

**Attn:** John & Mary Smith / Jean Jones  
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## The Home Report, LLC

Real Estate Inspection Service



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# Sample Inspection Report

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**Inspection Date:** 1/12/2012  
**Document #:** 12-039  
**Client:** John and Mary Smith  
**Location:** 1234 NW Main Street, Seattle, WA  
**Realty Agent and Co.:** Jean Jones - Seattle Real Estate Co.  
**Inspector:** Donald Lawn, WA State Lic. # 320

## Introduction

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**Purchasing property involves risk.** The Home Report, LLC's purpose in property inspections is to help reduce the risk associated with the purchase of a structure by supplying our professional opinion on the condition of an inspected property and its systems. We endeavor to provide a thorough inspection and quality report that can assist in making real estate purchase decisions. We do so to the best of our ability in the time allotted. The client acknowledges that The Home Report, LLC cannot eliminate all uncertainty, nor assume the risks associated with property purchase.

**The Home Report, LLC is not an insurance firm and should not be misconstrued as such.** Our reports do not substitute for, or serve as warranties or guarantees of any kind. Home warranties can be purchased separately from insuring firms that provide this service. The client agrees that The Home Report, LLC shall not be held liable for the cost of repairing any defects or deficiencies, whether present at the time of the inspection or arising in the future, or for any consequential property damage or bodily injury of any kind.

**Areas that are concealed, hidden or inaccessible to view are not covered by this inspection.** Our procedures involve non-invasive investigation and non-destructive testing. The information and comments contained herein are based upon a visual inspection only. We inspect the aspects of the structure that can be viewed without dismantling or disfiguring the structure and without moving furniture and interior furnishings. The client acknowledges that areas not open to viewing may have hidden defects or damage not perceived during this inspection, and that The Home Report, LLC is not liable for these conditions.

**The Home Report, LLC's inspections are not inspections for city / local code compliance for new or older homes.** During the process of being built, new structures are inspected for code compliance by municipal inspectors. Framing is open at this time and conditions can be fully viewed. Framing is not open for viewing when we inspect completed homes, and for this reason we cannot provide the in-depth information given by municipal inspectors. All houses fall out of code compliance soon after being built, as the codes continually change and advance. The national codes are augmented at least every three years for all of the varying disciplines. Municipalities can choose to adopt and phase in sections of the codes on their own timetables. There are no requirements to bring older homes into compliance. If there were, people would have to rebuild their homes every couple of years to keep up with changes in Plumbing, Electrical, HVAC, Foundation, Framing and Energy requirements. The Home Report, LLC inspects for conditions that demonstrate good building practice and sound functionality. The client acknowledges it is unrealistic to expect aging structures to reflect the newest technologies in building or to comply with current codes.

**Items that are underlined and italicized** in this report are considered to be an urgent concern of this inspection that may constitute a dangerous or life-threatening condition and requires immediate attention. Please note them specifically and take action on these conditions as soon as possible.

**Paragraphs with bold headings** at the end of each section give further background information on a comment that was made regarding conditions at the property.

Any repairs suggested in this report should be estimated and performed by qualified and licensed contractors/individuals.

## Inspection Summary Comments

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This narrative **Inspection Report** should be used in conjunction with the corresponding **Inspection Report Photos** document for this property to determine the most complete explanation of the conditions at this structure.

This list of summary comments reflects a portion of the issues noted in this inspection report. Please be aware that these are only a partial explanation of what may be more serious conditions at this property and should not be used solely in lieu of the more thorough explanations of the conditions discovered at this structure which are mentioned in the body of this report. For more detailed information on any of the following topics, view the appropriate section.

Basically the structure is in fair condition.

The foundation shows noticeable settling and translation of movement into the upper structure, although there was no indication of current settling and movement since there has been no obvious cracking of the brick work and no repeat cracking at interior locations at walls, doors and windows. The foundation could use attention at the interior of the crawl space, as mentioned in the report.

The exterior brick work is generally in good condition but was installed in an unusual manner and its supports were not visible, as it runs down below ground level. There is some attention that could be given at some of the brick patio at the front entry as well as repainting and sealing the windows around the perimeter and then doing some reglazing at these areas.

The roof is only in fair to poor condition, having only a couple of years at the south side and 3 to 5 years at the north side. There was no venting put in the ridge when this was installed. There is substantial moss buildup that could be cleaned. The chimney could use a cap at two flues. This layer of roofing may be desired to be removed so as not to add an additional load to the attic renovation which did not show collar support or ridge support.

The interior is generally in fair, but worn condition. It also shows settling. There is noticeable attention needed at the windows around the perimeter since many of these are not latched. There would need to be a substantial cleaning with additional cosmetic improvements.

The interior systems, plumbing, electric and heating, are in fair condition. The plumbing system shows a substantial amount of older galvanized piping for the pressurized water system, some of which is blocked and not allowing water flow at the upper second floor bath sink and will need to be corrected. This drain system should be scoped, as there is a possibility of backup that is occurring, as evidenced from water penetration in the basement crawl space.

The electrical system is only in fair condition. I would recommend that an electrician be brought in to clean up the main panel as well as clean up the wiring at the interior of the basement, at the deteriorated knob and tube locations and other areas to be sure that it is safely operational.

The furnace has been very recently replaced but is located in a bedroom and cannot be used at this location or needs to have a separation wall or a different use of this interior room.

## Building Site

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<b>Driveway:</b>	concrete
<b>Retaining walls:</b>	not visible
<b>Walkways:</b>	concrete
<b>Fencing:</b>	wood, fair/good condition
<b>Garage/Carport:</b>	two car, detached
<b>Surrounding grounds:</b>	clean, maintained in good condition
<b>Approximate age:</b>	96 years [ 1916 ]
<b>Comments:</b>	

The inspected structure is a single family dwelling located on a moderately sloping corner lot, with the entry to the structure facing toward the north and driveway access from the southwest off of a shared driveway leading to a parking pad at the southeast of the property.

The grounds around the structure are generally clean and have been well landscaped and maintained.

There are dog droppings all over the east yard that would need to be thoroughly cleaned up.

There has been some noticeable settling and cracking of the driveway. This has broken up at numerous areas and may at some point be desired to be re-poured. This settling is caused by the construction of the concrete over soil that was disturbed during the construction process and was not fully re-compacted before the weight of the concrete was applied. Over the years this ground compacts and causes the concrete to settle and crack. This is a common occurrence and is not necessarily an indication of structural problems with the foundation of the house. More significant cracks [over 3/4"] can be considered a tripping hazard and may be desired to be patched, ground down or repaired.

There is substantial settling at the parking pad at the southeast corner. This backs up to a retained area adjacent to the neighbor to the east and some buildings at this area. This retaining wall is completely encased in ivy and blackberry brambles and was hardly able to be seen. Therefore it was not possible to determine at this inspection what the condition was of the retaining wall, but it does show that the area at the parking space above has settled noticeably, cracked this concrete pad, and will need attention at some point to correct this condition. I would recommend getting further information from a retaining wall contractor who would be able to give more information, as well as information about whose responsibility this wall is since it is the intersection of three different properties. These brambles will need to be removed to gain access.

### **Older Homes**

It should be noted that older structures may contain numerous construction products that may have toxic material content to varying degrees. This can include asbestos content in the gypsum wall covering and plastering used for interior surfacing of the walls, vinyl asbestos interior floor coverings and vinyl tiles, roof felt and exterior shingles, sections of interior appliances[ie range and oven], acoustic ceiling tile, acoustic blown-on ceiling surfaces and other miscellaneous items in the structure.

Lead-in-water contamination is also a concern most noticeably in copper potable water supply systems installed before approximately 1980 in Seattle, 1985 in King County and 1988 in the remainder of the state. Previous to this time, lead-in solder was allowable. Pre-use flushing or water filters would be recommended as ways to reduce this type of contaminant.

There is also a concern for the lead contained in lead based paints used as wall coverings at the interior and exterior of older structures. Lead-based paint, which has been shown to be the cause of serious health problems, was a common substance in buildings constructed before 1978. Under the Environmental Protection Agency's Renovation, Repair, and Painting (RRP) Rule, contractors and painters are required to follow specified lead safety work practices and to provide lead safety information to owners and tenants before they start renovation, repair or painting work on pre-1978 residential housing and child-occupied facilities. On October 1, 2010, the Environmental Protection Agency began enforcing a new portion of the RRP Rule that requires contractors and painters to obtain lead paint safety certification before working on pre-1978 buildings covered by the rule. To become certified, contractors and painters must attend a training course provided or approved by the EPA that provides instruction on how to work safely with lead-based paint. Owners of rental housing and maintenance workers in multi-family housing (including condominiums) must follow the requirements of the RRP Rule. However, this rule does not apply to owners working on their own property (without tenants), and it also does not apply to "minor" maintenance or repair activities.

Associations and individual owners with pre-1978 homes or condominiums must be careful when hiring contractors and painters. They should ask what specific lead safety work practices will be used, and ask to see the contractor's or painter's EPA certificate.

To determine the possible presence of these materials requires more thorough, quantitative investigation than what is provided by The Home Report, LLC from this inspection and report. Additional testing by firms that perform these services may be desired. If there is a concern about these materials or plans for any substantive remodeling or renovation, I would recommend getting further information on this subject and having laboratory tests of the suspect materials. For more information and booklets on these subjects, you can contact these agencies:

**Washington State Department of Labor and Industries-Health/Safety** 1-800-423-7233

**EPA** 206-553-2770 or <http://www.epa.gov/region10/>

**Puget Sound Clean Air Agency** 206-343-8800 or [www.pscleanair.org](http://www.pscleanair.org)

**Seattle Public Utilities** 206-684-7980

**Lead Inspection and Risk Assessment Info:** 1-800-424-LEAD

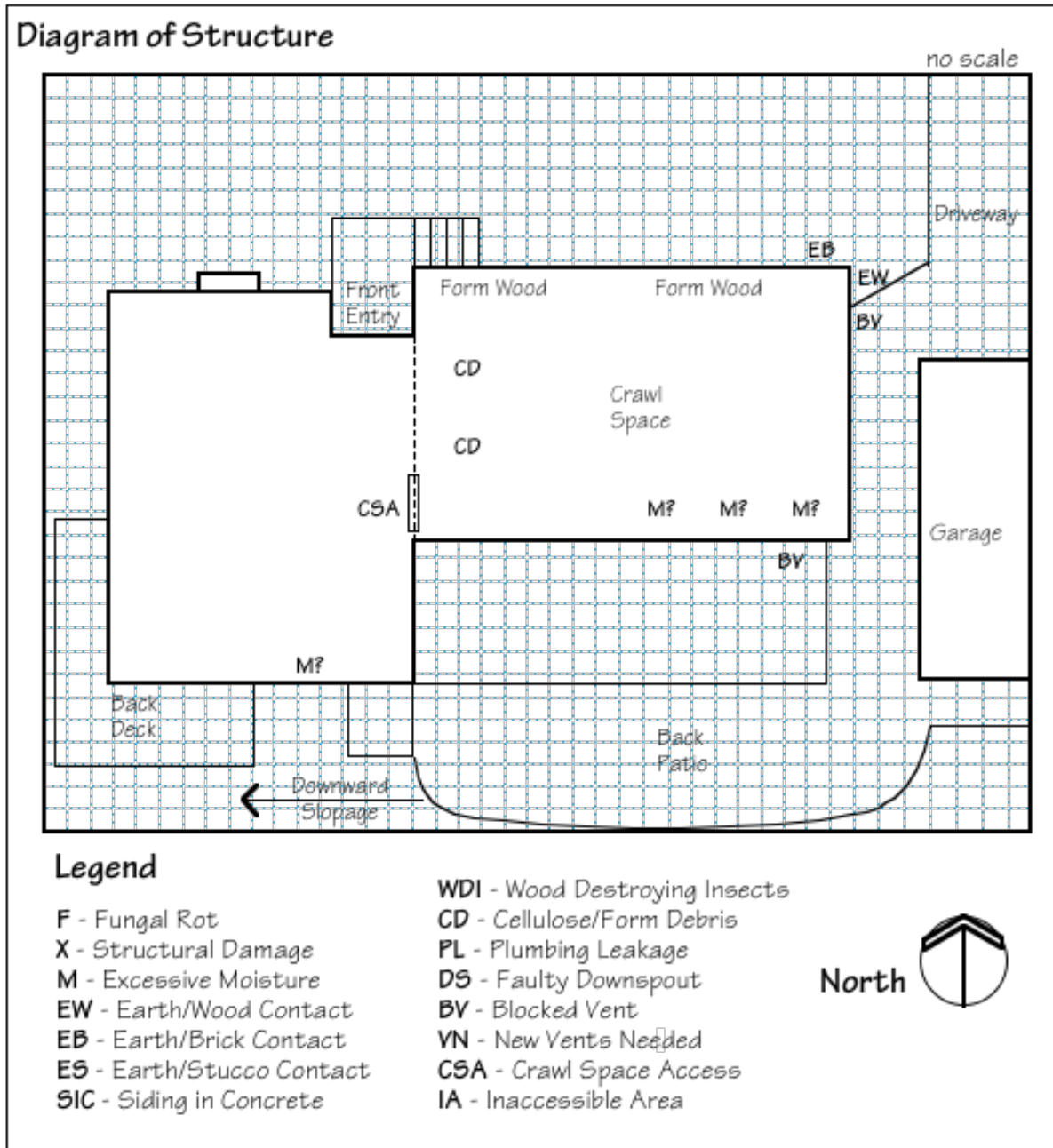
**Lead Paint Pamphlet:** [www.epa.gov/lead/pubs/renovaterightbrochure.pdf](http://www.epa.gov/lead/pubs/renovaterightbrochure.pdf), [www.epa.gov/lead/pubs/renovation.htm](http://www.epa.gov/lead/pubs/renovation.htm)

### **Testing Labs**

**NVL Labs** 206-547-0100, 4708 Aurora Ave North, Seattle, WA 1-2 Tablespoons \$35.00 24 hours for verbal/FAX, \$60.00 for one hour turnaround

**NorthWest Labs** 206-763-6252 241 S. Holden, Seattle, WA 1-2 Tablespoons \$35.00 24 hours for verbal/FAX, 2-3 days for report

# Diagram of Structure



## Exterior

<b>Exterior finish:</b>	brick facing
<b>Condition:</b>	overall fair/good condition, minor deterioration
<b>Deck/Patio:</b>	brick porch
<b>Wood clearance from ground:</b>	0-6 inches, brick buried in soil
<b>Insulation plugs:</b>	no
<b>Comments:</b>	

The exterior consists of brick facing around the entire exterior perimeter. This structure originally was constructed as a wood framed home with 4 inch bevel cedar siding around the perimeter. It appears that some time in the 1940s this structure was resurfaced with brick veneer around the entire perimeter. Generally brick veneer, being a heavy load, rests on the concrete perimeter foundation, but since this brick is on the outside of the foundation it most likely rests on some other type of footing or steel angle brace foundation lip around the perimeter. None of this was visible as this brick is buried in the dirt all the way around the perimeter. This appears to be buried well below the foundation line, at least at areas that were able to be more adequately viewed.

Brick is a very brittle veneer and when applied over the stud framing and sheathing at the exterior surface of the structure, unlike wood siding, will indicate foundation settling very quickly by cracking along the mortar lines if there is any movement or settling of the foundation. This brick shows no mortar line cracking and indicates no movement of the foundation. This brick showed no significant deterioration. The mortar lines were quite clean. There is a little bit of swelling and separation of some of the lintels at the windows but this was not too significant and did not indicate any necessary attention. It is possible that this brick was applied long after initial settling occurred and therefore does not reflect some of the original settling of this foundation as noted in the "Foundation" section of this report.

There were no visible weep holes around the perimeter, mainly because this structure was faced in an unusual, possibly non-professional, manner.

I would recommend caulking the areas around all the window trims where they butt into the brick, as there are numerous gaps at these areas that can allow for water penetration.

Many of the window sills, especially at the south and west sides, show substantially peeled paint with exposed bare wood and would need to be thoroughly re-prepared and repainted.

There is some significant mortar loss at the brick patio entry door at the north side. This would need to be re-tuck-pointed and sealed at this floor section.

The planters at the front entry have rusted steel pans. These most likely are leaking and would need to be replaced at some point in the future or be resealed again.

At the west porch there has been loss of veneer at the two doors that enter into the bedroom at this location. This veneer has been almost fully pulled off at both of these and then repainted but this shows lack of protection at this exterior. The thresholds at these doors show minor moisture rot due to the fact that this deck appears to have been built up with brick pavers that raise the line of water accumulation.

There is water absorption and beginnings of moisture rot at the east porch wood steps.

There is earth to brick contact at the west and northwest portions of the structure.

There is ivy overgrowth at the brick work at the southeast porch.

### **Brick Weep Holes**

Weep holes are inserted into the bottom course of brick and stone veneer exteriors to allow minor moisture that seeps through the facing to drain back to the exterior. These are usually located approximately 4 to 6 feet apart at the base course of brick. Weep holes are intentionally left open with a little gap at the mortar to allow any condensate or moisture buildup behind the brick to drain out. Often homeowners seal up this crack, thinking that it is an imperfection, and in turn prevent this water seepage. I would recommend that these weep holes be left open, or reopened if sealed, so that they can drain properly if necessary. The lack of these holes usually indicate a non-professional installation of the facing. Installing them after the application of the brick can be done, but should be done by a masonry contractor so as not to penetrate the vapor barrier behind which would allow moisture to drain toward the interior.

### **Planters at Brick walls**

Planters butted up to exterior walls can allow moisture penetration through the brick facing into the rim joists. This occurs since most planters have little or no interior sealant to prevent water migration, and deterioration of the felt vapor barrier behind the brick at the house wall is insufficient for protection. It is best to be sure that the dirt does not go too far up on this type of enclosure so that the water table will stay well below the foundation level and not the joist level. If this is not possible there should be a solid waterproof liner installed at the interior of the planter with adequate drainage to the ground.

### **Earth/Brick Facing Contact**

Care should be taken to keep the beauty bark, earth and gravel at least 2-4" from the bottom of the lowest course of brick facing. This brick is usually resting on the foundation but it backs up to the wood sill plate and the rim joists for the floor framing. When dirt is above the foundation/brick line and over the brick water can penetrate through the lowest course of brick at the mortar line and gain access to the wood behind. It is best to leave at least a 2-4 inch gap between the lowest course of brick mortar line at the foundation and the ground in order to prevent water from penetrating into these areas.

### **Vegetation/Ivy Contact**

Ivy and other climbing types of vegetation can allow for moisture to be drawn into the structure by allowing vines to penetrate under the wood siding as well as by holding moisture against the exterior for longer periods. Roots also penetrate, break the paint barrier and allow damage and moisture penetration. Even heavy vegetation overgrowth around the exterior is best cut back from the siding. It is recommended that any ivy overgrowth at the wood siding be cut back and maintained away from the wood. Ivy overgrowth at brick is more benign as long as it does not get into the wood trims. But it does leave root markings at the brick and mortar that can be unsightly. Ivy can also be a pathway for rodent access into the house and should be trimmed away from any potential entry points.

# Roof

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<b>Slope (Apr.):</b>	8/12
<b>Type:</b>	asphalt/composition shingle, hot tar built-up with gravel
<b>Condition:</b>	overall poor/fair condition, moss and lichen, cracked and brittle, deteriorated, degranulation
<b>No. of layers:</b>	one layer
<b>Air exchange:</b>	roof vents, inadequate, minimal venting
<b>Eaves and soffits:</b>	N/A
<b>Gutters:</b>	extruded aluminum, leaf and tree debris, partially blocked
<b>Flashing and valleys:</b>	fair condition, loose
<b>Chimney:</b>	masonry, needs moderate repair
<b>Comments:</b>	

The roof consists of a single layer of 3-tab composition roofing. There was a full tear-off in the past and a new layer of plywood, with a new layer of roofing. This appears to be 10 to 15 years of age and is showing a substantial amount of wear. The southwest quadrant shows ridging and cracking at a number of pieces that can allow for leakage in the near future. The other areas of the perimeter show substantial moss buildup as well as some degranulation and deterioration. I would estimate that the south part of this roof has about 1 to 2 years of remaining life and the north part about 3 to 5 years. The porch roof at the southeast is very deteriorated, has been patched, has a substantial amount of moss build-up and only has a couple of years of remaining life as well. Basically this roof will need to be replaced in the near future.

The chimney could use a flue cap. This is a wide open chimney at two flues and allows for substantial water penetration.

Some of the flashing at perimeter locations, especially at the bottoms of the corners where the valleys empty, could use better attention.

There are no ridge vents installed in this roof. This is a cathedral ceiling throughout the interior and requires ridge vents, but nothing was installed when this roof was replaced. I would recommend that ridge vents be installed at all locations.

This roof was accessed and traversed during the inspection process.

## **Moss and Lichen**

There is moss and lichen growing on the roof. The presence of moss will significantly accelerate the deterioration of a roofing material. Moss grows under the successive course lines of the roofing, lifting and spreading the material. When it rains, this moss acts like a sponge to retain the moisture on the roof and allows it to seep into and under the roofing and moisten the vapor barrier and even the sheathing. Under these conditions the roof is much slower to dry and retains a more substantial amount of moisture which aids aging. I would recommend this roof be cleaned and treated with a moss inhibitor. Zinc or galvanized strips at the peak and ridge lines can also be effective to prevent additional build-up of moss afterwards. The minerals in these materials leach onto the roof and prevent moss from growing.

Pressure washing a composition roof can damage the roofing material by removing the protective granular surface and should never be done. Pressure washing a cedar roof can also damage the roofing shake/shingle by peeling off the surface material. Saturation with moss inhibitor a number of times or milder compressed air cleaning is recommended before a moss inhibitor is applied to avoid damaging the cedar.

## **Gloeocapsa**

The darkening and roof discoloration of the roofing material is due to a blue-green algae known as gloeocapsa that occurs in moist climates usually at the north or shaded sides of the roof. Despite its poor appearance, it will not affect the durability or lifespan of the roofing material. This discoloration is difficult to remove, but it can be lightened with a weak solution of chlorine bleach, water and TSP lightly applied to the roof. There may also be commercial products available that will provide relief from this discoloration. Zinc or galvanized strips at the peak and ridge lines can also be effective to prevent additional build-up of algae. The minerals in these materials leach onto the roof and prevent algae from growing.

## **Degranulation**

Degranulation of asphalt composition style roofing material refers to the loss of the small aggregate pebble surface that is applied to the roofing during manufacturing. This aggregate material, when present, reflects sunlight and protects the asphalt impregnated felt roofing from being broken down by the ultraviolet radiation. Tar is susceptible to radiation degradation, and when covered with this aggregate is protected. As this granular surface deteriorates, it exposes the underlying layer of roofing to sunlight and accelerates the eventual failure of the roof.

## **Flue Cap**

There is a substantial amount of water that can penetrate down the open chimney flue during heavy rains. This can cause rusting and deterioration of the steel damper and steel lintels in the fireplace. It can also be a cause for efflorescence[white salts] build-up on the brick and mortar. Lack of any sort of flue enclosure can also allow for birds to build nests in upper chimney locations which will cause blockage and back-up of carbon monoxide if the chimney is used with a gas, oil or solid wood burning appliance. Although a flue cap is not

required by code, I would recommend as a maintenance suggestion that one be attached at the flue extension at the top of the chimney in order to prevent moisture penetration or blockage from occurring in the future. Flue caps are especially helpful for maintenance of an oil furnace flue.

### **Overhanging Trees**

There are overhanging trees at the perimeter of the property. Overhanging trees require more maintenance at the structure due to the fact that the branches can impact the structure and/or scratch off the painted surface of siding or scratch through the roofing. Also, tree debris builds up at the roof surfaces and gutters so that they need to be cleaned periodically.

If some of the overhanging trees are in contact with the structure, or if there is shrubbery or wisteria in contact with the structure, this can allow for rodent access to the roof, which eventually allows rodent access into the interior at the attic. Cutting back these locations so that there is no ability for rodents to gain access onto the structure is recommended wherever possible.

## **Downspouts and Drainage**

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**Driveway drain:** N/A  
**Downspouts:** aluminum, secure  
**Downspout drainage:** perimeter drains connected  
**Comments:**

There is a new downspout stub at the northeast corner. I would recommend gaining information from the owner as to where these are directed to. The downspouts have otherwise been properly tied into the perimeter drain stubs at the exterior of the structure and are properly draining the water away from the structure.

### **Water Redirection**

Drainblocks and properly functioning perimeter drains are important to the integrity of a foundation as they direct roof run-off water away from the foundation. One of the prime causes of foundation settling is undercutting of the foundation footings by rain run-off that is allowed to flow directly down the foundation wall and find its own route away from the area. This route usually entails slowly transporting away some of the support dirt of the footing. Over years of water drainage, this can cause settling. There is also the possibility of water penetration into the basement areas when the water run-off is not redirected. It is best to redirect water run-off before it causes problems.

Perimeter drains, when they are connected at the exterior, do not show their underground conditions. It is possible for some of these drains to have breaks or other blockage that can allow water penetration around the structure. This would not be evident at the surface since this is all buried under at least a few feet of dirt, sometimes six to eight feet deep. Inspections involve visual observation to determine whether there has been any blockage which can be indicated by water marking at the perimeter drain inserts, erosion around the drain stubs indicating overflow, or water marking and moss buildup at the downspouts that shows backup. Without excavation, or further information from the owner, it is difficult to determine whether there is any leakage occurring under the soil that is not evident visually from the surface. During an inspection, these drains are not flooded to try and mimic a heavy rain, but instead depend on the visual conditions at the surrounding areas to determine past overflow conditions.

Even though the downspouts may be connected into the perimeter drains, older drains may have restricted or minimal capacity for water flow and may need to be periodically cleared in order to allow the water to flow adequately.

## **Foundation/Basement/Crawl Space**

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**Type:** daylight basement, crawl space, concrete perimeter foundation  
**Foundation material:** poured concrete  
**Insulation:** fiberglass battens in joists  
**Condition:** foundation cracks, settling, water marks  
**Bituminous coating:** no, none visible  
**Sump pump:** no  
**Ventilation:** screened vents, minimal  
**Vapor barrier:** plastic on earth, partial coverage  
**Comments:**

The foundation was somewhat difficult to observe. The brick work around the perimeter is brought well below the dirt line so the foundation could not be viewed at this perimeter area to show indication of cracking or settling without digging a foot or more below grade. The interior was refinished at most all of the basement area and did not allow for viewing at these locations. There is, though, settling of the foundation, especially at the southeast corner that would have been indicated by cracking of the foundation but was not viewable. There is

also somewhat of a hump in the center of the house running north to south. This would indicate the foundation has cracked on the east and west far sides. This would be indicated by foundation cracks but were not able to be viewed without excavation of some of the gardening and yard area.

This foundation may not have footings around the perimeter, as this is an old foundation, and areas that were viewable did not show any obvious footing construction. Some older structures did not have footings under concrete perimeter walls. This is not allowed currently. The lack of footings prevents dispersal of the house load and can allow for more pronounced settling, which appears to be occurring at this structure.

There is an odd diagonal 6x6 set of beams over a T-brace at the central part of the southeast basement. This creates an earthquake condition that is very susceptible to movement and would be recommended to be secured and braced more effectively.

There are sleeper floors at the area being used as a bedroom in the northeast quadrant of the basement.

The lower stair tread of the basement steps is cracked and broken. Also, this stringer is sitting in the dirt below the slab and most likely has moisture rot at this area as it flexes and moves.

There is a crawl space access at the north side closet wall. The crawl space has had some structural renovation work done at the interior to add truncated pier supports for posts under some of the existing beams. This was cleanly constructed. There could be more work done at this interior, though. There is a post at the back side of a more recently constructed masonry block wall at the southwest that is penetrating down into the dirt. This no longer provides structural support but should not have been installed in dirt because it will rot at the base.

There is a dead rat at the south side of the crawl space. There are tunneling areas in the crawl space, indicating rodent infestation in the past. There was no sign of any significant droppings at the interior plastic.

There is some cellulose and trash debris at the interior that could be cleaned out.

There is moisture rot at a plate running north to south along the wall of the crawl space hatch. This had rotted substantially in the past and was not replaced. I would recommended that this be replaced in the future.

It appears that there had been a plumbing leak overflow or backup of some nature that allowed for a substantial amount of water to flow from the main stack at the central west side down through the central part of the crawl space. This was dry currently but may overflow under heavy usage or rain conditions or some other condition that allows for this to occur. It appears this may have been caused by overflow and blockage of the north deck drain above that then allowed for water to flow through the crawl space. This has already been corrected at the more recently finished and resurfaced north deck.

The crawl space was entered and explored.

### **Sleeper Floor Support**

Sleeper floors consist of wood furring strips that are applied over either dirt pier support or a concrete slab to raise the current floor above the previously existing area, usually to provide better leveling conditions and more aesthetic appeal. In older construction, this often leaves the wood supports in contact with concrete or moist areas and can lead to moisture damage. In newer construction this situation is usually benign as there should have been pressure treated material used for under floor support after a vapor barrier installation. These areas are not viewable and cannot be actually inspected, but they can be problematic. If there is any flexing at these floors at edges, it usually indicates that there is either a lack of connection or moisture damage.

### **Cellulose Debris**

There is some cellulose debris from the original construction or renovation at the interior. This can include wood strips, framing material and cutouts, cardboard footing forms and other construction materials. I would recommend that this be removed. Cellulose material at the interior of crawl spaces can attract insects as well as moisture deterioration and moisture rot since these are somewhat moist areas. Debris at ground level can deteriorate over time. These areas should have been cleaned out originally when the original construction occurred, but should be cleaned out afterwards to prevent insects or moisture rot from being attracted to the structure.

### **Crawl Space Ventilation Recommendations**

The following vent area recommendations reflect the current prevalent building code requirements: Under-floor areas shall be ventilated by an approved mechanical means or by openings in exterior foundation walls. Such openings shall have a net area of not less than 1 square foot for each 150 square feet of under-floor area [1/150]. Openings shall be located as close to corners as practical and shall provide cross ventilation. The required area of such openings shall be approximately equally distributed along the length of at least two opposite sides. They shall be covered with corrosion resistant wire mesh with mesh openings of 1/4 inch in dimension.

The Building Foundation Design Handbook notes that ground cover membranes such as 6-mil (0.006 in.) polyethylene that restrict evaporation of soil moisture are the single most important way to prevent condensation and wood decay problems in crawl spaces. The ground cover material should have a perm rating of no more than 1.0 and must be rugged enough to withstand foot and knee traffic. All debris must be removed and the soil should be leveled before laying the membrane. Overlap edges 4 to 6 in., and continue the membrane up the face of the wall to the grade level if the interior grade is below the outside grade.

There is an exception in the codes that has not been adopted in Seattle and some surrounding areas that states: Where moisture due to climate and groundwater conditions is not considered excessive, the building official may allow operable louvers and may allow the required net area of the vent opening to be reduced to 10

percent of the above [1/1500], provided the under-floor ground surface area is covered with an approved vapor barrier.

Traditional building practices and building codes have included provisions for crawl space ventilation. In recent years, some researchers are finding that crawl space vents may not be necessary, especially in southern climates where vents can introduce hot, humid air into the crawl space. As more information becomes available, building codes may change their ventilation requirements with the northwest, which has a damp winter climate, even being code permitted to allow these lower ventilation changes to be incorporated. Currently the 1 square foot vent per 150 square foot of floor space is being used.

#### **Earthquake Damage Prevention**

Although older structures were not constructed with current earthquake codes in mind, there are numerous renovations and improvements that can be performed on existing foundations and structural supports that will increase the house structure and foundation's propensity to resist earthquake damage. This can include cleating of the post and beam connections at the interior support beams in the basement and crawl space area. This is accomplished by applying plywood, 2x4 or 2x6 gussets or metal cleats along the sides of the posts that overlap the beams and are fully nailed into both beam and post, creating a sandwich effect. Also, there can be ½-¾ inch plywood nailed to the interior basement pony walls around the interior perimeter of the structure that would provide substantial increase of shear protection around the perimeter to help prevent any possible failure of the foundation supports up to the first floor. Simpson or similar earthquake prevention sill tie straps can also be attached to the sills and concrete foundation to more effectively attach the structure to the foundation supports. Consultation with an architect or structural engineer is recommended for proper sizing and placement. This can be a substantial expense when a full package of earthquake preventive methods are utilized.

Numerous Insurance companies no longer provide earthquake insurance to homes that have not been professionally retrofitted. I would recommend gaining further information from your insurance carrier as to what their current requirements are for coverage.

The City of Seattle has a resource for gaining information and contractors for earthquake retrofitting. They have lists of trained contractors that can do approved retrofits. Contact:

**Project Impact** 206-615-0288 or on the web at: <http://www.seattle.gov/emergency/programs/projectimpact/>

There are classes available at:

**University of Washington** 206-543-2310

**Phinney Neighborhood Association** 206-789-2244 or <http://www.phinneycenter.org/classes.shtml>

**Seattle Maps/Critical Areas** <http://maps.ci.seattle.wa.us/>

## **Interior**

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<b>Construction method:</b>	dimensional lumber wood framing
<b>Walls:</b>	drywall, solid wood paneling, plaster and lath
<b>Flooring:</b>	oak/fir flooring, linoleum, tile
<b>Ceilings:</b>	drywall, plaster and lath
<b>Windows:</b>	single pane, wood trim/sash, painted shut, missing hardware, disconnected counter-weight ropes
<b>Glazing:</b>	overall fair condition, cracked, leaking, allowing damage of wood window frames, broken windows [ 3 ]
<b>Doors:</b>	overall fair condition
<b>Comments:</b>	

The interior of the structure is generally in fair condition. This is an older structure that has received cosmetic upgrading and some renovation but does show structural movement with settling at the interior. Many of the doors show canted openings due to settling in the past. Some of the windows also show canted conditions, and many of the windows around the perimeter have no security hardware. A number of them are painted shut, numerous windows are missing their counterweight ropes, and there would need to be attention given to many of these so they can operate, close and secure properly.

Throughout the interior there would need to be a substantial amount of cleanup and then cosmetic upgrades and attention. All the interior rooms were dirty. All the carpets were quite dirty. Many of them are stained and will need to be replaced. Some may be able to be cleaned but most likely not and would need to be removed. The oak parquet flooring is quite worn and deteriorated. This may be able to be refinished, otherwise it would most likely be desired to be replaced. The linoleum in the basement at a number of areas shows loose connections that need to be re-secured and adhered back to the floor. All the interior rooms would need a thorough cleaning and most likely minor repairs for loose trim, impact damage at walls, wall penetrations and nails, and then a thorough interior repainting.

There has been a removal of the existing carpets at parts of the structure that exposed the older fir flooring. When carpets are originally put in over oak flooring, the quarter round trim is removed from around the perimeter walls to allow a snug fit for the new carpet. When the carpet is later removed, this leaves these areas open and often gaps in the fir or oak wood floors are visible and poor finish conditions are evident. Replacing this quarter round material after the floors are refinished is recommended for a finished cosmetic look.

There has been a more recent kitchen renovation and an earlier renovation of the second floor.

The renovation of the second floor may not have been done by permit and its structural conditions are somewhat questionable since this has no post support under the central intersection of the ridges that create a T at the center area. There may have been some type of steel bracket support at this area but none of this was able to be viewed. There is some minor cracking at this location, indicating some flex. This is a type of condition that allows for the weight of the roof to flex and splay the rafters and allow for settling movement. This could be investigated more thoroughly by trying to discover the plans for this renovation and see if this was done by permit with the city.

### **Non Permit Construction**

It is assumed from the observable condition of the construction of this property that renovations created by the current or previous owner did not include obtaining all permits that may have been required by municipal agencies. It did not appear that this was done by permit due to the inconsistencies for construction in relation to common building requirements. Permits are required for construction and renovation work of any significant nature. The Home Report, LLC does not check city records to determine whether building permits have been applied for, issued or closed. Some municipalities can return to completed structures and require permits and inspections be performed although this has not been common.

Homeowner, non-permit construction generally presents difficulties for inspection since much of the workmanship has been enclosed at the interior walls without original municipal inspection and many of the conditions observable during normal construction inspection procedures are no longer viewable. The normal inspection processes have never been performed. Without benefit of city or local inspections while wall, floor and ceilings are open, correct structural conditions and systems installation, including plumbing, electric and heating, cannot be ascertained.

It is recommended that any work done to correct situations mentioned in this report or discovered during repairs be done by licensed contractors and brought up to current standards wherever possible. I would recommend gaining any kind of building plans that may have been used by the previous owners in case there is a possibility of this information being helpful for renovations and repairs of the structure currently.

Using the DPD [Department of Planning and Development] permit search engine can be helpful in finding a history of permits on a given piece of property:

**DPD Permit Search [Seattle]:** <http://web1.seattle.gov/DPD/permitstatus/>

**My Building Permit [Outside Seattle]:** <http://transact.mybuildingpermit.com/permitsearch/SimpleSearch.aspx>

## **Attic Space**

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<b>Roof Construction:</b>	dimensional lumber framing
<b>Insulation type:</b>	batten fiberglass
<b>Insulation depth (Apr.):</b>	4 in.
<b>Vent clearance:</b>	inadequate, no vents
<b>Condition:</b>	clean
<b>Comments:</b>	

The attic is accessed only at the sidewall location at the southeast corner. This had a door opening that allowed for entry. This area shows insulation that was installed at the rafter spaces rather than at the wall and ceiling spaces of the heated envelope of the structure. This should have been done in a different manner. This did not show any sign of damage at these locations but has a potential to allow for moisture accumulation and shows a nonprofessional installation. The other sidewall locations were not visible and the remaining sections of the roof consist of vaulted ceilings that are not viewable.

There is no way to view the interior space between the interior ceiling and the exterior roof, which is the location where normally insulation would have been installed. From the age of this structure and its condition, it is assumed that there would be R-11, 3 1/2 inch fiberglass batten insulation at these areas. But, again, these areas were not able to be viewed and were not open to inspection. As mentioned in the Roof section, there is improper ventilation with no ridge vents over the areas with vaulted ceilings, which is most of the structure.

### **Minimal Venting**

There is minimal venting in this attic. If there is the addition of insulation in the future, I would recommend that there be further ventilation installed to provide better air circulation.

The code requires ventilation consisting of one square foot of venting per 150 square feet of projected floor space with only roof vents or one square foot of venting per 300 square feet of projected floor space if roof and soffit vents are installed that can allow for circulation. This venting should be installed in a manner that will allow for air circulation from the lower eaves to the upper peak and relieve the attic area of moisture laden air.

### **Minimal insulation**

A well insulated house saves energy and money. Current codes require 12" [R-38 value] of insulation for attic areas and 10" to 12" [R-30/38 value] for vaulted ceilings, dependent on the extent of their use in homes. Attic insulation is relatively cheap and easy to install and can dramatically affect heating bills if there is little

insulation in place currently. Vaulted ceiling structures are a different issue as there is usually no easy way to increase insulation depth from what might have been originally installed. This structure shows less insulation than current code requirements. There is no requirement to bring this area of to current codes, but additional insulation may be desired as a cost saving, energy reducing option.

## Plumbing

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<b>Water source:</b>	municipal
<b>Potable water piping:</b>	copper, galvanized, di-electric connectors (no)
<b>Waste disposal:</b>	municipal
<b>Waste piping:</b>	galvanized, cast iron, PVC/ABS plastic, lead
<b>Hot water tank:</b>	gas, Approx. 50 gallons, pressure relief valve (yes), manufacturers date 2001
<b>Water pressure/entry size:</b>	52 psi, not visible
<b>Comments:</b>	

Water pressure is OK at 52 psi. 80 psi is the code recommended maximum. Some appliance manufacturers do not maintain their warranties after 80 psi.

The plumbing consists of a mix of copper and galvanized for the pressurized water system and galvanized, cast iron, ABS and PVC plastic, and lead for the drain lines.

All the interior fixtures were tested and were operational.

This structure consists predominantly of galvanized piping for the interior plumbing. There appears to be a new copper line brought in from the street or at least through the crawl space at the northwest corner. There was, though, significant reduction in volume in the cold water side of the upstairs second floor bath sink. This dribbled out and allowed for no real flow. This is most likely plugged with debris and will need to be dismantled at the valves to determine where this blockage is focused.

Other locations showed generally full operation with some minor reduction in volume when three fixtures were operated simultaneously. This system, though, will need to be replaced, at least at the area that is blocked and eventually throughout the interior remaining piping.

There is a jacuzzi tub at the upstairs bathroom but the pumping mechanism was not able to be tested, as there was no visible air switch or timer at any location. The drain plug for this tub also did not operate and required a manual plug to be installed.

At the hot water tank there is duct tape being used to tape the hot exhaust vent to the top hood. Duct tape is not permissible for this type of application. It is melted and burned and will eventually fail, allowing for a release of this joint, allowing carbon monoxide into the house. I would recommend that this be secured properly.

There is a plumbing leak at the faucet spigot at the exterior basement door at the southeast corner. This is leaking into the foundation and I would recommend that this be sealed.

I would recommend that the sewer line at this structure be scoped and that a specialist be brought in to do this work so it can be viewed as there are indications, as mentioned in the foundation section, of overflow or leakage of this old system.

Water pressure is slightly low, but OK at 52 psi. 80 psi is the recommended maximum. Some appliance manufacturers do not maintain their warranties after 80 psi.

### Galvanized Piping

Galvanized steel piping for the potable water supply is a common form of plumbing pipe for houses that are more than 40 years old. As galvanized piping ages it can deteriorate by corroding from the interior, causing a reduction of the interior diameter and a restriction in water volume through the pipe.

Galvanized pipe has varied substantially in quality over the years. Therefore some structures that are quite old, constructed in the 1900s and 1920s, have high carbon steel used for the galvanized pipe that has lasted a long period of time, some of which is still good currently and shows no sign of any significant reduction. Other types of piping were used during the World War years and during the 1950s and 1960s which for a number of reasons, the quality of the pipe and the carbon content of the steel was reduced. There were many imports during this period as well as poor quality during the war years that allowed some of the more recent installations of galvanized piping to fail before older installations. Therefore it generally depends upon the original installation date, the quality of the piping, the condition and content of the water, as well as how much of the system has been replaced with copper piping that can allow for increased electrolysis.

A true test of the condition of galvanized piping requires removal of a section of pipe to cut open the material and determine its interior restriction and cross sectional area of water flow. This is destructive observation is not possible during a home inspection. Generally, galvanized pipe corrosion can be partially judged from the condition of the exterior threads at the pipe fittings and the water volume flow through the pipes by the activation of numerous fixtures simultaneously.

A secondary issue with galvanized pipe is heavy metal contamination. Both lead and cadmium exist as impurities in the galvanizing process and can leach into potable water from containment in galvanized pipes. This is usually a trace amount, but in older pipes that have aged and pitted or that have electrolytic action taking place,

this can allow for accumulation of particulates that over the long term may pose a health risk. Replacement of galvanized piping systems will eventually be necessary in every house that has this material in usage due to it's eventual deterioration. In the meantime, it is recommended that good quality water filters be used for all potable water intended for consumption to filter out lead, cadmium and other impurities.

#### **Pitting Galvanized Pipe**

Pitting is indicated by rust marks and sometimes water leaks coming through the body of galvanized pipe or at the threaded joints, either at the pressurized system or at the horizontal runs of the galvanized drain lines. For a while, these pitting points may be self-healing, meaning they will close back up due to the corrosion blocking the opening, but they will eventually fail and allow for leakage. Visible pitting though is an indication of deterioration and aging of the piping since the interior of the pipe is most likely quite rusted and restricted if the condition of the material shows rusts coming through the body of the pipe to the exterior. It is usually an indication that pipe sections, or the entire system, is getting close to needing a replacement.

#### **Di-electric Connectors - Electrolysis**

When older structures that have galvanized pipe are renovated or repaired, there often remains a mix of copper and galvanized pipe. If the two pipes are directly in contact with each other, electrolysis will occur between the two dissimilar metals. This electrolysis causes accelerated corrosion in the galvanized pipe and can allow for increased debris in the plumbing system that can cause wear on the fixtures as well as leakage at the joints at points of contact. The use of di-electric connectors at these copper/galvanized joints are required in order to prevent this from occurring. These connectors insulate one metal from the other and significantly reduce electrolysis. The lack of these fittings can cause accelerated aging and require further repair.

Electrolysis can also occur at metal plumbing supported with plumbers tape [metal strapping tape] of a dissimilar metal from the pipes being supported. Under these conditions resupport with identical material is recommended.

#### **Hot Water Tank Temperature**

The outflow hot water temperature is **131** degrees Fahrenheit. All hot water tanks should be set to provide hot water at no higher than a 120 degree temperature. This is important to prevent scalding by users, and especially to prevent injury to small children who might accidentally activate a hot water spigot without mitigating it's high temperature by mixing it with cooler water. The water temperature is measured at a hot water spigot close to the tank and being let run until the temperature stabilizes.

#### **Whirlpool Baths & Spas Health Warning**

The multiple feet of piping included in a whirlpool bath's and whirlpool spa's circulation system contains pools of trapped water when the whirlpool bath appears to be fully drained. This water, and the surface area on the inside of the piping, are contaminated with bath residue during every use of a whirlpool bath, regardless if the whirlpool bath's motor is activated. Bath residue often contains a rich broth for the nourishment and growth of microorganisms. Failure to follow proper cleaning procedures for a whirlpool bath's circulation system can result in the growth and transmission of infectious bacteria and viruses. Unless a whirlpool bath's circulation system is properly cleaned and maintained, serious enteric, respiratory, skin, and eye infections can result from its use.

The circulation system of a whirlpool bath should be flushed and a professional whirlpool bath system cleaning should be performed on residentially located whirlpool baths at least annually. A professional cleaning should consist of flushing, descaling, and disinfecting the entire circulation system with the use of specialized equipment capable of concentrating, heating to 135°F, and circulating the appropriate cleaning and disinfecting solutions.

I would recommend contacting your local spa retailer and servicing company to gain further information about products and requirements for proper care and cleaning of whirlpool baths and spas.

**Jacuzzi Cleaning** [http://www.lifescrpt.com/Life/Timeout/At-home/Home\\_Jacuzzi\\_Cleaning\\_Methods.aspx?p=1](http://www.lifescrpt.com/Life/Timeout/At-home/Home_Jacuzzi_Cleaning_Methods.aspx?p=1)

#### **Sewer Lines**

Older structures consist of cast iron, concrete or clay piping sewage system drains that run underground to the main street sewer system that can sometimes be located quite deep under yard, street or sidewalk locations. Due to the nature of this type of material, it is prone, as the structure ages, to cracking and deterioration due to materials aging as well as penetration from tree roots and ground movement from settling. It is possible that some of these drains can become blocked and need to be roto-rootered periodically and eventually may need to be replaced, which can be a very substantial expense.

Even newer homes can have problems associated with sewer line failure. This can occur due to poor installation, loss of support from non-compacted trench soils, crushing from trench backfill and disconnection of ABS or PVC plastic piping due to joint stress after installation.

The Home Report, LLC inspection does not cover the underground conditions or possible blockage conditions of a sewer line to the street. The only way to really determine its condition is either to be informed by the current owner as to whether there was any roto-rootering necessary at this system due to blockage, or by "scoping" this pipe with a fiber optic camera that is snaked down this drain line from the house toward the street. Scoping is not a part of this inspection but may be desired to be included in the purchase investigation of this structure by another firm in order to determine the condition of these drain lines. The Home Report, LLC recommends that this sewer investigation be done as a part of the pre-purchase investigation of this structure.

**Hydro Physics** - Rick 425-775-8445 -or- 866-775-8445

## Electrical

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<b>Service Size:</b>	200 Amps, 120/240 volt system
<b>Panel:</b>	main breaker, circuit breaker
<b>Service wiring:</b>	aluminum service wires
<b>Service drop:</b>	underground
<b>Circuits labeled:</b>	no
<b>Interior wiring:</b>	knob and tube, MC/BX cable, plastic and fabric sheathed romex
<b>GFCI protection:</b>	bathrooms (yes), garage (N/A), exterior (N/A), kitchen (yes), hot tub (not visible)
<b>Smoke detectors:</b>	# 1, not operational
<b>Comments:</b>	

There is a 200 amp main breaker, circuit breaker panel located in the basement at the southeast corner. This panel has been properly installed and grounded. The breakers are properly sized for protection of the branch circuit wiring to which they are attached at most locations. There is a mix of 20 and 15 amp breakers, though, for what appears to have a substantial amount of 15 amp knob and tube wiring. I would recommend that this be investigated by an electrician.

There is one 20 amp circuit breaker that shorts upon activation and needs to be corrected. The circuitry was not marked so it was very difficult to determine what loads are or are not affected.

I would recommend cleaning up the wiring at the basement.

There is an open lug basement light that needs to be cleaned up.

There are some open junction boxes in the basement that could be cleared up.

There is an open outlet at the wall by the freezer in the basement.

There is a failed kitchen GFCI by the sink.

There is an open switch wire/base at the second floor stairway wall.

There is no obvious control of the dining room light. There is a covered switch at the wall at this location that should be investigated.

There is messy homeowner wiring at the interior of the attic space and at the basement area, indicating that a substantial amount of the branch circuit wiring was most likely not professionally done nor inspected.

There is still a substantial amount of the structure that is fed with knob and tube wiring. This appears to be almost all the outlets on the main floor, except for the kitchen renovation. The upstairs second floor has a mix of grounded and non-grounded 3-prong outlets, indicating partial knob and tube wiring.

I would recommend that an electrician be brought in to clean up this wiring and to correct the unsafe conditions.

### Ground Fault Circuit Interrupters (GFCI)

Ground Fault Circuit Interrupters [GFCIs] are currently required at all locations where there is a possibility of coming in contact with a grounding source while using an electrical appliance. This includes the kitchen counter outlets within six feet of the kitchen sink edge, all bathroom outlets, all garage outlets and exterior outlets that are reachable from the ground, crawlspace and unfinished basement outlets, roof tops, outlets within six feet from laundry sinks [this includes the washer], unfinished basements, jacuzzi tubs, pool areas and wet bars— basically all wet locations. This protection can be supplied by a specialty circuit breaker located in the main electrical panel or by individual outlet protectors [GFCI] that can protect all outlets 'downstream' from the initial GFCI outlet. These outlets are identifiable by the test/reset buttons on the face of the outlet. This type of outlet is required to be installed on newer structures to prevent the possibility of significant electrical shock when dealing with a defective electrical appliance and are considered an additional safety feature for the house electrical system. Although older structures were not required to have them installed at all of these locations, they are inexpensive and I would recommend adding them at all the appropriate locations.

### Un-Grounded 3-prong Outlets

There are 3-prong outlets that have been installed at the locations of the previously existing ungrounded receptacles in the structure. Some of these outlets are not grounded, even though they have a third grounding prong for the insertion of grounded plugs. This is due to the fact that much of the in-wall interior wiring was not replaced and the older wiring did not have a third grounding wire in the wiring cable. It should be noted that these outlets cannot be used for computer or for items with integrated circuits or appliances that require a ground. They may also present a safety hazard if used with appliances that are defective as they will not provide the safety of a grounded type of receptacle. Electrical installation requirements dictate that these three prong receptacles should be replaced at ungrounded locations with two prong receptacles to avoid confusion and the possibility of damage to equipment or injury.

### Knob and Tube Wiring

There is knob and tube wiring located throughout portions of this structure. Generally knob and tube wiring was used in structures before the mid 1950s and constituted the significant bulk of wiring for structures previous to this age. Knob and tube wiring was generally a good form of wiring when installed properly at cleanly maintained and protected interior wall surfaces. But exposed at uncovered wall and ceiling locations or incorporated into renovations there can be problems that develop due to tapping into this wiring for renovations. Abrasion and deterioration caused by exposure can also be a problem for this older material.

With knob and tube wiring, as it ages, the bends fray and expose wire through the insulation. This occurs at edges of the knobs and tubes where the wire passes through the joists or anywhere that there are sharp bends or has been contact and abrasion. Protecting these areas up can be helpful to create a safer installation. If there are sections of the system that are exposed, this could entail looking over these exposed joints carefully and adding electrical tape to any spots that show exposure or excessive wear on the wire edges in order to prevent any contact of live wires to human touch or contact with any wood or grounded locations. Some runs may need to be replaced or connected with proper splicing and rosette connections if they present a dangerous condition.

It is recommended that an electrician do this work, as knob and tube wiring has differences in installation, such as switched neutrals and non-grounding, that are different from newer wiring methods. It requires a different technique for repair and replacement.

There has been more difficulty gaining reasonably priced insurance for homes with knob and tube wiring. It appears that the insurance carriers are looking at this type of wiring as a significant hazard and are significantly increasing homeowners policies or not providing coverage at all. In some cases this appears to almost double the rates verses homes without knob and tube wiring. There is a possibility that some insurance companies will not insure structures that have knob and tube wiring at the interior to any significant degree. They may require the rewiring of parts or all of the structure in order to gain insurance. Rewiring a structure is a significant expense which may be required by insurance firms regardless of the apparent condition of the wiring at your structure. Shopping around for insurance companies that do not have this requirement may be necessary. I would recommend gaining further information from your insurance carrier to determine if this will be a significant added expense.

### Open Lug Light Base

Open lug lights consist of older light bases for light bulbs that have the electrical lug attachments exposed. This allows bare wire to be connected to these locations that is electrically hot to the touch and can cause significant shock or injury. These types of fixtures are not permitted to be used anymore due to their dangerous nature and I would recommend that the open lug fixtures located at this structure be replaced. This would be a simple procedure but would render this system much safer.

### Non-Grounded Circuits

This structure consists of at least some interior branch circuit wiring that does not contain a grounding wire. These types of older systems did not use grounding, as it had not yet been established as a functional method of electrical safety, and therefore only have 2-wire systems. Therefore installing 3-prong grounded outlets needed for computers and other equipment that requires the third prong ground would require the installation of additional circuitry in the structure. This could be a substantial expense, depending upon the number and location of the desired outlets and the difficulty of access to the main panel.

## Heating

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<b>Type:</b>	central gas forced air, electronic ignition, fan-forced combustion air, fan forced electric wall units
<b>Location:</b>	basement
<b>Furnace/Boiler:</b>	Brand: Bryant
<b>Gas meter:</b>	yes
<b>Thermostat:</b>	set-back, wall mounted
<b>Last Serviced:</b>	no service record
<b>Filters:</b>	checked, dirty, needs cleaning, electronic air cleaner
<b>Condition:</b>	new, clean and operational
<b>AC:</b>	N/A
<b>Comments:</b>	

The structure is heated with a new central gas forced air furnace located in the basement.

It appears the basement partial renovation included enclosing this furnace after installation into the bedroom and bedroom closet construction. This is located at a room being used as a bedroom, which is not permissible. Combustion appliances are not allowed to be located in bedrooms or bedroom closets due to possible poisoning from carbon monoxide leakage or vent blockage. This furnace room would either need to be completely enclosed with a weather-stripped door and then have makeup air venting installed to the exterior, or this room would not be allowed to be used as a bedroom or sleeping location. I would also recommend carbon monoxide detectors at this basement area as well as the main floor.

The furnace was very recently replaced within the last 1 year. It was tested and is operational with no sign of carbon monoxide release.

There is asbestos type fabric wrapping at a number of locations in the basement at the old ducting. There is also asbestos tape at the interior of many of the registers.

There are numerous registers that are missing their flaps so that the air flow at the interior cannot be easily regulated.

The crawl space has ducting with loose connections and open joints. Re-sealing and insulating this material would be recommended

There is no heat source upstairs from the furnace. This is coming off of the electric fan forced wall heater and the electric fan forced ceiling heater in the bedroom. These are the only two heat sources visible at this area.

### **Furnace in Bedroom**

The furnace is located in a closet off the basement bedroom. Combustion appliances are not allowed to be located in bedrooms or bedroom closets due to possible poisoning from carbon monoxide leakage or vent blockage. If this furnace is to remain in this location, the door to the furnace enclosure would need to be upgraded to a weather sealed door to prevent air flow into the bedroom with a source of fresh air cut into the exterior wall to allow for make up air for furnace combustion. This installation as viewed is dangerous and should be corrected.

### **Buried Oil Tank**

There may be a buried oil tank at the exterior of the structure. This structure may have had an oil furnace in the past. I would recommend gaining information from the current owners or doing a magnetic test around the property to determine if a tank was present in the past.

The requirements for removal or decommissioning of unused buried oil tanks varies in different localities. The national Uniform Fire Code [UFC] requires that tanks be decommissioned or removed if not in service for one year. This requirement has been adopted by the Uniform Building Code as well. Each local municipality has varying degrees of enforcement or non-enforcement of this situation.

Seattle now permits decommissioning of the oil tank to include only a removal of existing remaining oil and a triple rinse cleanout of the interior of the tank. Oil removal, rinsing and filling with an inert agent is also an option as well as a full excavation and removal of the entire tank. Specific information is available from the Seattle Building Department.

Underground oil leakage conditions are not able to be determined during the course of this inspection. It requires deeper soils sampling and other testing that is not offered by The Home Report, LLC. If there are concerns regarding underground leakage due to an aged tank, there would need to be further investigation by firms that specialize in this type of detection and remediation.

There is currently no enforcement by the municipal building departments, EPA or Fire Marshall for the filling or removal of buried, unused oil tanks, but tanks are strongly recommended to be decommissioned or removed. At some locations there are rigorous regulations regarding the removal or filling of existing residential tanks and possible remediation requirements for adjacent contaminated soils. This can be a substantial expense. There has also been an increased concern and, at times, requirements by lending institutions to have these tanks taken care of during pre-sale agreements. There may be substantial legal complexities involved with soils testing and remediation and I would recommend further, more specialized investigation to be sure of the precise requirements regarding removal expenses, permissions around soil testing, remediation and insurance coverage. Contacting the local Fire Marshall and/or Building Department to gain the most current local information available would also be recommended.

**PLIA** [Pollution Liability Insurance Agency] 1-800-822-3905 or <http://www.plia.wa.gov/>

### **Asbestos Tape inside Registers**

There is asbestos tape located at the interior registers at a few visible locations at the interior of the house. This means that there is asbestos tape used as duct tape lining where the hot air from the furnace blows heated air through and into the room. This allows for asbestos fibers to enter the interior of the structure at the living areas. This can create a very unhealthy condition. I would recommend that this be corrected. This is probably the primary condition found in homes that require removal of asbestos material.

The registers could be dismantled for the removal of the interior tape at these locations. The interiors of the registers could then be sealed and painted before new tape is applied in order to prevent any possibility of further asbestos fiber migration through the structure. A proper professional removal of this material will include a complete removal of existing asbestos material, a full vacuuming of the existing ducting, then wall swipe and/or air sampling of the interior with laboratory analysis to determine if there is any asbestos remaining during interior air circulation. I would recommend that this work be done by a licensed asbestos removal contractor as poor or incomplete removal of this material can create a more hazardous condition with loose material than may already be present.

Asbestos is not permitted to be used in construction any more as it may cause respiratory and health problems.

For more information and a booklet on the subject:

**EPA** 206-553-2770 or <http://www.epa.gov/region10/>

**Puget Sound Clean Air Agency** 206-343-8800 or [www.pscleanair.org](http://www.pscleanair.org)

**Testing Labs**

**NVL Labs** 206-547-0100, 4708 Aurora Ave North, Seattle, WA 1-2 Tablespoons \$35.00 24 hours for verbal/FAX, \$60.00 for one hour turnaround

**NorthWest Labs** 206-763-6252 241 S. Holden, Seattle, WA 1-2 Tablespoons \$35.00 24 hours for verbal/FAX, 2-3 days for report

**Asbestos Abatement**

TLH Abatement Inc-Ed Plikaytis 206-523-4441

**Carbon Monoxide Readings**

[measurements are in parts per million]

- 0 ppm Outdoors [base reading]
- 0 ppm Interior [prior to firing furnace]
- 0 ppm at Furnace front during initial activation
- 0 ppm to 0 ppm range of change at interior air

**Furnace**

The heat exchanger in a gas or oil furnace is the part of the unit in which the combustion of either the natural gas or the vaporized oil occurs. When a furnace ages, the heat exchanger can deteriorate, developing holes through which the combustion gases escape into the circulating room air as the blower passes the room air across the exchanger. This can cause a dangerous build-up of gases in the interior living area of the structure. Without a dismantling of the furnace, it is not possible to determine the integrity of the heat exchanger since it can not be viewed externally and only restricted areas are viewable at the interior firebox or burner vanes. Dismantling a furnace is a substantial project which does not fall under the activities performed during a home inspection. The Home Report inspector views the firebox interior or burner vanes and performs a carbon monoxide leakage test to determine, as best as possible, the current condition of the heat exchanger.

To test for the presence of combustion by-products in the room air, The Home Report uses a UEI Carbon Monoxide monitor that is accurate from 0-999 ppm[parts per million +/- 1-3%]. An increase in carbon monoxide in the room air usually means a defective heat exchanger which can create an unhealthy and possibly health threatening condition. When this is the case, further investigation is recommended by a qualified heating contractor. An increase in the carbon monoxide at the furnace front can often mean blockage of the venting from the furnace to the exterior.

Early damage to a heat exchanger would be indicated by a 1-5 ppm reading at the interior of the structure during operation. Readings of 10-30 ppm would indicate substantial failure. Either reading of a positive nature indications a need for immediate repair or replacement. Minor readings at the front of the unit during start-up are common and usually only indicate initial backdraft spillage which clears quickly.

**Carbon Monoxide Detectors**

There is either a gas or oil fired furnace, or natural gas appliance located at this structure that allows for the use of gas or petroleum based combustion products to burn and be vented to the exterior through the chimney or through other exterior venting. When this type of appliance is used in a residential structure there is always a possibility of failure of the appliance or blockage of the venting. Appliances such as furnace, water heaters or fireplaces, that use this combustion fuel can allow carbon monoxide leakage into the structure. This is a by-product of the burning of this fuel. Carbon monoxide is an invisible, tasteless, odorless gas that can cause severe injury or sickness to individuals who may be subjected to even low concentrations of this gas at an interior enclosed area. Due to the fact that furnaces and hot water tanks can fail unexpectedly or be blocked unexpectedly, this gas can build up at the interior and cause hazardous conditions without the knowledge of the occupants. Even low levels of CO, in the 10-15 parts per million category, have become suspect as a health irritant and cause of varying minor illnesses.

I would recommend that there be carbon monoxide detectors installed at the structure. If you install only one CO detector, locate it near the bedrooms. For complete coverage, UL suggests one at the top of the second story stairway, one in the kitchen and one at the top of the basement stairway to be able to warn the interior occupants if there is any carbon monoxide buildup to any significant or dangerous degree. The use of digital readout units that show the actual 'parts per million' of CO on the face plate can be very informative and give advance warnings of high level conditions.

A trend in state and municipal regulations will eventually make CO detectors a standard installation in residential building, as has occurred in more recent iterations of the building code. As construction technology has advanced, the danger of carbon monoxide poisoning has actually increased. Chimneys in tighter, energy efficient houses are more likely to backdraft, and high-efficiency heating units now produce cooler flue gases that are less likely to vent naturally. CO can also originate from a wide variety of sources, including a car or lawn mower left running in an attached garage or improper venting of a kitchen appliance. Consumer awareness is heightened too, driven in part by homeowners' increasing concern for indoor air quality, and by agencies like the U.S. Consumer Product Safety Commission, which now urges all homeowners with fuel-burning appliances or attached garages to install UL-listed CO detectors.

### **Insulate and Seal Ducting**

Furnaces and heating systems lose a substantial amount of heat due to radiation and leakage at ducting, especially in crawl spaces, attics and unheated areas such as the garage. This can waste a substantial amount of the heat generated for the interior rooms of the structure—up to 30% by some estimates. A one inch hole in a duct in a crawl space can equal a 10-20 foot square section of wall with no insulation. It is recommended, especially since the price of heating for all types of power is increasing, that there be improvements at the ducting system, any plenums that may be located at the crawl space interior or any other unconditioned space. This would include wrapping the ducts with insulation and sealing of all the joints at the ducting with proper UL-181 mastic sealant, mechanical fasteners and tie-wraps depending on the type of ducting and joints in use. Standard fabric duct tape ironically, should not be used to seal ducts. It will fail in short order. Improving insulation and closing gaps will more effectively utilize the furnace heat and decrease heating bills. Most house will benefit substantially from sealing of ducting if ducts are located in unconditioned spaces such as crawl spaces and attics.

Starting January 1, 2011 the state of Washington adopted a newer version of the energy code that sets stricter standards for heat loss and infiltration. A new heating or cooling system requires a duct pressure test to be sure it is adequately sealed. Occasionally, some owners are testing their older systems to see how well they comply with the newer standards, but this is not a requirement. Duct testing is not a part of a home inspection, but may be desired to be performed to check on the efficacy of the ducting system in the house.

Occasionally, when crawl space and attic locations are better insulated and sealed at the ducting, there is the potential for freezing conditions due to the loss of heated air in these unconditioned spaces. This can impact water pipes in this area during a hard winter freeze. It is recommend that if house ducting is sealed, that water piping also be insulated to prevent the possibility of burst pipes from freezing.

## **Limitation of Liability**

**This inspection will include the following systems:** exterior, roof, structure, drainage, foundation, attic, interior plumbing, electrical and heating. The evaluation will be based on limited observations that are primarily visual and non-invasive. This inspection and report are not intended to be technically exhaustive. The Home Report, LLC will provide a written and photo report that is a summary of observations and impartial opinions based on the experience of the inspector. Our services are performed in accord with the Washington State Home Inspector's Standards of Practice [WAC 308-408C]. The Client's presence is requested during this inspection, as a written report will not substitute for all the possible information that can be conveyed verbally by a shared visual observation of the conditions of the property.

**Many items are not included in our inspections, such as:**

- Components not normally visible, obstructed from view, obstructed by furnishings, or not readily accessible at the time of inspection.
- Systems and components will not be disassembled and will only be operated with normal controls.
- Specialty Systems including security alarm and intercom systems, sprinkler and fire suppression systems, Ethernet and computer connection systems, cable, phone systems or irrigation systems.
- Compliance or non-compliance with any governing codes, laws or restrictive covenants. We do not search public records.
- Septic tanks, drain fields, groundwater percolation conditions or water purification/treatment systems.
- Air conditioning and heat pump compressors.
- Swimming pools, hot tubs, jacuzzis and spas.
- Furnace or boiler heat exchangers.
- Buried oil tank location/retention/leakage conditions.
- Underground sewer line and side-sewer conditions.
- Soil stability conditions.
- Property lines and plot dimensions.
- EIFS/synthetic stucco conditions.
- Potentially hazardous or toxic substances such as radon gas, urea formaldehyde, asbestos, lead based paint, recreational drug manufacturing, or contaminants in the structure, soil, water or air, detection of or damage from Chinese drywall.
- Building or health consequences of mold and mildew.
- Wood Destroying Insect inspection or identification.

**This inspection is not intended to be technically exhaustive.** The client acknowledges that The Home Report, LLC cannot observe every square inch of the structure and that defects may be missed. When a structure is inspected there are only a few hours in which to observe conditions and operate systems. During this limited period, we make reasonable attempts to discover the functional conditions of interior systems, but it is not always possible to determine all defects. During the inspection we cannot maximize usage of all combinations of interior fixtures, systems and living areas to the extent that might occur when the structure is occupied. After occupation of the structure, it is not uncommon to discover items that require repair or attention which may not have been discovered during the inspection.

**This inspection does not include a quantitative engineering analysis of the building's structural or interior operational systems.** If a very thorough and in-depth analysis is desired, The Home Report, LLC can provide this service but at a substantially higher fee. In-depth analysis requires prolonged access to the property by specialty contractors.

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All comments and information in this inspection report are strictly the opinion of the inspector. No warranty, guarantee or liability of any kind is implied or assumed other than that stated in this Contract Agreement. The Home Report, LLC's liability for mistakes or omissions in this inspection and report is limited to a refund of the fee paid for this inspection and report. This Contract Agreement is binding upon the client, the client's relatives, and any third party that may make a claim upon the inspection report. Any claim for failure to perform under this contract will be reported to The Home Report, LLC in writing within one year of this inspection. The Home Report, LLC will have the absolute right to re-examine the item or component in question, (including an independent second opinion) BEFORE any repairs or replacements are undertaken. Failure to allow said examinations or respond within the one year time frame will constitute a full and complete waiver of any and all claims against The Home Report, LLC.

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Thank you very much for using The Home Report, LLC. If you have any questions regarding the inspection or this report, feel free to call.

**Date:** 1/13/2012



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**Donald Lawn**

Owner/The Home Report, LLC

**Current Professional Licenses**

Licensed Washington State Home Inspector #320

Member **ASHI** - American Society of Home Inspectors #011836 [14 years] , **ACI** - ASHI Certified Inspector

Member **FREA** - Foundation of Real Estate Appraisers #11320

**Previous Professional Licenses**

Structural Pest Inspector, WSDA SPI #42990

Washington Specialty and General Contractors Lic #HOMER\*\*101JJ

Electrical Journeyman Four Year License [WA/OR/ID, Commercial, Residential, Industrial] #LAWND\*\*196DE

General Electrical Administrator [WA/OR/ID, Commercial, Residential, Industrial] #AD01 / LAWND\*\*173PG