmental impact, which, due to lack of operating experiences, has been limited and should be looked at very cautiously.

The promotion of Pyrolysis, especially over proven technologies such as state of the art thermal treatment based on mass burn as took place during the recent King County meeting can easily be seen

as another attempt to stall the development of and integrated waste management system utilizing, in part, proven technologies that outperform landfills on all levels. If we follow that direction we will continue to landfill for a very long time – locally or via export.

While developments should be looked at positively, they need to be compared on an apples to apples bases.

From decades of hands on experience with all aspects of managing waste, to date there is no better more effective process that can destroy the toxic organic content contained in the municipal waste stream than advanced thermal treatment based on mass burn technology, a technology that can be found in over 2000 facilities worldwide operating commercially vs one or two commercial pyrolysis facilities of which none are still in operation.

Further, when looking at municipal solid waste (MSW) and other similar wastes, the preprocessing requirements for Pyrolysis are very extensive and only certain fractions such as specific plastics could potentially be treated vs. heterogeneous Municipal Solid Waste. It is misleading and false to assume that the process of landfilling would be replaced by Pyrolysis. The vast majority of waste will still end up in landfills and potentially toxic remnants of the pyrolysis process will then also find their way into landfills.

Sincerely,
Philipp Schmidt-Pathmann,
Waste Management Expert at Neomer Resources

Table 3-1 Waste-To-Energy Evaluation Matrix - King County Waste-to-Energy Study

Criteria Number	Criteria Description (Major / Minor)	Score (points)	WTE	Refuse Derived Fuel (RDF) WTE	Advanced Thermal Recycling (ATR)	Thermal Gasification WTE	Pyrolysis	Plasma Arc Gasification WTE	Biochemical Waste-to-Biofuels	Thermochemical Waste-to-Biofuels	Kiln	Comments
1.0	State of Technology Score	15	15	11	11	5	5	3	5	3	12	
	Degree to which entire system has been proven on a commercial scale		Commercially proven over past 50 years	Commercially proven over past 25 years at numerous plants	Commercially proven in Europe since 1999 at MVR facility in Hamburg Germany	Limited commercial experience with MSW in Asia over past 10 years	Only one facility ever operated at a very high cost and was shut down (in Burgau Germany)	Pilot scale experience with RDF only	Pilot scale with select waste feedstocks only, Ineos Facility in Florida shutdown end of 2016	Pilot scale with select waste feedstocks only, Enerkem facility in Canada in startup phase for 2 yrs.	One cement plant using RDF (SpecFUEL) in the US since 2015 and several in Europe	Identify status of technology: Bench Scale, Pilot Scale, Demonstration Scale (0-3 years), or Commercially Proven (+ 3 years)
	Operating history / availability		Yes, well proven at > 60 plants in US and over 1,000 plants world wide	~ 5 RDF processing and 5 RDF processing / WTE plants in US	Two EU facilities. ATR is in essence the same as WTE	No commercial experience with MSW in the US	Only one facility every operated. Closed due to economical reasons and high carbon content	No commercial experience with MSW in the US	No commercial experience with MSW in the US	No commercial experience with MSW in the US	One cement plant using RDF (SpecFuel) as a fuel in the US since 2015 and several in Europe	How many operational plants and years of successful operation have been recorded?
	Freedom from high risk failure modes		Yes, mature industry has fully addressed high risks via design codes and operational procedures	High potential for shredder explosions has been observed	Yes. Same as WTE, with additional processes to improve energy recovery and residual efficiencies.	Potential for release of carbon monoxide syngas is dependent upon successful operation of bypass flares	Uncertain, and requires extensive, expensive and energy consuming fluegas cleaning technologies. Energy efficiency gets less over time.	Uncertain, molten materials inside reactor present some degree of risk	Uncertain, liquid fuels must be safely stored	Uncertain, liquid fuels must be safely stored	Fully dependent on the financial viability of the cement plant	Are there identified problem areas with mitigation measures implemented to prevent high risk failure modes?
	Demonstrated reliability of entire system		Yes, > 90% typical plant availability, many facilities 20-25 years old available 92-95%	Yes, high reliability (87.5%) has been demonstrated	Yes, high reliability in the EU with 18 years of operations, 92 - 95 percent annual availability	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	No commercial experience with MSW in the US	No commercial experience with MSW in the US	No commercial experience with MSW in the US	One cement plant using RDF (SpecFUEL) in the US since 2015 and several in Europe	What is the capacity and throughput (small, medium, large), and historical system and component annual availability (0-100%)?
2.0	Technical Performance Score	10	9	7	9	4	4	4	4	5	7	
	Compatibility with full spectrum of King County waste tonnage (volume and composition)		Yes, with limited percentage of tires and WWTP biosolids (although not currently considered by King County), except, e-waste, HHW, treated lumber, mercury containing devices	Yes, except numerous non-processible materials removed prior to combustion and disposed of in landfill and/or send to WTE facility	Yes, with limited percentage of tires and WWTP biosolids (although not currently considered by King County), except, e-waste, HHW, treated lumber, mercury containing devices	No - Process requires substantial amount of pretreatment. Process does not work with Heteregeneous waste - needs to be homogenized / presorted	No - Process requires substantial amount of pretreatment. Process does not work with Heteregeneous waste - needs to be homogenized / presorted	No - Process requires substantial amount of pretreatment. Process does not work with Heteregeneous waste - needs to be homogenized / presorted	No - Process is limited to cellulosic wastes (paper, cardboard, vegetative, and wood wastes)	No - Process prefers dry wastes, primarily limited to cellulosic wastes (paper, cardboard, vegetative, and wood wastes) and plastics	No - RDF processing prefers dry wastes, primarily limited to cellulosic wastes (paper, cardboard, vegetative, and wood wastes) and plastics	Is the process compatible with the full spectrum of potential needs (residential, commercial, and industrial MSW; household hazardous waste, construction and demolition waste, medical wastes, electronic wastes, WWTP biosolids, special wastes (asbestos, carpet, shingles, tires, used oils, etc.)?
	Ability to produce marketable byproducts		Yes, gross electricity (+600 kWh/ton), steam, hot water, ferrous and non-ferrous metals, aggregates which can be used as daily LF cover (although not currently permitted in WA)	Yes, electricity, steam, hot water, ferrous and non-ferrous metal, and aggregates which can be used as daily LF cover (although not currently permitted in WA)	Yes, electricity, steam, hot water, ferrous and non-ferrous metal, chemicals, minerals, gypsum, hydrochloric acid, bottom ash (separate from fly and boiler ash) proven uses as an aggregate, permiting expected in WA State	Very limited information available	Very limited information available	Very limited information available	Limited, electricity, liquid fuels, and chemicals	Yes, electricity, liquid fuels, and chemicals	The RDF produced becomes part of the fuel for a cement kiln (reduces coal use)	Does the process produce a viable commodity that can be sold to a large local or regional market? What type of other marketable by-products are produced?
	Need for pre-processing		No, other than removal of a small percentage of bulky, and non-processible items (typically < 1% of waste delivered, but could be as high as 4.9 percent in King County)	Yes, the RDF process has to extract metals, glass, PVC and inert materials then creates a RDF for combustion, with typical 30% sent to landfill	No, other than removal of bulky and non-processible items	Yes, gasification typically requires pre-sorting for removal of metals, glass, and inerts, although Thermoselect process can process MSW less than 2' dimension	Yes, pyrolysis requires extensive preprocessing - single stream homogenous preshreddered materials only	Yes, gasification process is not well suited for high moisture materials, and generally prefers removal of metals, glass, and inerts	Yes, process will require select wastes which are reduced in size and screened of inerts	Yes, process will require select wastes which are reduced in size and screened of inerts	Yes, process will require select wastes which are reduced in size and screened of inerts	Does the process require source separation, sorting, or sizing, and what % of waste is bypassed to landfill?
3.0	Technical Resources	5	5	4	3	1	1	1	1	1	3	
	Proven contractor experience in waste processing		Yes, 3 major, 3 minor, domestic private firms, 9 public in US (B&W, Covanta and Wheelabrator)	Yes, 3 major domestic, 3 minor firms, 1 public in US (Covanta, B&W, Xcel Energy, Great River)	Yes - Contractor has proven experience with underlying technology though not one contractor and vendor in the US with proven experience in the advanced efficiency technologies	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	One cement plant using RDF (SpecFUEL) in the US since 2015 and several in Europe	Does the proposer have direct and applicable experience in the receipt, storage, handling, and processing of MSW?
	Proximity of technical support		US based vendors, often located regionally at WTE facilities with industry crossover	US based vendors, often located regionally at WTE facilities with industry crossover	Uncertain, pilot scale (advanced metals recovery) only.	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Fair technical support for RDF processing and fair support for using RDF in a cement kiln	Does the proposer have local resources to provide on-going technical support of the process, or will the support be located in the US or Offshore?
	Availability to provide support on continuing basis		US based vendors, often located regionally at WTE facilities with industry crossover	US based vendors, often located regionally at WTE facilities with industry crossover	Uncertain, no one primary vendor with experience in managing ATR	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Fair technical support for RDF processing and fair support for using RDF in a cement kiln	Is there one "key project leader" without whom the project may fail, or does a broader team exist that can sustain the project if one or more project leaders leave?
4.0	Facility Siting and Public Acceptance Score	5	4	4	4	4	4	4	3	3	3	
	Acceptable site		Yes, typically located in urban settings, at landfills, adjacent to WWTP facilities, or within industrial areas	Yes, typically located at landfills, adjacent to WWTP facilities, or within industrial areas	Yes, location as any other WTE facility - located in industrial areas, urban settings, at landfills, adjacent to WWTP facilities, near district heating systems	Yes, typically located at landfills, adjacent to WWTP facilities, or within industrial areas	Yes, typically located at landfills, adjacent to WWTP facilities, or within industrial areas	Yes, typically located at landfills, adjacent to WWTP facilities, or within industrial areas	May require special zoning for refinery process	May require special zoning for refinery process	May require special zoning but may not be required if the RDF plant is located at the cement plant	Is there adequate acreage, adequate buffer, acceptable zoning, ability to be rezoned, or is the proposed process better suited for an alternate location?
	Synergy with adjacent activities		Yes, use of reclaimed water, and sale of steam and electricity is common, internal use of electricity may be possible	Yes, use of reclaimed water, and sale of steam is common, internal use of electricity may be possible	Yes, use of reclaimed water, and sale of steam and electricity is common, internal use of electricity may be possible	Yes, use of reclaimed water, and sale of steam, internal use of electricity may be possible	Yes, internal use of electricity may be possible	Yes, use of reclaimed water, and sale of steam, internal use of electricity may be possible	Yes, use of reclaimed water, and sale of steam, internal use of electricity and biofuels may be possible	Yes, use of reclaimed water, and sale of steam, internal use of electricity and biofuels may be possible	Excellent integration of the RDF plant with the cement plant	Is the process able to take advantage of adjacent activities in a synergistic way, such as sale of electric hot water, or steam?
	Adequate utilities		Site specific, typically requires potable, process, sanitary / wastewater, and natural gas (if available)	Site specific, typically requires potable, process, sanitary / wastewater, and natural gas (if available)	Site specific, typically requires potable, process, sanitary / wastewater, and natural gas (if available)	Site specific, typically requires potable, process, sanitary / wastewater, and natural gas (if available)	Site specific, typically requires potable, process, sanitary / wastewater, and natural gas (if available)	Site specific, typically requires potable, process, sanitary / wastewater, and natural gas (if available)	Site specific, typically requires potable, process, sanitary / wastewater, and natural gas (if available)	Site specific, typically requires potable, process, sanitary / wastewater, and natural gas (if available)	Site specific, typically requires potable, process, sanitary / wastewater, and natural gas (if available)	Are adequate water, wastewater, reclaimed water, and natural gas utilities available to the existing site, or will new or increased capacity be required?
	Adequate / affordable electric interconnection		Site specific, facility generally within 3 miles of utility substation	Site specific, facility generally within 3 miles of utility substation	Site specific, facility generally within 3 miles of utility substation	Site specific, facility generally within 3 miles of utility substation	Site specific, facility generally within 3 miles of utility substation	Site specific, facility generally within 3 miles of utility substation	Site specific, facility generally within 3 miles of utility substation, if electricity is to be sold	Site specific, facility generally within 3 miles of utility substation, if electricity is to be sold	Site specific, facility generally within 3 miles of utility substation but may not be an issue if the RDF plant is located at the cement plant	Does the proposed site allow acceptable electric interconnection to a nearby utility substation, or will new transmission lines and switchgear be required?
	Synergy with local infrastructure		Yes, requires accessible via major highways, occasionally served by rail service	Yes, requires accessible via major highways, occasionally with rail service	Yes, requires accessible via major highways, occasionally with rail service	Yes, requires accessible via major highways, occasionally with rail service	Yes, requires accessible via major highways, occasionally with rail service	Yes, requires accessible via major highways, occasionally with rail service	Yes, requires accessible via major highways, occasionally with rail service	Yes, requires accessible via major highways, occasionally with rail service	Yes, requires accessible via major highways, occasionally with rail service	Will the local roads be adequate for the project, or will new transfer stations, transfer trucks, or other infrastructure improvements be required?
	Public acceptance (note that public acceptance is difficult to assess and strongly dependet upon the project site and neighboring development)		Yes, many modern WTE with advanced combustion and flue gas controls are located in urban areas close to population centers. Some were originally rural areas, and neighboring development came later.	Yes, requires greater buffer area due to odors, unless odor treatment system is employed	Uncertain. While the underlying technological premise is similar to mass-burn. There has been no US experience in ATR.	Uncertain, requires greater buffer area due to odors from RDF process, and perceived issues with carbon monoxide gas and explosions	Uncertain, requires greater buffer area due to odors from preprocessing, and perceived issues with carbon monoxide gas and explosions	Uncertain, requires greater buffer area due to odors from RDF process, and perceived issues with carbon monoxide gas and explosions	Uncertain, odors and storage of ethanol may present public opposition	Uncertain, odors and storage of ethanol may present public opposition	Yes, requires greater buffer area due to odors, unless odor treatment system is employed	Will the process be acceptable to local residential, business, environmental and civic groups?
	Local economic impacts		Positive, well paying construction, O&M jobs, positive economic ripple effect over long-term operation	Positive, well paying construction, O&M jobs, positive economic ripple effect over long-term operation	Uncertain. While the underlying technological premise is similar to mass-burn. There has been no US experience in ATR.	Positive, well paying construction, O&M jobs, questionable positive economic ripple effect over long-term due to lack of operational	Positive, well paying construction, O&M jobs, questionable positive economic ripple effect over long-term due to lack of operational	Positive, well paying construction, O&M jobs, questionable positive economic ripple effect over long-term due to lack of operational	Positive, well paying construction, O&M jobs, positive economic ripple effect over long-term operation	Positive, well paying construction, O&M jobs, positive economic ripple effect over long-term operation	Positive, well paying construction, O&M jobs, positive economic ripple effect over long-term operation (may make the cement plant more	Will the process / project create well paying construction jobs, operation and maintenance jobs, and have a significant annual economic ripple effect on the local / regional economy?
5.0	Environmental Criteria	11	11	12	15	5	5	5	4	4	12	
	Data to support ability of control technology for air emissions		Credible database, permits grow more restrictive over time	Credible database, permits grow more restrictive over time	Credible database, though it's the European experience	Uncertain, no commercial experience with data in US	Uncertain, no commercial experience with data in US	Uncertain, no commercial experience with data in US	Uncertain, no commercial experience with data in US	Uncertain, no commercial experience with data in US	Credible database, permits grow more restrictive over time	Is there qualified data to allow permitting agencies to regulate major and minor air pollutants?
	Data to support ability of control technology for residues		Credible database, ash residue generally land filled	Credible database, ash residue generally land filled	Potential to significantly reduce solid	Uncertain, no commercial experience with data in US	Uncertain, no commercial experience with data in US	Uncertain, no commercial experience with data in US	Uncertain, no commercial experience with data in US	Uncertain, no commercial experience with data in US	Credible database, no ash residue (becomes part of the cement)	Is there qualified data to allow permitting agencies to regulate residues and non-processible wastes bypassed to the landfill?
	Data to support ability of control technology for liquid discharge		Credible database, some facilities are zero water discharges	Credible database, some facilities can be zero water discharges	Liquid discharges should be similar to massburn and RDF	Uncertain, no commercial experience with data in US	Uncertain, no commercial experience with data in US	Uncertain, no commercial experience with data in US	Uncertain, no commercial experience with data in US	Uncertain, no commercial experience with data in US	Credible database, some facilities can be zero water discharges	Is there qualified data to allow permitting agencies to regulate wastewater quantities and quality?
	Data to support ability of control technology for odor emissions		Credible database, massburn WTE has almost no odors escaping buildings	Credible database, possible odor control needed in the MSW processing building.	Credible database, the underlying massburn WTE has almost no odors escaping buildings	Uncertain, no commercial experience with data in US	Uncertain, no commercial experience with data in US	Uncertain, no commercial experience with data in US	Uncertain, no commercial experience with data in US	Uncertain, no commercial experience with data in US	Credible database, possible odor control needed in the MSW processing building.	Is there qualified data to allow permitting agencies to regulate odorous compounds and ability to escape project boundary/ buffer zone?
	Reduction in greenhouse gasses		Credible database, on-going debate over biogenic versus anthropogenic emissions	Credible database, on-going debate over biogenic versus anthropogenic emissions	Credible data base, on-going debate over biogenic versus anthropogenic emissions	Uncertain, on-going debate over biogenic versus anthropogenic emissions	Uncertain, on-going debate over biogenic versus anthropogenic emissions; produces large amounts of hydrogen choloide	Uncertain, on-going debate over biogenic versus anthropogenic emissions	Uncertain, on-going debate over biogenic versus anthropogenic emissions	Uncertain, on-going debate over biogenic versus anthropogenic emissions	Will be a significant reduction in GHGs due to the cement plant using RDF and reducing their dependence on coal	Will there be a net reduction in GHG compared to local sources of electric power or comparable energy generation; compared to current landfill disposal option; compared to future landfill option with landfill gas collection and destruction?

Table 3-1 Waste-To-Energy Evaluation Matrix - King County Waste-to-Energy Study

Criteria Number	Criteria Description (Major / Minor)	Score (points)	WTE	Refuse Derived Fuel (RDF) WTE	Advanced Thermal Recycling (ATR)	Thermal Gasification WTE	Pyrolysis	Plasma Arc Gasification WTE	Biochemical Waste-to-Biofuels	Thermochemical Waste-to-Biofuels	Kiln	Comments
6.0	Environmental Criteria - Sustainability Score	10	8	8	9	7	7	7	9	7	8	
	Impacts on local resources		Requires potable and clean process water, can use reclaimed water and/or other alternate sources for cooling	Requires potable and clean process water, can use reclaimed water for cooling	Requires potable and clean process water, can use reclaimed water for cooling.	Requires potable and clean process water, can use reclaimed water for cooling.	Requires potable and clean process water, can use reclaimed water for cooling.	Requires potable and clean process water, can use reclaimed water for cooling.	Requires potable and clean process water, can use reclaimed water for cooling, if power is co-produced	Requires minor potable and clean process water, can use reclaimed water for cooling, if power is co-produced	Requires potable and clean process water, can use reclaimed water for cooling	Does the process minimize use of local water resources (potable, wastewater, and reclaimed water); minimize fossil fuel (natural gas, coal, oil) and fossil powered electricity, and maximize local recycling / energy recovery?
	Impacts on neighboring communities		With adequate buffer and aesthetic treatment, WTE facilities are compatible with industrial and institutional locations, many have	With adequate buffer and aesthetic treatment, WTE facilities are compatible with industrial and institutional locations	With adequate buffer and aesthetic treatment, ATR facilities are compatible with industrial and institutional locations, many have	With adequate buffer and aesthetic treatment, WTE gasification may be compatible with industrial locations	With adequate buffer and aesthetic treatment, WTE pyrolysis may be compatible with industrial locations	With adequate buffer and aesthetic treatment, WTE gasification may be compatible with industrial locations	With adequate buffer and aesthetic treatment, waste Biofuel facilities may be compatible with industrial locations	With adequate buffer and aesthetic treatment, waste Biofuel facilities may be compatible with both industrial locations	With adequate buffer and aesthetic treatment, RDF facilities are compatible with industrial and institutional locations, especially if the RDF facility is	Are there any significant or potential issues (positive or negative) on the neighboring communities (visual, traffic, litter, property values)?
	Impacts on natural habitats		Minor, typically much smaller sites than landfills with well developed mitigation strategies	Minor, typically much smaller sites than landfills with well developed mitigation strategies	Minor, typically much smaller sites than landfills with well developed mitigation strategies	Minor, typically much smaller sites than landfills where mitigation strategies can be employed	Minor, typically much smaller sites than landfills where mitigation strategies can be employed	Minor, typically much smaller sites than landfills where mitigation strategies can be employed	Minor, typically much smaller sites than landfills where mitigation strategies can be employed	Minor, typically much smaller sites than landfills where mitigation strategies can be employed	Minor, typically much smaller sites than landfills where mitigation strategies can be employed	Are there any significant or potential issues (positive or negative) on the local, sub-regional, or regional habitat (litter, emissions, noise, lighting)?
	Compatibility with local environmental goals		Complies with the EPA waste management hierarchy of energy recovery over landfill disposal.	Complies with the EPA waste management hierarchy of energy recovery over landfill disposal.	Complies with the EPA waste management hierarchy of energy recovery over landfill disposal.	Complies with the EPA waste management hierarchy of energy recovery over landfill disposal.	Complies with the EPA waste management hierarchy of energy recovery over landfill disposal.	Complies with the EPA waste management hierarchy of energy recovery over landfill disposal.	Uncertain GHG emissions due to limited commercial applications.	Uncertain GHG emissions due to limited commercial applications	Complies with the EPA waste management hierarchy of energy recovery over landfill disposal.	Does the process fully meet all of the local community's environmental goals, such as reduction in pollutants, and greenhouse gasses on a lifecycle basis?
	Compatibility with local waste reduction goals		Recovered and recycled metals help meet local recycling goals, WTE may qualify for recycling goals in some states	Recycled metals help meet local recycling goals, WTE may qualify for recycling goals in some states	Recycled metals, residues, and minerals maximizes the waste reduction goals. Over 99% landfill diversion possible	Recycled metals help meet local recycling goals, gasification may qualify for recycling goals in some states vitrification can minimize residues	Recycled metals help meet local recycling goals, gasification may qualify for recycling goals in some states vitrification can minimize residues	Recycled metals help meet local recycling goals, gasification may qualify for recycling goals in some states vitrification can minimize residues	Waste conversion to biofuels may count toward recycling	Waste conversion to biofuels may count toward recycling	RDF facility can include enhanced recycling	Does the process fully meet all of the local community's waste reduction and recycling goals?
	Synergistic with municipal utilities and recycling processes		Yes, electricity from WTE can be used for other public works and municipal utilities if co-located	Yes, electricity from WTE can be used for other public works and municipal utilities if co-located	ATR maximizes the recovery of energy and material resources and process efficiencies	Yes, electricity from WTE can be used for other public works and municipal utilities if co-located	Yes, electricity from WTE can be used for other public works and municipal utilities if co-located	Yes, electricity from WTE can be used for other public works and municipal utilities if co-located	Less impact than WTE renewable electricity, but biofuels could be internally used for fueling fleets	Less impact than WTE renewable electricity, but biofuels could be internally used for fueling fleets	Yes, there will be no ash stream produced	Does the process afford the opportunity to provides additional benefits to community's public works programs and processes?
7.0	Financial Resources	10	10	10	10	3	3	3	2	3	8	
	Ability of vendor to finance project without public money		Yes, however, most WTE is typically publically owned, unless tax laws are favorable for private ownership	Yes, however, most WTE is typically publically owned, unless tax laws are favorable for private ownership	The underlying technology is typically publically funded. No US demonstrated facility	Lack of commercial development may not allow projects to be suitable for public finance	Lack of commercial development may not allow projects to be suitable for public finance	Lack of commercial development may not allow projects to be suitable for public finance	Lack of commercial development may not allow projects to be suitable for public finance	Lack of commercial development may not allow projects to be suitable for public finance	Lack of commercial development may require a guarantee from the public	What % of public money is at risk?
	Ability to endure and achieve performance goals during prolonged startup and testing phases		Startup easily achieved based upon historical performance	Startup easily achieved based upon historical performance	Uncertain, no commercial experience for the enhanced efficiency processes in the US.	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Startup easily achieved based upon historical performance	Does the developer have the financial resources and access to additional funds and resources to make the system fully functional during prolonged startup?
	Ability to make municipality whole from their investments and costs if technology fails		Historically demonstrated via long-term operation and maintenance service agreements with performance guarantees	Historically demonstrated via long-term operation and maintenance service agreements with performance guarantees	Uncertain, no commercial experience for the enhanced efficiency processes in the US.	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Historically demonstrated via long-term operation and maintenance service agreements with performance guarantees	Does the developer have the financial resources and willingness to accept liquidated damages causes to cover costs and impacts to the public?
	Financial reserves in escrow to dismantle and remove in event of failure		Yes, performance guarantees typically included in O&M service agreement	Yes, performance guarantees typically included in O&M service agreement	Uncertain, no commercial experience for the enhanced efficiency processes in the US.	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Uncertain, no commercial experience in US	Yes, performance guarantees typically included in O&M service agreement	Does the developer have the financial resources and willingness to place adequate funds, insurance, or financial backup to dismantle system in event of failure?
8.0	Project Economics Score	20	20	12	20	10	10	7	7	7	10	
	Requirement for Public capital investment		Typically 100% publically financed	Typically 100% publically financed	Uncertain. No commercial	Lack of commercial development	Lack of commercial development	Lack of commercial development	Lack of commercial development	Lack of commercial development	Typically 100% publically financed with	What % of commitment is required from local municipality to
	Commitment for delivery of wastes		Typically require commitment for minimum delivery of wastes on a daily, weekly and annual basis	Typically require commitment for minimum delivery of wastes on a daily and annual basis	Typically require commitment for minimum delivery of wastes on a daily and annual basis	Likely to require commitment for minimum delivery of wastes on a daily and annual basis	Likely to require commitment for minimum delivery of wastes on a daily and annual basis	Typically will require commitment for minimum delivery of wastes on a daily and annual basis	Typically will require commitment for minimum delivery of wastes on a daily and annual basis	Typically will require commitment for minimum delivery of wastes on a daily and annual basis	Typically require commitment for minimum delivery of wastes on a daily and annual basis	What is the commitment of required waste delivery (tons per day, contract years)?
	Acceptable contract terms and conditions		Yes, historically demonstrated as normal practice	Yes, historically demonstrated as normal practice	Uncertain. The underlying technology will have historically demonstrated as normal practice, except for the enhanced efficiency processes.	Uncertain, but likely to adopt as normal practice	Uncertain, but likely to adopt as normal practice	Uncertain, but likely to adopt as normal practice	Uncertain, but likely to adopt as normal practice	Uncertain, but likely to adopt as normal practice	Yes, historically demonstrated as normal practice	Does the project allow acceptable put or pay contract terms; base service fee plus excess waste processing fee; method of determining annual escalation; revenue sharing of energy production, recyclables, and other co-products?
	Economic costs and benefits to the community		Yes, stabilizes solid waste rates over long-term, especially after facility debt is retired, lowest cost of WTE technologies	Yes, stabilizes solid waste rates over long-term, especially after facility debt is retired, costs higher than massburn	Uncertain. The cost effectiveness of the enhanced efficiency processes is unknown	Uncertain, but likely to adopt as normal practice	Uncertain, but likely to adopt as normal practice	Uncertain, but likely to adopt as normal practice	Uncertain, but likely to adopt as normal practice	Uncertain, but likely to adopt as normal practice	Yes, stabilizes solid waste rates over long-term, especially after facility debt is retired, costs higher than massburn	Does the process provide any long-term revenue potential for the host municipality, or other benefits such as renewable energy to the local service area?
	Realistic estimate of project revenues / incomes		Yes, long-term electric power purchase agreements cover bulk of revenues, market fluctuations for recycled metals	Yes, long-term electric power purchase agreements cover bulk of revenues, market fluctuations for recycled metals	Uncertain. The long-term electric power purchase agreement cover bulk of revenues. The cost effectiveness of the enhanced efficiency processes is unknown	Yes, long-term electric power purchase agreements cover bulk of revenues, market fluctuations for recycled metals	Yes, long-term electric power purchase agreements cover bulk of revenues, market fluctuations for recycled metals	Yes, long-term electric power purchase agreements cover bulk of revenues, market fluctuations for recycled metals	Uncertain, market risk for biofuels, long-term PPA if electricity is sold	Uncertain, market risk for biofuels, long-term PPA if electricity is sold	Yes, long-term RDF purchase agreement covers bulk of revenues; market fluctuations for recycled metals	Are the assumptions reasonable for estimating income from sale of power, by-products, or processing of special wastes in comparison with other similar industries and processes?
	Realistic assumptions for estimation of operation and maintenance expenses		Yes, long history of successful operations and data base	Yes, long history of successful operations and data base	Uncertain. The cost effectiveness of the enhanced efficiency processes is unknown	Uncertain, no commercial experience and data in US	Uncertain, no commercial experience and data in US	Uncertain, no commercial experience and data in US	Uncertain, no commercial experience and data in US	Uncertain, no commercial experience and data in US	Limited history of successful operations and data base	Are the assumptions reasonable for estimating expenses (labor, wage rates, power use, cost of chemicals, fuels, and equipment) in comparison with other similar industries and processes?
	Costs to commercial, industrial, or institutions?		No additional cost, system users pay set fees per ton	No additional cost, system users pay uniform fees per ton	Uncertain. The cost effectiveness of the enhanced efficiency processes is unknown	Uncertain	Uncertain	Uncertain	No additional cost anticipated	No additional cost anticipated	Cost of RDF to the cement plant is limited to the energy value content of the coal displaced	Is the impact of implementation of the process acceptable to the commercial, industrial, and institutional community?
[illegible]	Overall Project Risks Score	10	9	7	8	3	3	2	3	5	7	
	Economic realities		Cost effective approach when evaluated over 45 - 50 life cycle, stabilizes disposal rates	Less competitive than WTE, stabilizes disposal rates	Uncertain. No commercial experience in the US, but should be similar to massburn WTE	Uncertain, no commercial experience and data in US, more costly than WTE	Uncertain, no commercial experience and data in US, more costly than WTE	Uncertain, no commercial experience and data in US, more costly than WTE	Uncertain, no commercial experience and data in US, Biofuel revenues may be significant, but cost of production is uncertain	Uncertain, no commercial experience and data in US, Biofuel revenues may be significant, but cost of production is uncertain	Much lower capital cost compared to WTE, but dependent on the economic viability of the cement plant	What is the process cost differential compared to landfill disposal and other competing technologies? Will the process help stabilize solid waste rates over long-term?
	Technical risk		Low risk, proven technology, experienced contractors	Moderate risk, proven technology, high O&M, potential shredder explosions, few experienced contractors	Low risk, proven technology, experienced contractors	Uncertain, no commercial experience and data in US, technically riskier than WTE and RDF	Uncertain, no commercial experience and data in US, technically riskier than WTE and RDF	Uncertain, no commercial experience and data in US, may be technically riskier than WTE and RDF	Uncertain, long learning curve anticipated, feedstock pre-treatment, process (wastewater, effluents, odors) concerns anticipated	Uncertain, long learning curve anticipated, feedstock pre-treatment, process (wastewater, effluents, odors) concerns anticipated	RDF - Moderate risk, proven technology, high O&M, potential shredder explosions; RDF feed to cement plant - limited experience	Is there a limited history of technology and/or limited history of the service provider?
	Siting risks		Siting a WTE facility is complex and will require an acceptable site with adequate buffers and mitigation strategies	Siting a RDF facility is complex and will require an acceptable site with adequate buffers and mitigation strategies	Siting an ATR facility is complex and will require an acceptable site with adequate buffers and mitigation strategies	Siting a thermal gasification facility is complex and will require an acceptable site with adequate buffers and mitigation strategies	Siting a pyrolysis facility is complex and will require an acceptable site with adequate buffers and mitigation strategies	Siting a plasma gasification facility is complex and will require an acceptable site with adequate buffers and mitigation strategies	Siting a waste-to-biofuels facility is complex and lengthy multi-dimensional process, and the outcome is not always certain.	Siting a waste-to-biofuels facility is complex and lengthy multi-dimensional process, and the outcome is not always certain.	An existing cement kiln will not require a new siting process, only a permit modification. A successful outcome is more likely.	Siting a WTE facility is complex and lengthy multi-dimensional process, and the outcome is not always certain.
	Procurement issues		Several qualified contractors in the US	Few experienced contractors in US	Proven experience in Europe, not in US	Few experienced contractors in US	Few experienced contractors in US	Few experienced contractors in US	Few experienced contractors in US	Few experienced contractors in US	Few experienced contractors in US	Is there a lack of qualified competition due to the uniqueness or state of technology development?
	Fatal flaws		No fatal flaws	Minor potential flaws due to equipment performance and potential explosions	No fatal flaws but no demonstration facility with ATR in the US	Uncertain, no commercial experience and data in US, carbon monoxide in syngas	Uncertain, no commercial experience and data in US, large quantities of hydrogen chloride	Uncertain, no commercial experience and data in US, carbon monoxide in syngas	Uncertain, no commercial experience and data in US	Uncertain, no commercial experience and data in US	Dependent on the economic viability of the cement plant	Is the project dependent on uncertain factors / conditions, such as the acceptance of a byproduct by an industry that could leave the local community, or income from a byproduct whose price or market is not reliable?
	Contractual risk		Minimal contractual risk	Minimal contractual risk	Minimal contractual risk	Uncertain, no experienced contractors in US	Uncertain, no experienced contractors in US	Known vendor filed for bankruptcy protection within the past 5 years	Uncertain, few experienced contractors in US	Uncertain, few experienced contractors in US	Minimal contractual risk	Can the definition of "failure" be clearly described or expressed in a contract?
	Contract terms		Yes, demonstrated ability to meet performance guarantees	Yes, demonstrated ability to meet performance guarantees	Yes, demonstrated ability to meet performance guarantees	Uncertain, few experienced contractors in US	Uncertain, few experienced contractors in US	Uncertain, few experienced contractors in US	Uncertain, few experienced contractors in US	Uncertain, few experienced contractors in US	Limited demonstrated ability to meet performance guarantees	Is the developer willing to include an "escape clause" if the technology fails to achieve benchmark performance goals / guarantees?
	Total Score	100	55	45	55	42	42	37	39	33	72	

Honorable Representatives,

Some of you were questioning the GHG emissions displayed in the 2019 Comprehensive Plan. For good reason!

I've attached a comparison GHG emission calculations report. Please read the information below before viewing it - this email explains the report.

I have analyzed the inputs used in the WARM model.
Source data was not available to evaluate the MRR results.

There are issues with the EPA WARM model, not only with the tool itself, but the way KCSWD applied it for the Comprehensive Plan. In addition, the calculations for the expansion and export, DID NOT use the same data as the WTE, rendering the comparisons inaccurate.

The variables selected when using the WARM model should reflect reality. KCSWD's variable usage reflects nothing of the sort. Their results should be thrown out, and an EXPERT at evaluating GHG emissions from landfills should be used, not amateurs.

The WARM model used 1 year's tonnage, so the variables only apply to a current, active cell that will eventually have a final cover on it. WARM looks at the "life cycle" of the waste materials for the given tonnage and no consideration is given to the rest of the landfill that has final cover on it.

As state before in the special council meeting:

WARM is NOT peer reviewed. Numerous mistakes have been found over the years, hence the numerous versions developed. AND they are currently working on WARM 2 model

- WARM is a screening tool
- Major decisions should NOT be based on a screening tool with no substantiation of the results
- Uses an outdated efficiency rate for Waste to Energy – 17%. Modern WTE attain about a 24% efficiency rating

Most importantly, WARM uses the same assumptions and formulas for gas generation as the MRR HH-1 model. The portion of BOTH models that use the moistness variable for calculating methane gas generation **DOES NOT WORK for Cedar Hills**. The MRR model, for Cedar Hills annual reports, using the HH-1 formula consistently calculates the landfill produces LESS gas than what is collected. The "k" value for the amount of rainfall does not sufficiently account for our wet weather (57 inches/year). The highest "k" value in the HH-1 formula is for a region that gets over 40" of rain. The WARM model has a higher "k" value that should have been considered to account for our wetter weather.

So...if you insist on using it, there are some things you need to be aware of:
After analyzing the WARM model variables that were used to calculate the MTCO2e for the Comprehensive Plan, I've concluded that the SWD used the "best case scenario" variables, which are nowhere near reality. In addition, the WARM model doesn't allow for certain situations.

Specifically:

6a: If your landfill has gas recovery, does it recover the methane for energy or flare it?

The landfill actually flares about 15% of the gas collected each year, but the model only allows one or the other, not a combination. This will change the results, not to the good. It can be manually calculated, but was not for this analysis.

Item 6b: This variable asks about the collection efficiency with 5 choices:

	Landfill gas collection efficiency (%) assumptions
Typical	*Years 0-1: 0%; Years 2-4: 50%; Years 5-14: 75%; Years 15 to 1 year before final cover: 82.5%; Final cover: 90%*
Worst-case	*Years 0-4: 0%; Years 5-9: 50%; Years 10-14: 75%; Years 15 to 1 year before final cover: 82.5%; Final cover: 90%*
Aggressive	*Year 0: 0%; Years 0.5-2: 50%; Years 3-14: 75%; Years 15 to 1 year before final cover: 82.5%; Final cover: 90%*
California	*Year 0: 0%; Year 1: 50%; Years 2-7: 80%; Years 8 to 1 year before final cover: 85%; Final cover: 90%*

SWD chose the California Variable for expansion alternative.
SWD chose the Aggressive variable for the export alternative.

There is absolutely no way they should be choosing the California model for expansion. Even the aggressive doesn't fit. Nor should the aggressive be used for the export option, since the export landfill has not been identified in the study.
Remember, the WARM model analyzes just 1 year worth of tonnage per this study. It calculates the "life cycle" out for about 100 years.
If you assume the tonnage in question is the first year of the expansion, intermediate or final cover would not occur for several years and the Typical would be appropriate..
If you assume the tonnage is the LAST years of the the expansion, then you could use the final cover % for the majority of the model - California variable.
However, since Area 9 was to remain open for nearly the entire 12 years (with toplifting), one shouldn't assume the "best" possible scenario, except if you want to skew the results.
For the expansion, since the active area will be "open" and with some daily cover for at least 6 years, the TYPICAL variable would be more reflective of a Cedar Hills Landfill active area for the first 6 years or so. These areas would be considered "daily" cover – not intermediate.

Based on this, the efficiency closer to reality would be the Typical

Furthermore, it is very important to note that California itself doesn't even think a 90+% collection efficiency is possible. A California Air Resources Board (CARB) report concluded a well-controlled landfill collected about 85% of the gas generated.

In addition, a team of researchers evaluating methane emissions in the L.A. basin directly measured emissions from the Puente Hills Landfill. The emissions they directly measured were indicative of a 75% instantaneous collection efficiency. A summary of that work is available, as well as the underlying paper, if you'd like to review it.

If landfills in CA aren't actually achieving a 90% collection efficiency in practice, the WARM results are clearly under-representing landfill gas emissions. Using the "California" style collection efficiency only exasperates this issue.

Also, the fact that these efficiency ratings do not correspond to the MRR cover efficiency ratings only highlights the EPA's conflicts with what actual cover efficiency ratings should be used. It further shows that these formulas are an inaccurate science.

Item 7: Which of the following moisture conditions and associated bulk MSW decay rate (k) most accurately describes the average conditions at the landfill?

	Moisture condition assumptions
Dry (k=0.02)	*Less than 20 inches of precipitation per year*
Moderate (k=0.04)	*Between 20 and 40 inches of precipitation per year*
Wet (k=0.06)	*Greater than 40 inches of precipitation per year*
Bioreactor (k=0.12)	*Water is added until the moisture content reaches 40 percent moisture on a wet weight basis*
National average	*Weighted average based on the share of waste received at each landfill type*

SWD chose the WET variable for the expansion.
SWD chose the DRY variable for the export, which seems appropriate.

Since we KNOW the MRR model doesn't work with the Wet option, it would seem they should be using the Bioreactor variable - or at least using it as a top "range". The Wet "k" value in the MRR HH-1 formula **underestimated** the amount of methane produced for every year it was used in Cedar Hills annual reports, for 7 years..
As an example of the amount of rain (57 inches/year) last year, during a real wet period, the current active cell got so much water, the leachate ponds began to overflow until pumps were engaged to pump the leachate out to the sewage treatment plans – this created a bathtub effect in the active cell.

Based on the fact that the "Wet" k factor underestimates the gas production in the MRR model, then the Bioreactor should be used to at least get an upper level range.

Finally,
Both the tonnage and the mix KCSWD used for the Expansion and export were far different than CDM Smith used in the WTE calculations.
THIS IS TOTALLY UNACCEPTABLE TO CREATE A COMPARISION OF MTCO2e and NOT use the same totals!

TONNAGE:
CDM Smith used Tons processed per year based on the 20 year scenario with the design facility of 4,000 tpd and 1,350,050 tpy.

It is unclear what model KCSWD used since I only received the printouts for the analysis. The tonnage used for the model was 1,295,246 tpy.

MATERIALS MIX:
CDM Smith used the 2015 Cascadia Waste Characterization for Cedar Hills. The Cascadia report identifies 97 different materials. CDM Smith condensed those 97 materials into the 57 materials categories in the WARM model. They supplied a very detailed list of where each of the 97 materials fit into the 57 WARM categories.

It Is unclear exactly how KCSWD defined the materials mix for their model, but I assume they also used some sort of mix from the Cascadia report.

CDM Smith also used a "one size fits all" -- the MIXED MATERIAL option on the WARM model. This uses an EPA default for the materials mix.

The range that is reported in the Comp plan reflects the 2 different Materials mix that CDM Smith used. (12000-80000)

In the attached report, I've included 2 other figures that have been calculated by the WARM model, but were not included in the Comp Plan.
1. GHG emissions from MTCE (Metric tons of Carbon equivalent). I'm not sure if this is biogenic carbon or exactly what it is. The WARM model is not very transparent as to what or how they calculate their numbers.

2. Energy used / (saved) and a comparison of an alternative to the baseline. I'm not sure why KCSWD decided not to show this because it has some significant numbers. WTE saves a bunch of energy. Keep in mind the WARM model only uses a 17% efficiency rating, but modern plants now have about a 24% efficiency rating so the savings would be even higher.

Thank you for reviewing this information.

Sincerely,
Janet Dobrowolski
21003 SE 155th Pl
Renton, WA 98059
Attachments area

GHG Emissions, tonnages and material mix used in the Comp plan:

COLUMNS:	1	2	3		4
Life Cycle Greenhouse Gas Emissions (EPA's WARM Model)	(134,000) MTCO2e	(78,000) MTCO2e	12,000 MTCO2e		80,000 MTCO2e
	Expand	Export	WTE - DETAIL MSW		WTE -MIXED MSW
Material	Tons Landfilled	Tons exported	Tons recycled	Tons Combusted	Tons Combusted
Aluminum Cans	3844.8	3844.8		4051.5	
Aluminum Ingot	0.0	0.0		2701.0	
Steel Cans	6244.8	6244.8		22958.5	
Copper Wire					
Glass	34279.4	34279.4		36463.5	
HDPE	7025.9	7025.9		6752.5	
LDPE			NA	5402.0	
PET	10938.8	10938.8		10804.0	
LLDPE			NA	86432.0	
PP			NA	18907.0	
PS	8294.0	8294.0	NA	8103.0	
PVC			NA	24309.0	
PLA			NA	0.0	
Corrugated Containers	42291.5	42291.5		44566.5	
Magazines/Third-class Mail				49968.5	
Newspaper	0.0	0.0		20257.5	
Office Paper	10289.2	10289.2		10804.0	
Phonebooks				71576.5	
Textbooks				147204.5	
Dimensional Lumber	146644.2	146644.2		153957.0	
Medium-density Fiberboard				20257.5	
Food Waste (non-meat)			NA	278203.0	
Food Waste (meat only)			NA	81030.0	
Beef			NA		
Poultry			NA		
Grains			NA		
Bread			NA		
Fruits and Vegetables			NA		
Dairy Products			NA		
Yard Trimmings	71188.2	71188.2	NA	72927.0	
Grass			NA		
Leaves			NA		
Branches			NA		
Mixed Paper (general)	96058.4	96058.4			
Mixed Paper (primarily residential)					
Mixed Paper (primarily from offices)					
Mixed Metals	50645.6	50645.6		33762.5	
Mixed Plastics	132034.7	132034.7		4051.5	
Mixed Recyclables					
Food Waste	265710.0	265710.0	NA		
Mixed Organics	265180.0	265180.0	NA	5402.0	
Mixed MSW	88981.7	88981.7	NA		1350500.0
Carpet	21445.8	21445.8		35113.0	
Personal Computers	5478.5	5478.5		13505.0	
Clay Bricks			NA	NA	
Concrete			35113.0	NA	
Fly Ash			8103.0	NA	
Tires	795.3	795.3		8103.0	
Asphalt Concrete			5402.0	NA	
Asphalt Shingles	4896.1	4896.1			
Drywall	22979.4	22979.4	24309.0	NA	
Fiberglass Insulation			NA	NA	
Vinyl Flooring			NA		
Wood Flooring			NA		
	1,295,246.30	1,295,246.30	72,927.00	1,277,573.00	1,350,500.00
				1,350,500.00	

Warm Variables used in the Comp Plan:

	Expand	Export	WTE
Gas Collection efficiency	California Cover	Aggressive	N/A
Decay Rate (k factor)	Wet (.06)	Dry (.02)	N/A
Digestion	Wet	Wet	N/A
LFG recover	Yes	Yes	N/A
Material Mix	Detailed	Detailed, same as Expansion	Default Mix AND detailed Mix
Tonnage used	1,295,246.30	1,295,246.30	1,350,500.00

The WARM model calculates Energy used (saved) (in Million BTU's and GHG emissions of MTCE (Metric tons Carbon equivalent)

It was included here, even though the Comp plan didn't think it was important

This is an example of what the WARM model reports if the alternative saves energy:

Total Change in Energy Use (million BTU): **(7,568,315.10) *****

Using the 1,350,500 tons. Results of WTE over expansion:

This is equivalent to...		
Conserving	**65,810**	Households' Annual Energy Consumption
Conserving	**1,302,636**	Barrels of Oil
Conserving	**60,917,829**	Gallons of Gasoline

To illustrate how the variables affect the results, the following shows different combinations of the variables - some more closer to reality.

USING KCSWD Tonnage and Materials Mix Column 1 totals:

	Expand MTCO2e	Export MTCO2e	WTE MTCO2e
Aggressive efficiency - export California efficiency - expand "Wet" k value (.06) Materials mix - SWD numbers	(134,000)	(78,000)	59,975
Summary MTCE	(36,476.00)	(21,243)	18,521
Energy used (saved) in BTU's	127,534.00	954,723	-5,824,637
Aggressive efficiency - both "Wet" k value (.06)-expand "Dry" k value (.02) - export Materials mix - SWD numbers	(46,222)	(78,000)	59,975
Summary MTCE	(12,606)	(21,243)	18,521
Energy used (saved) in BTU's	143,409	954,723	-5,824,637
Aggressive efficiency - both "Bioreactor" k value (.12)-expand "Dry" k value (.02) - export Materials mix - SWD numbers	24,450	(78,000)	59,975
Summary MTCE	6,668	(21,243)	18,521
Energy used (saved) in BTU's	156,119	954,723	-5,824,637
Typical efficiency - both "Bioreactor" k value (.12)-expand "Dry" k value (.02) - export Materials mix - SWD numbers	**85,773**	**(59,910)**	**59,975**
Summary MTCE	**23,393**	**16,339**	**18,521**
Energy used (saved) in BTU's	**173,472**	**958,335**	**-5,824,637**

MOST REALISTIC VARIABLE COMBINATIONS for this tonnage/mix

Comparison using CDM Smith tonnage (1,350,500) and Waste Characterization Column Column 3 Totals:

Materials usage below will use the CDM Smith breakdown. Their analysis used the 2015 Cascadia Materials composition report for Cedar Hills. They reduced the 97 materials %'s to the 57 materials used in the WARM model. The materials composition from SWD is unclear as to where the % were derived.

** Note - This model is about 1000 MTCO2e's off from the Comp Plan for the WTE - I wasn't sure what to do with the tonnage that wasn't combusted (concrete, asphalt shingles, etc), so I put it under recycle.

	Expand	Export	WTE
California efficiency - expansion	MTCO2e	MTCO2e	MTCO2e
Aggressive efficiency - export			
"Wet" k value (.06) - expansion			
"Dry" k value (.02) - export			
CDM Smith Mix %'s	(166,818)	(82,098)	10,842
Summary MTCE	(45,496)	(22,390)	2,957
Energy used (saved) million BTU's	96,316	946,899	(7,424,395)

Aggressive efficiency - both			
"Wet" k value (.06) - expansion			
"Dry" k value (.02) - export			
CDM Smith Mix %'s	(53,986)	(82,098)	10,842
Summary MTCE	(14,724)	(22,390)	2,957
Energy used (saved) in BTU's	115,072	946,899	(7,424,395)

Typical efficiency - Both			
"Wet" k value (.06) - expansion			
"Dry" k value (.02) - export			
CDM Smith Mix %'s	(8,641)	(66,504)	10,842
Summary MTCE	(2,357)	(18,137)	2,957
Energy used (saved) in BTU's	128,792	949,864	(7,424,395)

Typical efficiency - Both			
"Bioreactor" k value (.12)-expand	MOST REALISTIC VARIABLE COMBINATIONS		
"Dry" k value (.02) - export	for this tonnage/mix		
CDM Smith Mix %'s	75,398	(66,504)	10,842
Summary MTCE	20,563	(18,137)	2,957
Energy used (saved) in BTU's	143,920	949,864	(7,424,395)

***

Comparison using KCSWD Tonnage (1295246) and CDM Smith Tonnage (1,350,500) and EPA default Materials Mix (1 total) Column 4:

This is not typical, but since CDM Smith used it and SWD showed the "upper range" from this, I thought it should be added. See Column 4 as an example of where the number is entered.

California efficiency - expansion Aggressive efficiency - export "Wet" k value (.06) - expansion "Dry" k value (.02) - export	Expand MTCO2e	Export MTCO2e	WTE MTCO2e
KCWSD Tonnage	17,004	194,348	76,335
CDM Smith Tonnage	17,729	202,638	79,591
CDM Smith Tonnage - MTCE	4,835	55,265	21,707
CDM S Ton-energy used(saved)	(31,385)	855,170	(5,219,976)

* Note - difference between KCWSD and CDM tonnage isn't significant enough to go thru the calcs

Aggressive efficiency - both "Wet" k value (.06) - expansion "Dry" k value (.02) - export			
KCWSD Tonnage	192,390	194,348	76,335
CDM Smith Tonnage	200,598	202,638	79,591
CDM Smith Tonnage - MTCE	54,708	55,265	21,707
CDM S Ton-energy used(saved)	(3,228)	855,170	(5,219,976)

* Note - difference between KCWSD and CDM tonnage isn't significant enough to go thru the calcs

Typical efficiency - Both "Wet" k value (.06) - expansion "Dry" k value (.02) - export			
KCWSD Tonnage	233,106	202,853	76,335
CDM Smith Tonnage	243,050	211,507	79,591
CDM Smith Tonnage - MTCE	66,286	57,684	21,707
CDM S Ton-energy used(saved)	10,808	856,255	(5,219,976)

* Note - difference between KCWSD and CDM tonnage isn't significant enough to go thru the calcs

Typical efficiency - Both "Bioreactor" k value (.12)-expand "Dry" k value (.02) - export	Most realistic if using MIXED MSW		
KCWSD Tonnage	319,821	202,853	76,335
CDM Smith Tonnage	333,464	211,507	79,591
CDM Smith Tonnage - MTCE	90,945	57,684	21,707
CDM S Ton-energy used(saved)	26,459	856,255	(5,219,976)

* Note - difference between KCWSD and CDM tonnage isn't significant enough to go thru the calcs

IN THE KING COUNTY COUNCIL AS SPEECH GIVEN ON APRIL 17, 2019

TO: **KING COUNTY COUNCIL**
1200 King County Courthouse
516 Third Avenue
Seattle, WA 98104

Attn: Whole Counsel
(206) 263-8459
Yolanda.Pon@kingcounty.gov

Hendrick W. Haynes
17427 - 195th Plc. SE
Renton, WA. 98058
hh.gmvuac@gmail.com
Communication pp: 24 inclsv
Digital Attachments: DVD
Speech: about 1.3 pgs. or so.

HANK HAYNES PART 1 OF 3

HAYNES TO Y. PON LETTER MAR. 26, '19 HAYNES SPEECH DVD 4/17/'19

PART 2 PART 3

DATE: **Wednesday, Apr. 17, 2019**

Project Name & Address: **King County Department of Natural Resources and Parks**
Solid Waste Division
201 South Jackson St., Suite 701
Seattle, WA 98104-3855

Facility Name & Address: **Cedar Hills Regional Landfill**
16645 228th Avenue SE
Maple Valley, WA 98038

Permitting Authority: **King County Counsel and Public Health - Seattle & King County Environmental Health Services Division (or "KC Pub. Health", 401 5th Avenue, Suite 1100**
Seattle, WA 98104)

RE: **MINED OUT COAL MINE SITES AND GEOLOGICAL FAULTS IN THE GENERAL PROXIMITY OF SR-169 AND CROSSING WITH 196TH AVE. SE. AND SE. JONES ROAD;**

SUBJECT: **Planning and designing to minimize future risk and public hazard.**

Most Honorable King County Counsel:

My name is Hank Haynes, and I live in the Maple Valley near the Landfill.

Previously, I submitted materials to you about the Cedar River Canyon, and this material is duplicated on the attached DVD. I am also including a printed copy of my letter to the King County Health department dated March 26, 2019 (to Ms. Yolanda Pon). Some of the photos, etc. in Ms. Pon letter are included herein for your convenience. I cannot go into these details in two minutes allowed at this podium.

Today, I am supplementing this with a new set of maps which I have gotten from USGS and the U. S. Department of the Interior which shows 1) drainage direction of some streams (both seasonal and permanent) in and around the Cedar Hills Regional Landfill; and 2) a map showing the extensively MINED OUT COAL MINING ACTIVITY (spent mines) under and

near the Cedar River and SR-169, and also details on many more FAULTS than previously presented (and this IS NOT an exhaustive and completely accurate survey ism).

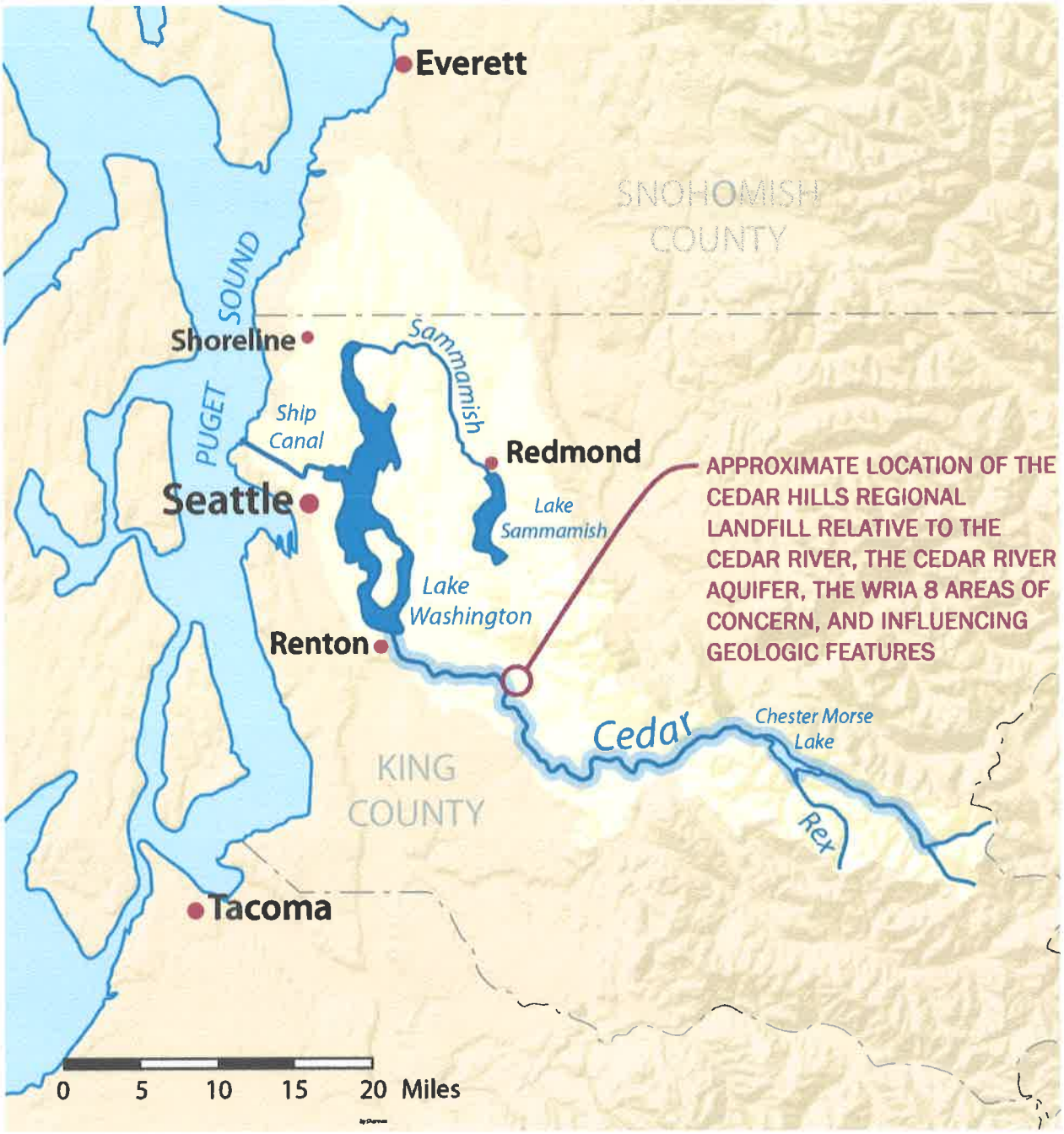
In the attached DVD, I have included pictures and articles related to earthquake damage and probabilities. This is only a scratch on the subject. The "BIG ONE" is estimated to be up to a "9", which is equivalent to the "Good Friday" Alaska Earthquake of 1964 (see references on DVD). One article cites the odds of having such an event is about 15% in the next 30 years (MV Northwest (Oct. 11, 2018), with this growing to 40% in the next 50 years ("Is Seattle Ready for a Major Earthquake", by Nathan Williams, updated 01/31/19). By comparison, the 2001 February 19 Nisqually Earthquake was a magnitude 6.8 and classed on the Mercalli intensity scale as VII (severe). The 1906 San Francisco earthquake of April 18 was estimated to have a magnetude of 7.9 and a Mercalli intensity of XI (Extreme). In the San Francisco earthquake, significant damage was done due to "Liquefaction" hazard in the soils, and settling rupturing buildings, pipes, and discharging natural gas (and creating sweeping fires). In this case, the CHRLF is both a high liquefaction hazard location, AND it is a methane source crisscrossed with methane supply lines. There are many neighborhoods near subject site, and methane gas and other contaminates move through soils, abandoned coal mines, pipes, etc. and may create hazards elsewhere.

Is the current CHRLF site a good place to make a long term investment in waste processing and energy production? Can it be more profitably located and operated elsewhere? How may be current labor and contractor relationships be best preserved (if possible)?

In terms of labor jobs, there will be many more jobs for a long time related to decommissioning and moving the existing site. There will be many new jobs in creating and working a new site, which has to be done in parallel with the phase out and decommissioning of the current site. This could last for many decades, and we will be working against borrowed time. What is up their now seems a "Super Fund" Site, and priority one should be (in my mind) finding and creating a lobbyist for Congress to get the resources needed for planning and implementing this process. It seems to me that an "ounce of prevention is worth a pound of cure", and in this case a several billion dollar investment by the U. S. Government may save a trillion dollars in economic hardship, disease, and lost production if and when the "Big One" hits and the Cedar River Canyon (and elsewhere) possibly becomes contaminated with a potential OSO landslide into drainage areas.

Planting trees (reforestation) on and around the CHRLF should be a priority as the affect of such vegetation is known to stabilize banks and hillsides, and removal of such is known to destabilize banks and hillsides, and accelerate erosion and run-off.

We look forward to discussing this with you. Thank you.



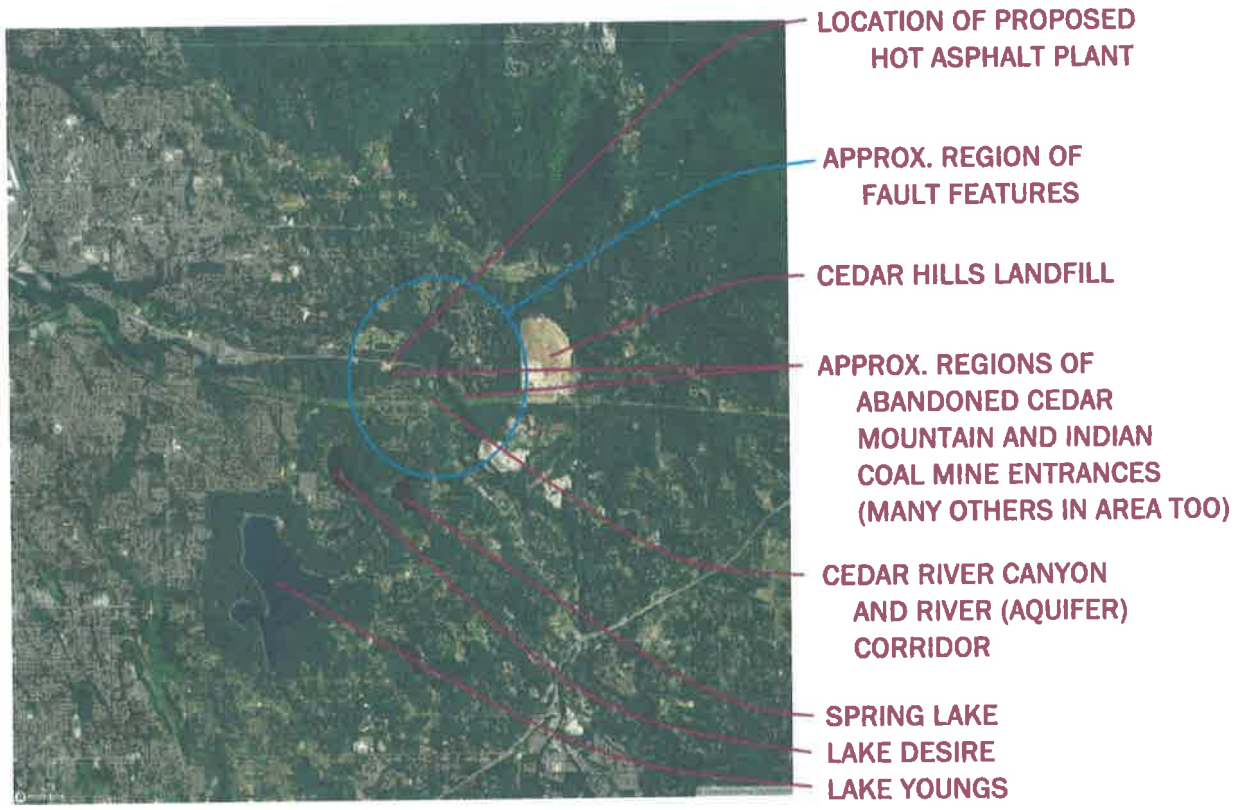
3/26/'19 Map 1: Cedar Hills Regional Landfill Location & Seattle.

3/26/'19 Map 2: Asphalt Plant, Landfill sites, and COAL MINES. Proposed for Hot Asphalt Facility location along Cedar River (blue arrow), and Cedar Hills Regional Landfill proposed operations renewal location along Cedar River (red arrow). Heaviness of orange line indicates some sense of the number of drawings on file with the State of Washington. This is not a complete set of drawings describing ALL mining operations, as mining has been going on for over 100 years and documentation was not always required, and drawing have either not been made, lost, destroyed, damaged, and/or withheld from the state for personnel of commercial reasons (such as, but not necessarily so, as trade secrets, to limit liability(s), kept as family art, etc.).

Map above is from a Washington Geologic Information Portal "**Coal Mine Map Collection**". Consult WA DNR with reference to available maps. [WA DNR 2019]. As noted above, Blue Arrow is location of proposed Lakeside Industries Hot Asphalt Plant relative to mapped coal mines (drawing sheets areas outlined by red rectangles). Red Arrow is Cedar Hills Regional Landfill. Green areas are King County sensitive wildlife Natural Areas and Parks which are proximate to wetlands, streams, rivers and lakes under Shoreline Management Act and critical areas protections. The Cedar River corridor has underneath it the King County, Renton, and Seattle Aquifer water feature which many people rely on for drinking water.

Local residents have wells that also rely on the aquifer for drinking and agricultural uses. Coal mine shafts and rooms increase water permeability through rock layers. Coal mine shafts and rooms also contribute to subsidence; e.g., shafts and rooms collapse cause the rock and soil features above to move and implode (drop down), filling the shaft(s) and room(s) with fractured and permeable materials. Coal mine shafts and rooms also reduce the strength of rock layers and structures, and make large land features such as mountain sides, canyon walls, and hill sides less strong and more prone to cave-ins and landslides. The property to landslide, cave in, and go to liquefaction is increased when also done alongside other geologically unstable features, such as faults, scarps, and naturally occurring fracturing of rock masses. Accumulation of water and vibration from other sources also improves hazard risks. For reference, view the history of the August 17, 1959 Hebgen Lake Earthquake and landslide near Yellowstone Park, and the many people who were buried alive and died under the landslide. Another landslide to consider is the Washington OSO LANDSLIDE or mudslide of March 22, 2014. Although tragic, in both cases these disasters did not poison the public water supply, and especially a water supply needed to serve millions of people into the future.

A slipping, sliding, breaking away or removal of the supporting canyon wall in proximity of the Cedar Hills Regional Landfill may also increase the propensity for instability inside a deposited mass. If a liquefaction and/or landslide occurs, and if allowed to flow out into the countryside, this could present a community hazard of varied concerns. Note that material is being mined below the Landfill by various gravel mining concerns, and this is affecting the water accumulation patterns on the Cedar River Canyon wall, and slope strength and buffer material location(s), between the Landfill and the Cedar River. Such excavation on the southwestern slope of the Cedar Hills Regional Landfill day-by-day increasingly changes the properties of the canyon wall, and may erode away precious site safety factor for the purpose of commercializing the areas gravel deposits. This seems counterproductive to the larger purposes of public safety and necessity to provide for disaster planning and security needs in case of a public emergency.

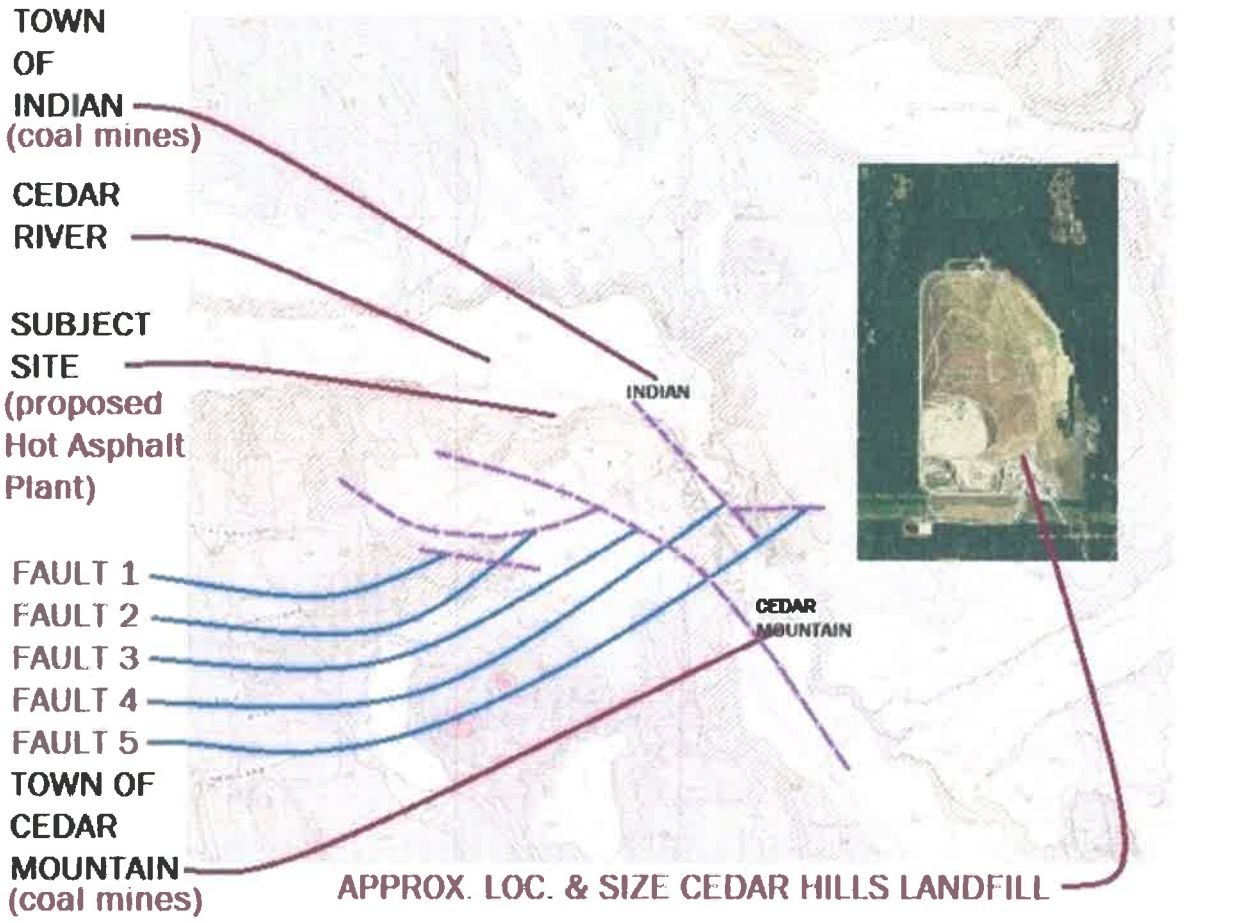


AERIAL VIEW OF LAKE YOUNGS, CEDAR RIVER CANYON (AND RIVER), AND CEDAR HILLS LANDFILL WITH GEOLOGIC FAULT REGION ABOUT 196TH AVE. SE/JONES ROAD AND SR-169 CIRCLED IN BLUE. ALSO NOTED IS EXTENSIVE PAST COAL MINING IN THIS REGION WHICH INCREASES AVENUES AND PERMIABILITY OF CHANNELING TRANSPORT MECHANISMS FROM SURFACE FEATURES INTO DEEPER GEOLOGIC LAYERS (SUCH AS THE KING COUNTY/RENTON CITY AQUIFER). SEE ALSO MAP "FAULT LINES: ON CEDAR MOUNTAIN SLOPE NEAR PROPOSED SR-169 LAKESIDE INDUSTRIES HOT ASPHALT PLANT...." WITH "CEDAR HILLS LANDFILL" INSERT. VIEWS TAKEN FROM H. HAYNES 3/11/2019 ASPHALT PLANT COMMENT.

3/26/'19 Map 3: Landfill proximity. Cedar Hills Regional Landfill is located amongst a great many lake and soil features which help to recharge the aquifer, these including Lake Kathleen, Lake McDonald, Francis Lake, and others (not shown) surrounding the Landfill.

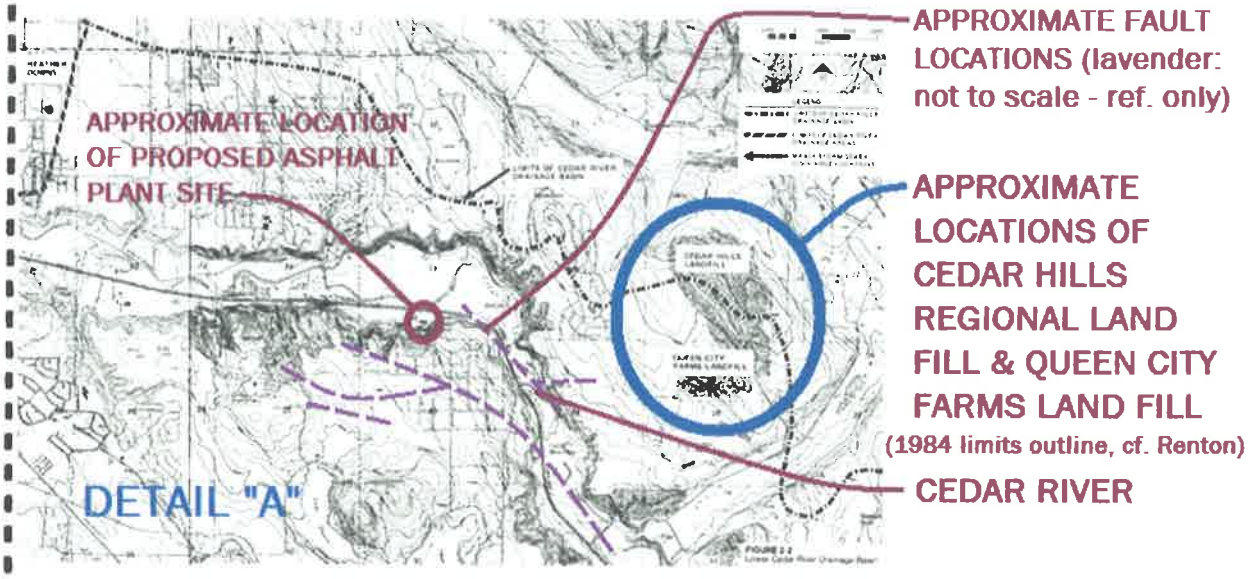
Percolation surface area and permeability factor is important to allowing water to recharge an aquifer (replace the water that is drawn out of the water table). The Cedar Hills Regional Land Fill occupies a sizable area that is easily viewed. Lined and capped garbage pits of the Landfill deny valuable area needed to readily recharge the aquifer. Land that could have been made into wetlands or other high value water filtering and wildlife supporting feature is denied (this could have been supportive of King County Parks and Natural Areas). Instead, Landfill contains much toxic waste in lined pits that, with adequate underlayment disturbance, could tear and discharge toxins in a flow trajectory that could intercept the sensitive aquifer.

3/26/'19 MAP 4: Landfill faults. Map excerpt from PRELIMINARY GEOLOGIC MAP OF THE HOBART AND MAPLE VALLEY QUADRANGLES, KING COUNTY, WASHINGTON, by James Vine, Geology Map GM-1, 1962 (available from then Department of Conservation, Olympia, WA). Short dashed lines indicates concealed identified inferred fault lines. U, upthrown side; D, downthrown side. The arrows show relative horizontal movement. Note proximity of drawing identified fault lines along top of steep slopes to lower left, and straight fault feature spiking off fault between narrow choke point on Cedar River and up toward area occupied by Cedar Hills Regional Landfill.



FAULT LINES (PLUM DASH LINE) : **ON CEDAR MOUNTAIN SLOPE NEAR PROPOSED SR-169 LAKESIDE IND. HOT ASPHALT PLANT AND CEDAR HILLS REGIONAL LANDFILL.**

3/26/'19 Map 5: **Landfill Faults and Proximity.** Map 3 above with plum dashed lines drawn in emphasizing fault lines, and approximate location and size of Cedar Hills Regional Landfill. Note FAULT 5 line extending toward Landfill. A FAULT is a crack in the earth that penetrates deeply through rock strata of varied permeability. A FAULT can produce a crack gap of varied width and pass-through potential, and may grow in size and connect with other geologic features.



PROXIMITY OF CEDAR RIVER DRAINAGE BASIN RUNNING THROUGH CEDAR HILLS REGIONAL LAND FILL (source: "Report On WELL FIELD PROTECTION STUDY City of Renton (CH2M Hill 1984)", Water Resources Library of Renton #F-940; 90101496, Figure 2-2. (HWH mod. 3/24/19)

3/26/'19 Map 6: Fault Lines, Landfill, and Aquifer Drainage Limits.

Map 4 features combined with (in an approximate way) with "Well Field Protection Study City of Renton" (1984; or "Renton Well Study 1984") Figure 2-2 as described above. The limits of the Cedar River Drainage Basin are shown passing through the Cedar Hills Regional Land Fill, and as such drainage potential into the Cedar River Aquifer exists. Queen City Farms Land Fill is shown below Landfill, and inside drainage basin. Map features are about 1984, and should be retested and redrawn using more currently gathered data.

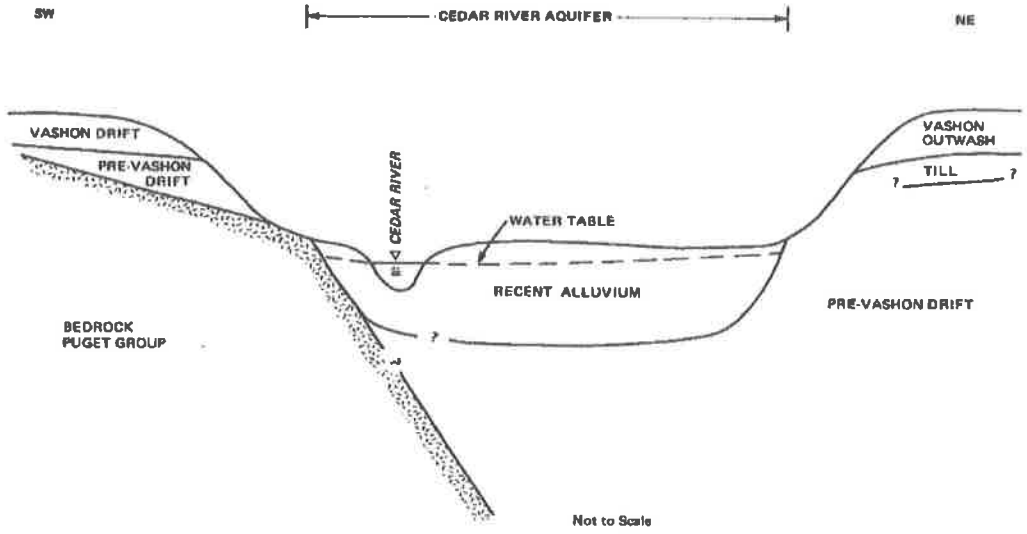


FIGURE 2-4
Schematic Cross-Section,
Cedar River Aquifer

3/26/'19 FIGURE 1: Map 6 Faults in Renton Aquifer Assumptions?
Cross section showing assumptions made as to Cedar River Aquifer Cross-Section inside Renton Well Protection Study of 1984. Enclosed map features would imply a very different local cross-section in area of Landfill. This view is encouraged when looking at mining engineer reports about what they observed when mining coal from layered rock strata close to subject Landfill and across canyon (see Haynes "Comment" to Fereshteh Dehkordi ((206) 477-0375) March 11, 2019 Asphalt Facility comment).

Baseline subterranean Cedar River basin contour assumptions do not conform to rock strata discovered by a long history of coal mining in the area, nor does it conform to mapping of geologic faults in proximity of the Cedar Hills land fill site. The existence of coal mines features (shafts, rooms, etc.) and deep penetrating faults increase permeability and potential flow pathways (and flow rates) into lower strata including water table. Proof of potential concern includes a recent test by contractors for Lakeside Industries in doing soil testing for their proposed Hot Asphalt Plant site on the old Indian Coal Mine site. See Rhys Sterling letter dated February 20, 2019 to Fereshteh Dehkordi, Project Manager; Permitting Division/Department of Local Services with regard to "Combined Notice of Applications and Environmental Review Process - Maple Valley Asphalt Facility - Lakeside Industries, 18825 SE Renton-Maple Valley Road, Renton, WA COMM18-0014 and SHOR18-0032"; attached below. Letter concerns itself with soil permeability and potential for proposed Maple Valley Asphalt Facility to contaminate the aquifer. Site, like many, is high permeability and capable of filtering and recharging high

flows of water. One acre of this site may equal many (if not hundreds) acres of recharge area elsewhere. It is benefited by being fed by springs and streams from water purifying wetlands and lakes located above canyon rim. There may be similar features along canyon rim near Landfill.

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Facsimile (425) 413-2455
E-mail: RhysHobart@hotmail.com

February 20, 2019

Fereshteh Dehkordi, Project Manager
Permitting Division / Department of Local Services
35030 SE Douglas St., Suite #210
Snoqualmie, Washington 98065-9266

Subject: **Combined Notice of Applications and Environmental Review Process - Maple Valley Asphalt Facility - Lakeside Industries, 18825 SE Renton-Maple Valley Road, Renton WA CONR18-0014 and SHOR18-0032**
Supplemental Update to my January 16 and 22, 2019, Comments/Letters re the Review of Application Documents and SEPA Checklist for Lakeside Industries' Maple Valley Asphalt Facility

Dear Ms. Dehkordi:

Please accept from me this supplemental comment letter[1] for the purpose of providing additional relevant information for the review by King County Permitting Division / Department of Local Services (formerly KC DPER) of the application documents and SEPA Checklist for Lakeside Industries' Maple Valley Asphalt Facility as referenced above. The following comments focus on the environmental import and effect of the infiltration test results reported by Associated Earth Sciences Incorporated (AES) in its October 2, 2018, letter-report captioned "Subsurface Exploration, Infiltration Testing, Design Infiltration Rate, and Groundwater Mounding Analysis" (Project No. 170017H001, prepared for Lakeside Industries, Inc.) (referred to hereinafter as the "AES Report").

Critical Analytical Results of AES Report

The Infiltration Testing Procedures in the AES Report at pp 4 - 5 states that 6,191 gallons of water was discharged over a 3.9

[1] This comment/review letter is supplemental and in addition to my previously submitted correspondence dated January 16, 2019, and January 22, 2019. These comments are formally submitted to King County under and pursuant to the February 4, 2019, Combined Notice of Applications & Environmental Review Process that extended the public comment period on this proposal to March 11, 2019.

hour period[2] into a 4-foot deep hole the wetted cross section of which was equal to 3.4 sq ft.[3] This equates to an infiltration/ loading rate >/= 11,205 gpd/sq ft (or roughly 748 inches/hour).[4] In particular, it was noted that:

> [A] measurable head of test water did not accumulate in the test pit during the soaking[5] or testing period at the maximum flow rate of the flow meter. Additionally, the water truck was emptied within the soaking period and had to be re-filled. Over 6,000 gallons were discharged at the maximum flow rate of the flow meter in less than 4 hours. . . . [Because] a measurable water level did not accumulate during the entire soaking and testing period . . . a falling-head test could not be performed.

AES Report, at p 5.

Observations

As starkly observed and reported by AES, on this site of the proposed new Lakeside Industries' Maple Valley Asphalt Facility the underlying soil transmitted the water discharged into the pit so as not to create any accumulation whatsoever. This fact indicates that whatever transmissible/soluble pollutants/contaminants may be spilled upon or in the ground at this site will likely be transmitted quickly and unimpeded to the underlying ground water system.

---

[2] "Water was conveyed from the water truck to the test location using a Honda WT20X water pump and 2.5-inch firehose." AES Report, at p 4. Industry specifications note that this pump can discharge a maximum of 187 gpm (*see* https://www.waterpumpsdirect.com/manuals/Honda_Pump_Brochure.pdf).

[3] *See* AES Report, Table 1 at p 5.

[4] For purposes of comparison, it is noted that King County limits infiltration rates from stormwater ponds to a maximum of 20 inches/hour. AES Report, at p 9. Presumably, this reduced infiltration rate would allow some measure of soil treatment and mitigation of impacts to the quantity and quality of the underlying ground water.

[5] "The soaking period allows the receptor soils in the immediate vicinity of the pit to become saturated. During the soaking period, typically the flow rate would be adjusted periodically until a constant head was attained at a constant water discharge rate. The test would then continue for an additional 'test period' while the water discharge rate was maintained." AES Report, at p 5.

Significant Environmental Adverse Impacts

Sources and contaminants generally associated with the manufacture of asphalt at a batch facility include the following: (a) outdoor stockpiling of materials exposed to precipitation include total suspended solids (TSS), total dissolved solids (TDS) biochemical oxygen demand (BOD5), chemical oxygen demand (COD), oil and grease (O&G), benzene, methylene blue active substances (MBAS), metals, pH; (b) storage of materials in above-ground tanks subject to leakage from tanks include TSS, TDS, BOD5, COD, O&G, benzene, MBAS, metals, pH; and (c) transport of materials by a conveyor or front-end loader due to exposed materials and potential spills include TSS, TDS, BOD5, COD, O&G, benzene, MBAS, metals, pH.[6]

The foregoing minimal list of sources and contaminants pose a substantial risk to, and probable significant adverse environmental impact on, the underlying ground water system that comprises a critically important and publicly-valuable resource having the following fact-based attributes:

1. The ground water system underlying this site is an EPA-designated Sole Source Aquifer;[7]

2. King County Water District #90 (KCWD #90) operates and maintains a well field drawing from this Sole Source Aquifer to supply drinking water to its customers;[8]

3. The site of the proposed Lakeside Industries' Maple Valley Asphalt Facility (LIMVAF) lies within the Wellhead Protection Area for the KCWD #90 wells and the proposed asphalt facility poses a substantial risk thereto;[9] and

---

[6] *See* US EPA Industrial Stormwater Fact Sheet Series, EPA-833-F-06-019 (Table 1, December 2006; https://www3.epa.gov/npdes/pubs/sector_d_asphalt.pdf) - surface water runoff constituents associated with asphalt facilities.

[7] *See* US Environmental Protection Agency, *Sole Source Aquifers for Drinking Water* (https://www.epa.gov/dwssa **and** https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=9ebb047ba3ec41ada1877155fa31356b).

[8] *See* King County Water District #90, *2014 Wellhead Protection Plan* (August 2014; http://gmvuac.org/wp/wp-content/uploads/2018/04/KCWD-90_SKM_C65918041809260.pdf).

[9] *See* KCWD #90 Resolution No. 1041 (April 3, 2018; *see* fn 8, *supra*).

4. The Washington Department of Ecology has identified petroleum based contaminants in both the soil ***and the*** ground water at and underlying the LIMVAF site in excess of the Model Toxics Control Act (MTCA) cleanup standards.[10]

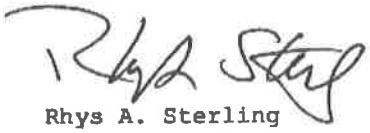
Conclusions

The foregoing facts should give King County pause and sufficiently substantial grounds on which to undertake a full environmental analysis and review of the proposed Lakeside Industries' Maple Valley Asphalt Facility, including and not limited to the preparation of an Environmental Impact Statement. Based on the significant facts set forth in the AES Report, as well as the undisputed attributes of the underlying ground water system, it must be observed that this particular site is wholly inappropriate for the construction and operation of an asphalt facility.[11]

Thank you for your consideration of the foregoing and my previous comment letters, and all attachments. Please contact me if you have any questions.

Very truly yours,

RHYS A. STERLING, P.E., J.D.



Rhys A. Sterling
Attorney at Law

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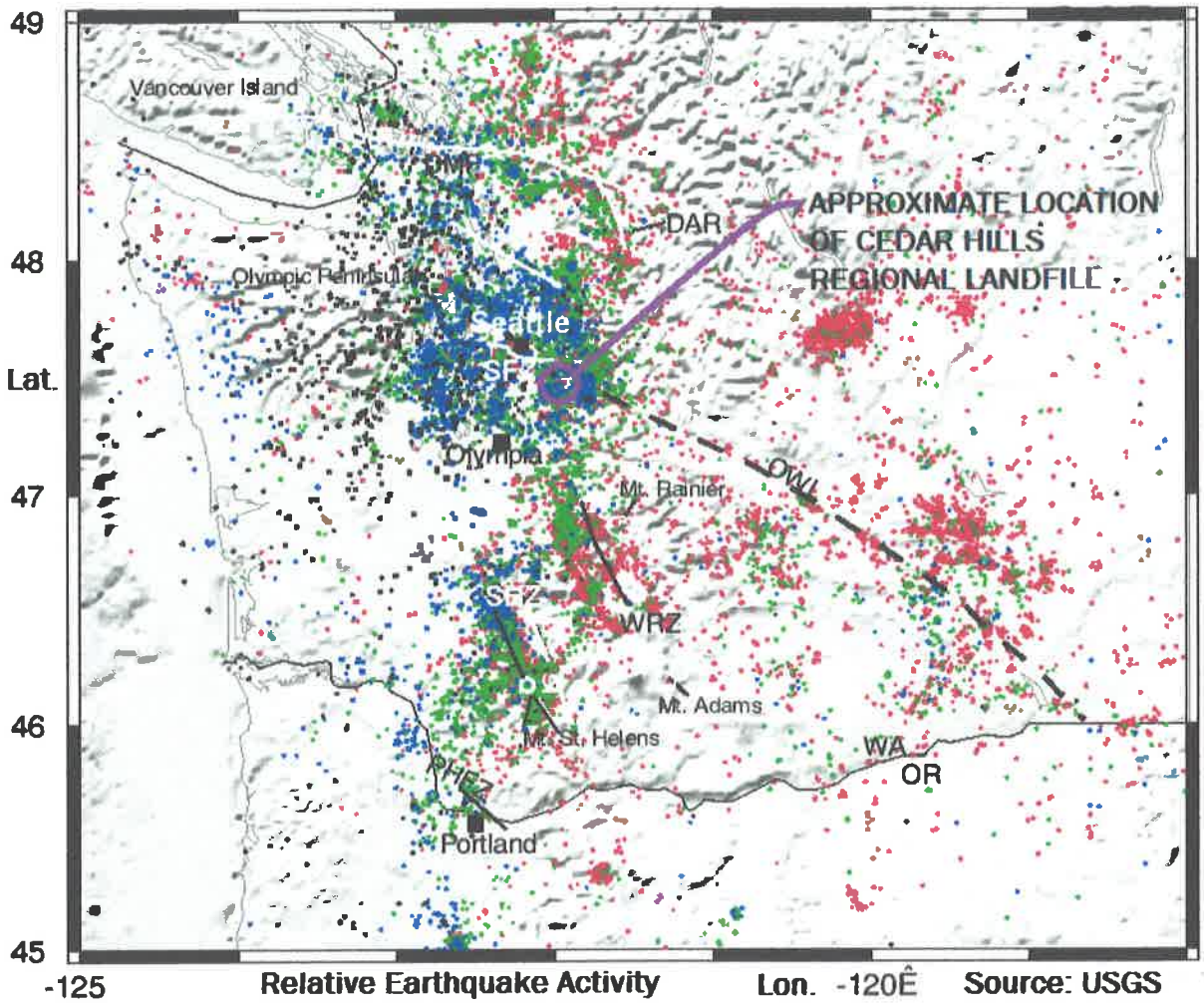
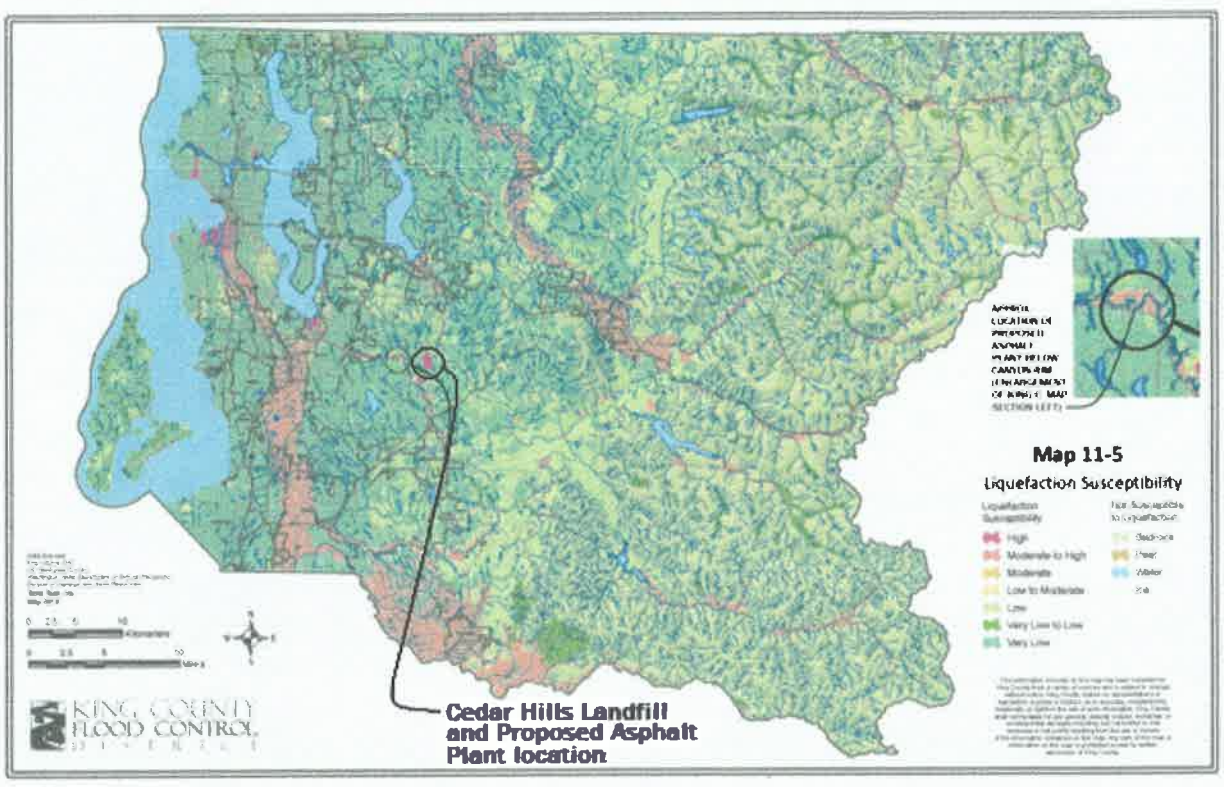
[10] *See* Washington Department of Ecology, Cleanup Site Details for King County Shops, ID# 9217 (https://fortress.wa.gov/ecy/tcpwebreporting/tcpreportviewer.aspx?id=csd&format=pdf&csid=9217).

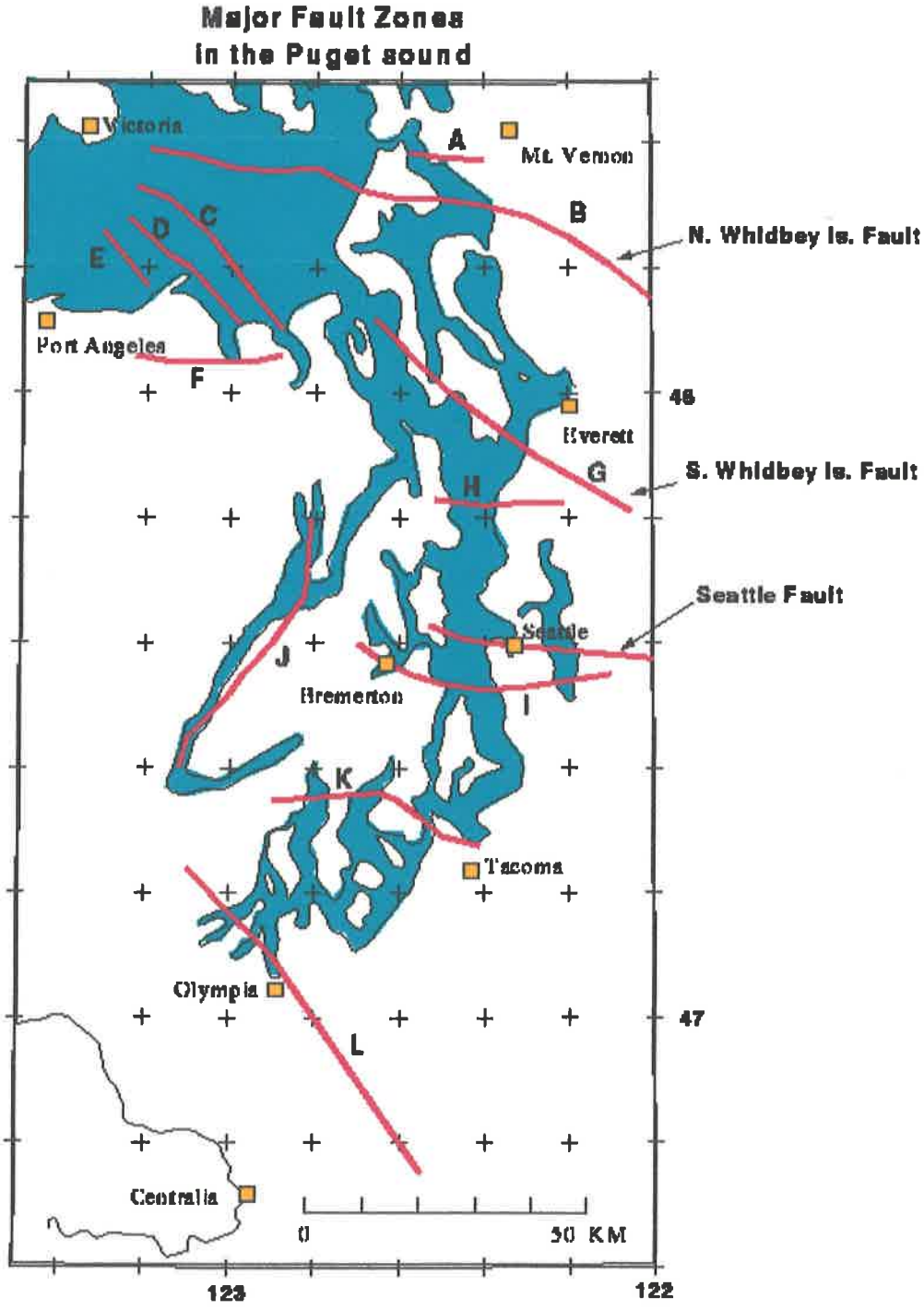
[11] However, even the preparation of a full EIS does not and will not afford any measure of relief in light of the absolute prohibition of locating a new industrial facility at this particular site under and pursuant to the King County Comprehensive Plan, Policy R-513. This prohibition is clear, express, and mandatory -- and cannot be ignored or in any way mitigated-away by King County. KCCP Policy R-513, in conjunction with and as applied pursuant to RCW 36.70A.120 and the Court of Appeals decision in *Concrete Nor'West v. Western Washington Growth Management Hearings Board*, 185 Wn. App. 745, 755-56, 342 P.3d 351, *review denied*, 183 Wn.2d 1009 (2015), as a matter of law absolutely prohibits the use of the proposed site for and as an asphalt facility - a new industrial use.



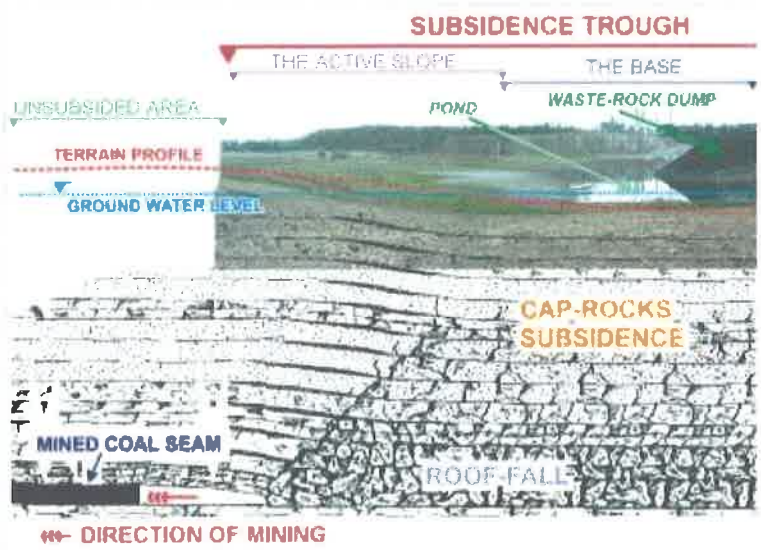
3/26/'19 Map 7: Earthquake magnitude and frequency. USGS available periodically updated regional map showing measured area specific earthquake data. Notice that the region surrounding approximate location of the CEDAR HILLS REGIONAL LAND FILL has a high density of many kinds of colored dots. There are areas east of the Cascade Mountains that show no colored dots, and thus would seemingly have a lower danger of earth displacement that could settle and/or part earth features, tear pit liners and damage equipment and buildings, and discharge pit liquid contents in a way that may contaminate a water supply supporting wildlife and human populations. Note red dot in center of circle (similar to Mount Rainier area, Mount Saint Helens area, etc.).



3/26/'19 Map 8: K.C. Liquefaction Susceptibility. King County Flood Control District Map 11-5 indicating Liquefaction Susceptibility (propensity to have damage due to soil movement and settling; much like a person sinking in quick sand during an earthquake). The Cedar River Canyon area has a moderate to high rating. The Cedar Hills Regional Land Fill has a red color high rating (the charts highest rating in terms of danger).



MAP 9: Puget Sound Major Fault Lines. Common map projected locations of major fault lines in and about Puget Sound Basin Region. The fault line rising out of Bremerton seems to stop somewhere around Newcastle, while the Seattle Fault line passes toward Issaquah. The fault lines proximate to 196th Ave/ SE/Jones Road and SR-169 are not indicated. Source: Internet search for fault line maps of the Puget Sound basin.



3/26/'19 FIGURE 2: Coal Mine Subsidence. Mechanism of collapsing coal mine workings and complimentary "roof - fall" and "cap rocks subsidence". Such stretching of surface layers can pull and stretch pond and/or refuse pit liners beyond yield point limits and tear them, thus causing them to leak. Source: **InSAR and POLinSAR for Land Subsidence Monitoring - A User Perspective - Scientific Figure on ResearchGate. Available from: https://www.researchgate.net/figure/ Mine-subsidence-caused-by-underground-mechanized-longwall-coal-mining_fig1_234550472 [accessed 20 Jan, 2019])**

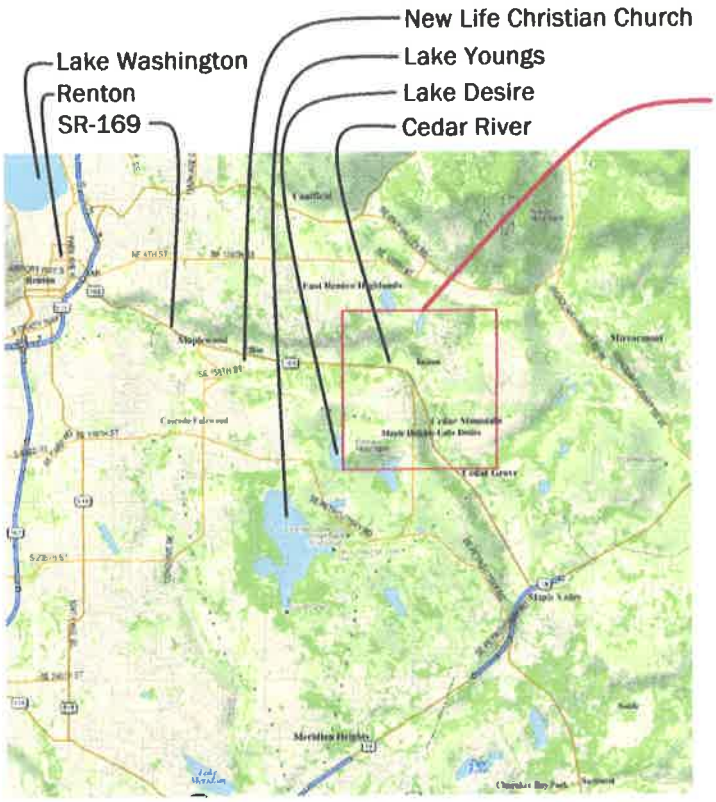
Photo 1: CEDAR MNT. COAL MINERS (GOOGLE: Cedar Mountain Coal Mine)

3/26/'19 Photo 4: MINE COLLAPSE UNDER FIELD. ISSUE OF SUBSIDENCE
(source: Wikipedia photos in geological feature "Subsidence"). Can Landfill liners handle this?

3/26/'19 Photo 5: MINE COLLAPSE UNDER MOUNTAIN. ISSUE OF SUBSIDENCE
(source: Wikipedia photos in geological feature "Subsidence").

3/26/'19 Photo 6: MINE COLLAPSE UNDER SUBURB. ISSUE OF SUBSIDENCE (source: Wikipedia photos in geological feature "Subsidence"). Can Landfill handle this?

3/26/'19 Map 2: Photo 7: Liquefaction at Niigata Japan 1964 (source: WIKIPEDIA on subject Liquefaction). Liquefaction danger increases with soil fill, water, & disturbances (vibration, earthquakes, etc.).



MAP 1: GENERAL LOCATION & RENTON (CEDAR MOUNTAIN, CEDAR MOUNTAIN COAL MINE, INDIAN COAL MINE, CEDAR HILLS REGIONAL LAND FILL, AND MANY CEDAR RIVER PROXIMATE INFERRED FAULT LINES)

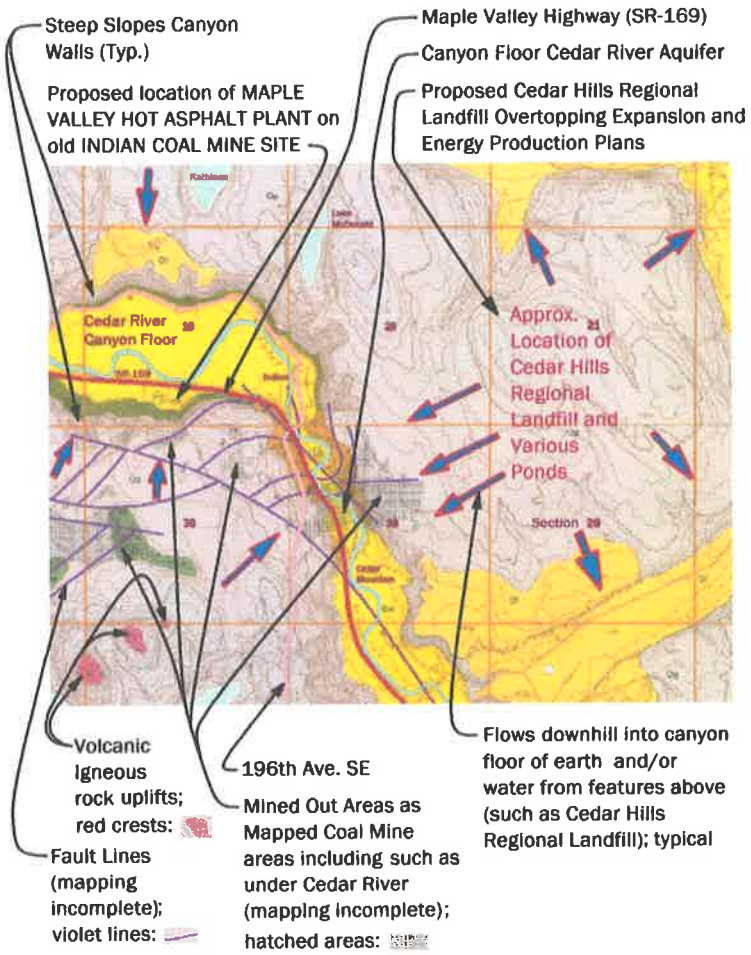
MAP 2: Cedar Mountain Neighborhoods and Drainage Into The Cedar River (and Cedar River Canyon). Note CHRLF.

Cedar River is indicated in dark blue:
Streams are indicated in light blue:
Significant State Routes & Collectors:

The National Map
US Topo

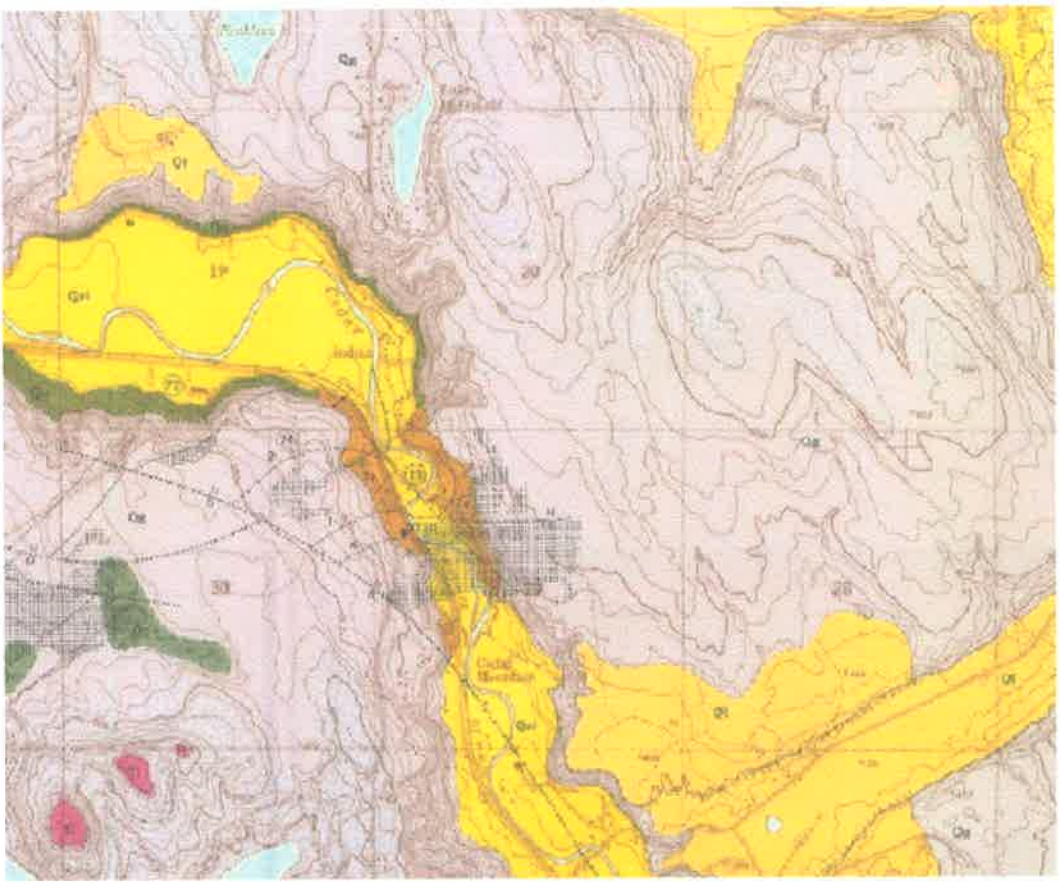
(note no seasonal and non-seasonal streams differentiation as scale is too small and purpose is to show direction of flow)

Source: Section from Map "Maple Valley Quadrangle, Washington-King Co. 7.5 Minute Series", produced by the United States Geological Survey, Imagery: NAIP, August 2011; NSN 7643016402164; reference section by Hendrick W. Haynes (Reworked to enhance useful features. Details omitted for clarity. For reference idea puposes only. 2019APR17



MAP 3: Geological Contour Map of Sections 19, 20, 21, 28, and 29; Showing Inferred Fault Lines, Mined Out Coal Areas, Proximity of CHRLF and Proposed MV Asphalt Plant (Indian Coal Mine Site) and Cedar River Canyon and Cedar River Aquifer (note approx. flow directions indicated by red and blue arrows).

Source: "GEOLOGIC MAP OF THE CUMBERLAND, HOBART AND MAPLE VALLEY QUADRANGLES, KING COUNTY, WASHINGTON"; Scale: 1:24,000; Countour Interval 20 and 25 feet. By the United States Department Of The Interior Geologic Survey, Prepared In Cooperation With The Washington Division of Mines and Geology. Professional Paper 624, Plate 1; Geology by A.A. Wanek & J.D. Vine: Assisted By P.J. Pattee, 1959; & by J.D. Vine & H.D. Gower, 1960-61; Assisted By C. L . Rice, 1960 . Material Redacted & Enhanced for Ideas Only HWH 2019APR17.



MAP 4: MAP OF INFERRED FAULTS AND MINED OUT COAL MINES (MINE INDICATIONS NOT A COMPLETE OR EXHAUSTIVE REPRESENTATION OF ALL AREA HISTORY). LISTING INCOMPLETE.

Source: "GEOLOGIC MAP OF THE CUMBERLAND, HOBART AND MAPLE VALLEY QUADRANGLES, KING COUNTY, WASHINGTON"; Scale: 1:24,000; Countour Interval 20 and 25 feet. By the United States Department Of The Interior Geologic Survey, Prepared In Cooperation With The Washington Division of Mines and Geology. Professional Paper 624, Plate 1; Geology by A.A. Wanek & J.D. Vine: Assisted By P.J. Pattee, 1959; & by J.D. Vine & H.D. Gower, 1960-61; Assisted By C. L. Rice, 1960. Material Redacted & Enhanced for Ideas Only HWH 2019APR17.

RPC meeting April 17, 2019

Hello, I am here today in support of passing the amendments that have been sent to this committee. I believe these amendments are a good first step in showing a commitment to the citizens, and the environment that this landfill affects daily.

As I continue to learn more about the operations at Cedar Hill Landfill and its detrimental effects to our environment past/present/and future I feel an increased responsibility to state that we must not go forward with the recommended alternative. It is difficult to understand how the leadership at the solid waste division can in good conscience say it is the best environmental alternative when all facts demonstrate just the opposite. This landfill has been and will continue to be a liability for King County and our environment. To continue to increase its capacity will further that liability.

There are two other alternatives:

1. Waste Export which has proven to be a viable alternative for the city of Seattle and Snohomish County with substantial cost savings on their recent contracts. Those landfills are in arid climates thus greatly reducing leachate and methane production. They have no wetlands or streams, no regional aquafers directly below them, not near communities and schools, and have energy plants to convert the methane to energy.
2. We also have the option of waste to energy that has proven to be the choice of many cities throughout the world. We need policies that will protect our environment and human health.

   This alternative is poor policy and should not move forward. Please provide the leadership that we can all be grateful for.

Thank you,

Leslie Morgan

greenfirs@msn.com

Closure of Cedar Hills Regional Landfill

To whom it may concern

I have lived in Maple Hills for almost 15 years. When we purchased our home in 2004, I was a bit concerned about the proximity of our property (our property ends at the fence line of the landfill) to Cedar Hills landfill and Cedar Grove Composting. But after doing some research, making some phone calls and recalling the previous class action lawsuits I felt comfortable in the purchase of our home. Fast forward to today and I'm starting to wonder if I made the right decision.

Constant noise, odors and trash in my yard is not what I pictured so many years ago. It seems that the past few years these noise and odors have increased. To be fair not all noise and odors come from the landfill, many also come from Cedar Grove Composting. Solid waste has been promising for years that the landfill will close on this date and then this date and so on and so on. Many years ago, I took the tour of the landfill that was offered by solid waste and thought that they did a good job. It was pointed out during the tour that they have a bird control program in place, have normal working hours that respect the surrounding neighborhoods and every night the trash is covered with a layer of dirt. With the number of eagles in my yard eating trash apparently the bird control program has changed. I often hear heavy equipment when I leave for work at 5:25 AM and I now understand that the trash is only covered with a tarp at night.

Here are my current issues with the landfill.

The trash being covered with a tarp at night gives the eagles a free meal in the morning when yesterday's trash is uncovered. I imagine that the trash being uncovered in the morning would release a large amount of odor. Additionally, covering with a tarp instead of covering with dirt would increase rodents and other scavengers. I have also been told that veterinary offices dispose of euthanized deceased pets into the landfill. These animal carcasses may contain sodium pentobarbital. Scavenger animals such as eagles can be poisoned or killed if they eat one of these animal carcasses. Secondary poisoning can occur if other scavengers or domesticated dogs then eat the eagle carcass.

Picking up trash in my yard is a weekly occurrence. Just over the weekend I picked up almost 20 pieces of garbage from my property all of which was brought on to my property by eagles, other birds and possibly other wildlife. My dog spends the day outside and is constantly finding trash, bones and meat scraps. Fortunately, she has not gotten sick or died, but maybe one of these days her luck will run out.

Being that we have a larger wooded lot my kids enjoy playing in our woods. Some of the items that are being dropped on our property could be hazardous to their health. My neighbor has found medical waste (bag of human blood) on his property and just recently found several more bags. Medical waste being sent to the landfill and then dropped into our neighborhood is a threat to public health, this should not be happening.

I believe that the Cedar Hills Landfill needs to be closed and a waste to energy plant should be constructed. Eventually the landfill will contaminate the ground water or some other environmental disaster. Burying our trash does not seem like the right thing to do. Taking our trash to someone else's backyard does not seem right either. I believe that Spokane has had a waste to energy plant since the

early 90s and seems to be a success. Please do the responsible thing and do not allow Cedar Hills landfill to continue into the future.

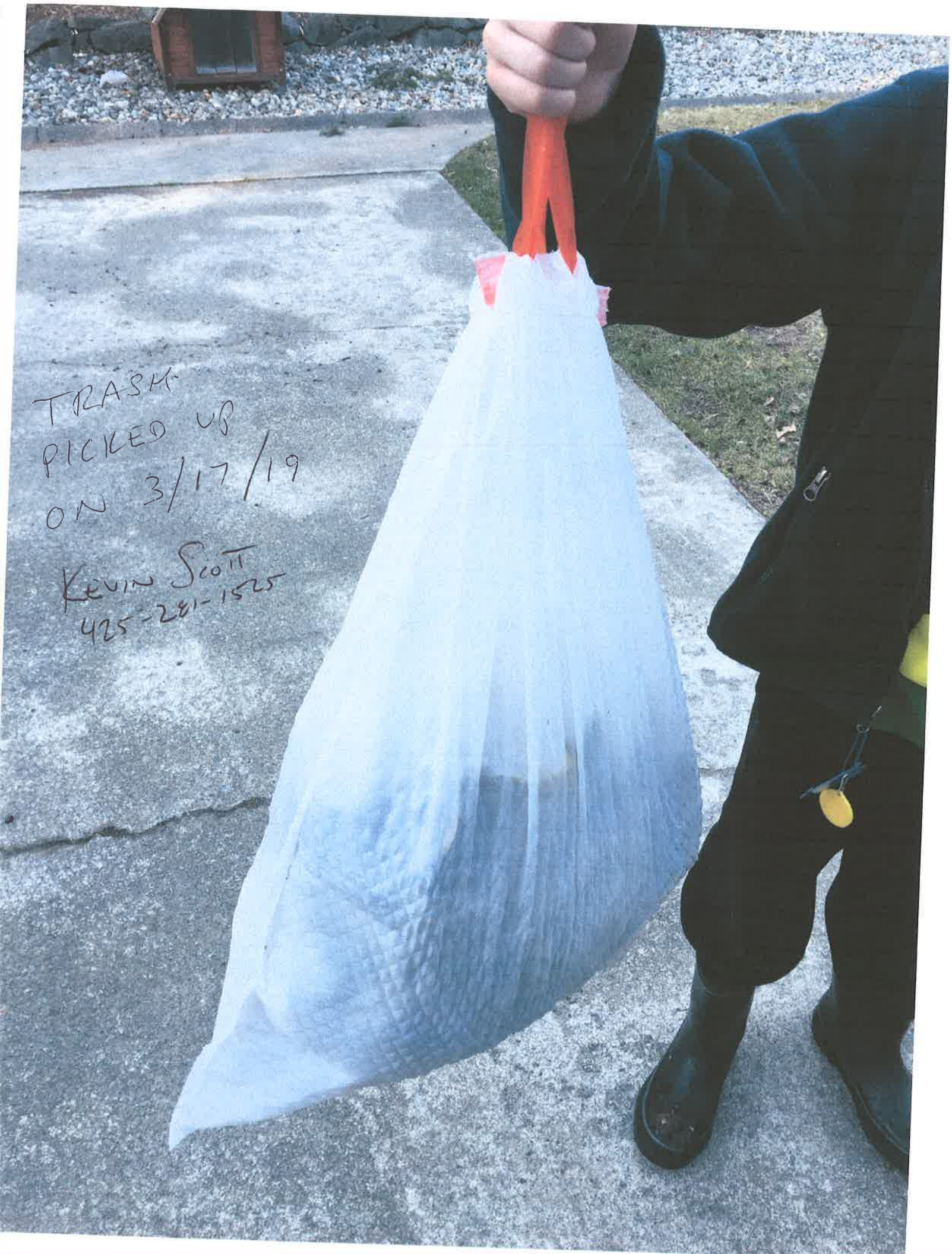
Thank you,
Kevin Scott
Renton, WA.
425-281-1525

MISC. TRASH IN MY YARD.

KEVIN SCOTT 425-281-1525

MISC. TRASH IN MY YARD.

KEVIN SCOTT 425-281-1525


TRASH
PICKED UP
ON 3/17/19
KEVIN SCOTT
425-281-1525

TRASH PICKED UP ON 4/14/19

KEVIN SCOTT 425-281-1525

FOUND IN YARD ON 4/16/19

KEVIN SCOTT 425-281-1525