



MEMORANDUM

TO: Mayor and City Council
Board of County Commissioners
FROM: R. Barry Crook, Assistant City Manager
DATE: August 1, 2012
MEETING DATE: August 7, 2012
RE: Joint Worksession – Centennial

SUMMARY:

The work recommended by City staff is inappropriately characterized by the Centennial HOA as “a band aid.” It is in fact a comprehensive effort to fix the problems with their buildings in a responsible manner, consistent with any owner’s desire to balance fixing the problem for a long term solution with responsible use of an owner’s funds. It is consistent with the approach taken for years now by the Centennial Rental Project – constructed at the same time and with the same design features. Results to-date are encouraging and suggest a total project cost much more in keeping with our original estimates of less than \$10,000 per unit. This is an amount that is reasonably within the ability of the Centennial HOA to finance through assessments and loans from a bank (which loans banks are ready to make), and can be done over the course of several years.

A repair estimate from Summit Consulting (cost split between the HOA and the governments) will:

- review the Building Science Corporation (BSC) report dated 02.21.2012 and solicit feedback from Athens Builders (the HOA’s current Contractor); John Forster (HOA representative); and BSC.
- A narrative for the following estimate option will be prepared prior to commencing the estimate phase.
- Once approved, master bid forms will be assembled and quantity surveys will be performed. Select subcontractor feedback will be solicited to market validate the estimate. The estimate will be accompanied by a Basis of Budget attachment.

The approach/estimate option that will be the basis for the estimate will be similar to the approach taken by the Centennial rental project:

- An estimate to replace the exterior wall envelop of the south and west facing aspects based upon BSC feedback . The north and east facing aspects will be reviewed for water intrusion areas and particularly for repairs/replacement of flashing details at the roof/wall juncture.

BACKGROUND AND PREVIOUS ACTION:

Approach and Preliminary Findings:

- In early 2010 the City agreed to provide interim project management services to assist the HOA/APCHA/City of Aspen/Pitkin County team in expanding the overall evaluation.
- The City requested, received, and executed a proposal from Building Science Corporation (BSC), a Boston based engineering and architecture firm with extensive experience in building mechanics, systems, and water management. BSC has conducted numerous forensic examinations and prepared evaluations and solutions for moisture damaged buildings. The City has worked with BSC as the liaison for the US Department of Energy Building America program.
- BSC visited the site on June 30th, 2010. For the investigations the City engaged Rudd Construction (Rudd) to provide manpower, equipment, tools and materials to assist in uncovering areas for inspection, and for replacement and waterproofing repair. Also present on the day of these inspections, at the request of Lee Cassin (City Environmental Health Director) was industrial hygienist and mold expert, Michael V. Van Dyke, PhD, from National Jewish Health in Denver. He provided visual inspection of mold presence and extent.
- The final BSC report which was reviewed extensively with, and modified by recommendations of, REG.
- The primary cause of damage is reported to be inadequate flashing, particularly at roof- to-wall details, at some windows, and at eave overhangs.
- In addition there are issues with attic air leakage and ventilation. The June 2010 BSC inspections removed large expanses of siding where the earlier investigation relied on localized core samples. This more extensive removal showed the water leakage and resultant water caused deterioration occurring at specific flashing intersections while adjacent areas were in good condition.
- A further complication top the structural and water intrusion issues at the Centennial ownership buildings have been owner installed balconies and other additions
- It should be noted and emphasized that according to building science experts, moisture damage remediation is generally accomplished carefully and deliberately.
- BSC initially recommended a range of options with respect to the attic issues and exterior walls. This approach was based on their years of experience in the field over decades and is consistent with generally accepted asset management practices for repair and preservation.
- It is generally accepted that elimination and control of moisture is first necessary and successful step in retarding further mold growth. It is also generally accepted that mold

exists everywhere in the environment, and that testing procedures can quantify and identify those genus that can be health concerns, after moisture control is established.

- The sequence of these work efforts is logical and straightforward. Moisture must be mitigated before repair and investigation of damaged materials can begin.

Costs

- The 2009 assessment resulted in estimates from the HOA of repair costs of \$100,000 per unit or \$10 million for the entire complex. This estimate was based on observed conditions at the time of repair of the unit which encountered the waste line break, and a complete destruction/reconstruction of the outer shell of the buildings – walls and roof.
- Based on BSC's site investigation and similar restoration work, a local construction company took a very broad and very preliminary look at work scope, based on the first level of recommended repairs.
- The total using that example was estimated at \$30,000 per building, or \$2,300 per unit, or \$212,336 to restore the complete project. It was recommended to address 1-2 buildings at a time. Residents would be able to stay in their home during the work, unless individual conditions required removal and replacement of wall elements, or penetration to the unit interior.

On August 3, 2010 City of Aspen Capital Asset Department staff presented a report to a joint meeting of the City of Aspen City Council and the Pitkin County Commissioners. The report was prepared by Building Science Corporation (BSC), <http://www.buildingscience.com/>, a building science and consulting firm, with a focus on preventing and resolving problems related to building design, construction and operation. BSC is internationally recognized for its expertise in moisture dynamics, indoor air quality, and building failure forensic investigations.

Also presented at that meeting was a three page report from Michael V. Van Dyke, PhD, from National Jewish Health (NJH) in Denver (engaged at the recommendation of the City Environmental Health Department). He had provided visual inspection of mold presence and extent, and had reviewed one document from DS Consulting (the Centennial HOA retained mold assessment firm). The City Asset staff had provided Dr. Van Dyke with the information it had thus received from the Centennial HOA and management.

The staff presentation was cut short by Ed Cross, HOA president, who highlighted another report from DS which contained sample evidence of elevated mold levels within living spaces at Centennial. City Council and The Board of County Commissioners requested staff to resolve the "dueling experts" reports and return at a later date to complete the report.

We resolved the questions of differing opinions by obtaining joint letters of agreement from the building experts and from the mold experts. Council and the BOCC asked staff to try and have the "dueling consultants" of the City and the Centennial HOA agree to some background facts.

At a joint worksession on April 5, 2011 the following discussion/direction was provided:

It is clear that moisture intrusion issues have long been known to the Centennial HOA Board and that studies have been repeatedly done over the past 20 years. Some work has been done, but much of the recommended repairs have been continuously deferred. Capital reserve recommendations have been ignored – indeed a rebate was provided to owners in one year, even though the need to save for repairs was well understood.

As far as the building issues are concerned, in order to deal with moisture and mold the HOA should:

Moisture and Mold Mitigation (all consultants are in agreement)

- Step 1 - stop the water infiltration
- Step 2 - assess and repair damage at exterior and behind the exterior sheathing
- Steps 3 - (simultaneous with Step 2) conduct tests for mold and mitigate to standards (such as the New York City protocols).

Mold Assessment

- Mold exists everywhere in the environment
- Mold tests reflect a “moment in time” and can vary from day to day
- None of the tests showed evidence of *Stachybotrys* (often referred to as “Toxic Black Mold” which is potentially toxigenic)
- No visible molds in some areas with elevated levels, visible mold in some areas but no elevated levels
- DS Consulting suggested using a recognized method like the “NYC Protocols” – there is no national standard
- There is no state or federal established level of “normal”, “safe”, or “unsafe” mold counts
- Both DS Consulting and National Jewish Health advised distribution of informational materials on methods to avoid mold growth, and that individual complaints of health or comfort are addressed through further testing, and/or individual mitigation.

Construction Repairs/Recommendations/Alternatives

- Building Science Corporation (City of Aspen consultant), and Resource Engineering Group (Centennial consultant) have collaborated and agreed on a general repair strategy. Note that this revised strategy is more extensive and than that initially recommended by BSC. It goes beyond normal standards for building repair and allows for the building owner to install a new and complete building wrap over 100% of the exterior wall assemblies (NOTE: this option is not being pursued, rather the repairs will concentrate on the south and west facing aspects of the buildings, as the Centennial rental property has done),
- Detail a moisture drainage plane, and new cladding.
- BSC has noted that if this repair approach is taken, the owner may wish to also replace windows and doors with more modern and thermally efficient units (an additional cost).

- Both the original and the expanded repair strategies will allow moisture damaged areas to be uncovered and examined for deeper damage and mold. Once uncovered, and only when uncovered, can any accurate estimate of mold remediation be determined, and those repairs should be undertaken in that process.
- The HOA elected to follow the example of the rental section and re-cladded the south and west aspects (3 units), while refining the flashing and moisture intrusion areas of the roofs.

Board and Council Discussion:

- Role should be in assisting the HOA to deal with their problem
- Staff should meet with the HOA and fully brief them on the parts of the presentation they missed due to the meeting proceeding faster than anticipated
- Not sure about providing the HOA any funding – but rather emphasis should be on providing technical assistance
- Proceed with BSC recommendation to start with a few units, a few walls – to see what you are really dealing with and get a better handle on the projected cost of repairs

Direction:

- Provide technical assistance and help them get started with the BSC recommendation to begin repairs with a few units or a few walls so you can really see what is going on behind the cladding and get a better estimate on projected costs.
- Do not continue with cost estimating efforts under RLB nor negotiate with the HOA over government assistance to pay for the repairs.

TODAY'S DISCUSSION:

Over the course of the past year:

- Athen Builders, the same contractor who has been working on the Centennial rental buildings, was selected by the HOA to conduct repairs on three units, on their worst south and west exposures.
- The HOA and contractor determined it was not possible to remove and restore the existing siding. Instead new siding was used on those south and west exposures (this is how the Centennial rental project has proceeded). This had a cost impact.
- The selected sample appears to be costing \$7-10,000 per unit, based on the small quantity. Athen believes a larger selection of units will increase efficiency and allow for quantity materials costs.
- A review of deteriorated decks indicates costs for those could be \$2,500 to \$3,000 per deck.

Conclusions

The inspections reports all corroborate and identify the initial requirement to repair the construction issues that result in water intrusion. Once the excess moisture intrusion is mitigated mold will not grow.

The costs we can estimate from this investigation are well below the suggested outcomes from the HOA's 2009 scenario and our original estimates. If the mold mitigation is added, and considering some contingency for unforeseen conditions the per-unit cost of repairs may be below \$7,000.

RECOMMENDATIONS:

- Continue with the effort already underway to do a side or two at a time (the south and west facing aspects) on selected buildings. Let the HOA continue to assess the efficacy of replacing windows and help them secure outside funds where possible for that effort. Let the HOA assess their desire to deal with decks and how to deal with the individual deck's owner's responsibility.
- Engage a local consulting firm to evaluate and extrapolate on the work scope undertaken by the rental property and the HOA in 2012. Get a professional estimate for the entire project using an approach that emphasizes the effort on the south and west-facing aspects of the building (taking off the siding and reviewing what needs to be done) and a review of the north and east facing aspects for flashing detail repairs, particularly at the juncture of the roof and wall.
- We do not believe it is wise, nor necessary, for government funds to pay for the responsibilities of home ownership. The repair costs that are underway at Centennial are a necessary part of being a home owner – and in fact have been somewhat neglected for a long time (as evidenced in the meeting minutes of the Centennial HOA since the early '90's). There are opportunities for energy-related grants to be made available to Centennial owners to defray a portion of their repairs/maintenance costs. Policy discussions have been underway about some ways of helping an HOA raise capital reserve funds (e.g. a payment to be assessed and collected at each sale – something already in place for Burlingame transactions). It is anticipated that this will be a topic for consideration at the upcoming Housing Summit in September.

FINANCIAL/ BUDGET IMPACTS:

City staff estimates they will spend slightly less than the \$75,000 originally authorized for our participation on this project (consultants, staff time and shared costs with the HOA). This amount is to be split evenly between city and county.

ATTACHMENTS:

Exhibit A: Memo from April 5, 2011 Joint meeting

August 7, 2012

MEMORANDUM

TO: Mayor and City Council
Board of County Commissioners
FROM: R. Barry Crook, Assistant City Manager
Scott Miller, Director, Capital Asset Department
Steve Bossart, Capital Asset Project Manager
DATE: March 31, 2011
MEETING DATE: April 5, 2011
RE: Centennial HOA – Assessment and Recommendations

EXECUTIVE SUMMARY

Beginning in 1987, the Centennial HOA board meeting minutes began to mention issues related to broken window seals, window issues and possible liability issues with the developer. This was the beginning of a long-standing understanding around water intrusion issues associated with their building. In 1991 a consultant was hired to study water damage and water intrusion to the building. Their report identifies “potentially serious problem” of moisture infiltration behind siding, “causing deterioration,” possible mold, decay, and “extensive moisture damage”. Possible causes include: lack of roof overhangs, lack of exterior caulking, poor ventilation of baths and appliances, sprinklers directed at siding, lack of crawl-space and attic ventilation. Possible remedies were predicted to be “costly and complicated.” It recommended increasing fees by 15% for 1992 in anticipation of capital repairs.

Over the ensuing years the HOA Board meetings reveal:

- They discussed installing dryer vents, repairing water damage, installing prototype roof drip edges.
- Mentioned that roof overhangs were installed on south side of all buildings for \$47,595.50
- Had another Replacement Cost Study done by Wilson Building Consultants, Inc.— it recommended total funding for repair and replacement of \$892,279
- First Choice (property manager) revises total replacement costs from Wilson report down to \$264,834.
- Meeting minutes note “now that replacement study has been completed, the surplus will be passed on to the owners as a credit” to reduce 1995 assessments.
- Three and one-half years later Board meeting minutes note “not enough money in the reserve fund”. Reserve assessments will be increased “twofold”, getting assessments back to same level of “five years ago”.

Exhibit A: Centennial

August 7, 2012

- In 1999, Wilson Replacement Cost Study recommends Replacement cost funding of \$804,700 for next 5 years.
- In 2009, REG, Inc. prepared study recommending removal of all building exteriors to repair/replace any and all moisture damaged building components.

It is clear that moisture intrusion issues have long been known to the Centennial HOA Board and that studies have been repeatedly done over the past 20 years. Some work has been done, but much of the recommended repairs have been continuously deferred. Capital reserve recommendations have been ignored – indeed a rebate was provided to owners in one year, even though the need to save for repairs was well understood.

The latest proposal to deconstruct the entire outer shell of every building (replace all wall framing, sheet rock and exterior cladding, replacement of all roofs) goes way beyond what is necessary to reasonably deal with the structural issues and stop water intrusion – which stops mold growth and any deterioration to support structures. The HOA's proposal of a "\$10 million fix that must be accompanied by the lifting of deed restrictions" is unnecessary to the problems that exist with the buildings – that is the inevitable conclusion one would draw by a review of the experts hired by the City and whose findings have been agreed to by the HOA's consultants.

As far as the building issues are concerned, in order to deal with moisture and mold the HOA should:

Moisture and Mold Mitigation (all consultants are in agreement)

- Step 1 - stop the water infiltration
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Mold Assessment

- Mold exists everywhere in the environment
- Mold tests reflect a "moment in time" and can vary from day to day
- Centennial 2009 tests (DS Consulting, September 29, 2009) were "10.8 times greater than the outdoor sample" in two tested units and 23.7 times greater and 17.7 greater than the outdoor sample in the two other tested units.
- The unit tests genus was of the *smuts*, *Pericconia*, *Myxomycetes* group, a type that "generally pose no health concerns to humans or animals" and is found in soil, and living and decaying plants (DS Consulting, Appendix A, Description of Common Mold Types)
- Attic tests (Unit 321 Free Silver) identified *smuts*, *Pericconia*, *Myxomycetes*, *Penicillium/Aspergillus* (*Aspergillus* colonizes on continuously damp materials and *Penicillium* is common bread mold in one species – both are allergenic to some individuals), and *Basidiospores* (commonly found in gardens, forests, woodlands, and outdoor air samples. Can be allergenic but not potentially toxigenic.) NOTE: Attics were not originally accessible. In some units access

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stairs were installed by owners. Recommendations are offered to address these situations and attics in general.)

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- detail a moisture drainage plane, and new cladding.
- BSC has noted that if this repair approach is taken, the owner may wish to also replace windows and doors with more modern and thermally efficient units (an additional cost).
- Both the original and the expanded repair strategies will allow moisture damaged areas to be uncovered and examined for deeper damage and mold. Once uncovered, and only when uncovered, can any accurate estimate of mold remediation be determined, and those repairs should be undertaken in that process.

The “sister buildings” at the Centennial rental property were constructed at the same time, using the same designs and the same contractors. They have been dutifully dealing with the same problems over the years with a relentless capital improvement program and do not face the same issues as a result of their diligence at repairing and fixing their water intrusion problems.

It is the staff conclusion that the building’s repairs have been well understood for 20 years and that fixing the moisture intrusion problems can be undertaken at a cost well within the means of the property owners at Centennial.

REQUEST OF COUNCIL/BOCC:

Accept the consultants’ reports and staff recommendations to let the HOA deal with their ownership issues without further public assistance, or modification of the affordable housing program’s deed restrictions.

Exhibit A: Centennial

August 7, 2012

Staff must recommend a careful approach, similar to what any prudent home or building owner would do with such an asset. That is implement strategies immediately, consistent with the BSC recommendations, to stop and mitigate the moisture issues in every building. Failure to do so or continuing the debate merely increases the damage and financial problem. Then begin work on a strategic approach to each building to uncover and repair the damage. This could be done on a schedule that allows moderate assessments to the owners over time. If additional improvements such as new windows were desired those could be handled unit by unit or through an HOA arrange finance mechanism.

PREVIOUS COUNCIL/BOCC ACTION:

On August 3, 2010 City of Aspen Capital Asset Department staff presented a report to a joint meeting of the City of Aspen City Council and the Pitkin County Commissioners. The report was prepared by Building Science Corporation (BSC), <http://www.buildingscience.com/>, a building science and consulting firm, with a focus on preventing and resolving problems related to building design, construction and operation. BSC is internationally recognized for its expertise in moisture dynamics, indoor air quality, and building failure forensic investigations.

Also presented at that meeting was a three page report from Michael V. Van Dyke, PhD, from National Jewish Health (NJH) in Denver (engaged at the recommendation of the City Environmental Health Department). He had provided visual inspection of mold presence and extent, and had reviewed one document from DS Consulting (the Centennial HOA retained mold assessment firm). The City Asset staff had provided Dr. Van Dyke with the information it had thus received from the Centennial HOA and management.

The staff presentation was cut short by Ed Cross, HOA president, who highlighted another report from DS which contained sample evidence of elevated mold levels within living spaces at Centennial. City Council and The Board of County Commissioners requested staff to resolve the "dueling experts" reports and return at a later date to complete the report.

We have resolved the questions of differing opinions by obtaining joint letters of agreement from the building experts and from the mold experts.

DISCUSSION:

Staff has since worked extensively with the combined resources of BSC and Resource Engineering Group (REG), and with NJH and DS to present joint reports of the conditions and recommendations. These are referenced in this memo and attached to this report.

Centennial

The Centennial ownership complex consists of 92 category-four, deed restricted ownership units. They were constructed in 1985 and are located at the base of Smuggler Mountain. There is also

Exhibit A: Centennial

August 7, 2012

a Centennial rental complex at the same location consisting of 148 category three restricted rental units. Both complexes are frame construction with sloped standing seam metal roofing, and painted ship-lap rabbet redwood siding. Roofing ends nearly flush to building gable ends and at eaves.

Early moisture damage was noted at one window on the southeast several years after construction. There are examples of retrofit sheet metal overhang assemblies and kick-out metal flashings at lower eaves. In August of 2009 a wastepipe break in a party wall required repairs and other infiltration moisture damage was discovered. Investigation uncovered other areas of concern and further investigations were commissioned by the HOA.

On August 8th, 2009 selected city staff members and then Centennial HOA president, Ed Cross and HOA attorney Fred Pierce sat down to go over what was then known about the scope of the problems at Centennial. Recent water and mold problems at units #314 and #316 increased the HOA urgency. For its part the HOA had hired an engineering firm, Resource Engineering Group (REG), to examine the problem and issue a report and recommendations - REG recommended extensive demolition and reconstruction.

The HOA hired DS Consulting to conduct an inspection of mold as well as sampling reports of interior air quality.

It was clear that more information and evaluation was needed to fully understand the scope of the problems and the approach to a solution.

Approach and Preliminary Findings

In early 2010 the City agreed to provide interim project management services to assist the HOA/APCHA/City of Aspen/Pitkin County team in expanding the overall evaluation. The City requested, received, and executed a proposal from Building Science Corporation (BSC), a Boston based engineering and architecture firm with extensive experience in building mechanics, systems, and water management. BSC has conducted numerous forensic examinations and prepared evaluations and solutions for moisture damaged buildings. The City has worked with BSC as the liaison for the US Department of Energy Building America program.

BSC visited the site on June 30th, 2010. For the investigations the City engaged Rudd Construction (Rudd) to provide manpower, equipment, tools and materials to assist in uncovering areas for inspection, and for replacement and waterproofing repair. Also present on the day of these inspections, at the request of Lee Cassin (City Environmental Health Director) was industrial hygienist and mold expert, Michael V. Van Dyke, PhD, from National Jewish Health in Denver. He provided visual inspection of mold presence and extent.

Attached is the final BSC report which was reviewed extensively with, and modified by recommendations of, REG. The primary cause of damage is reported to be inadequate flashing,

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Exhibit A: Centennial

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a Centennial rental complex at the same location consisting of 148 category three restricted rental units. Both complexes are frame construction with sloped standing seam metal roofing, and painted ship-lap rabbit redwood siding. Roofing ends nearly flush to building gable ends and at eaves.

Early moisture damage was noted at one window on the southeast several years after construction. There are examples of retrofit sheet metal overhang assemblies and kick-out metal flashings at lower eaves. In August of 2009 a wastepipe break in a party wall required repairs and other infiltration moisture damage was discovered. Investigation uncovered other areas of concern and further investigations were commissioned by the HOA.

On August 8th, 2009 selected city staff members and then Centennial HOA president, Ed Cross and HOA attorney Fred Pierce sat down to go over what was then known about the scope of the problems at Centennial. Recent water and mold problems at units #314 and #316 increased the HOA urgency. For its part the HOA had hired an engineering firm, Resource Engineering Group (REG), to examine the problem and issue a report and recommendations - REG recommended extensive demolition and reconstruction.

The HOA hired DS Consulting to conduct an inspection of mold as well as sampling reports of interior air quality.

It was clear that more information and evaluation was needed to fully understand the scope of the problems and the approach to a solution.

Approach and Preliminary Findings

In early 2010 the City agreed to provide interim project management services to assist the HOA/APCHA/City of Aspen/Pitkin County team in expanding the overall evaluation. The City requested, received, and executed a proposal from Building Science Corporation (BSC), a Boston based engineering and architecture firm with extensive experience in building mechanics, systems, and water management. BSC has conducted numerous forensic examinations and prepared evaluations and solutions for moisture damaged buildings. The City has worked with BSC as the liaison for the US Department of Energy Building America program.

BSC visited the site on June 30th 2010. For the investigations the City engaged Rudd Construction (Rudd) to provide manpower, equipment, tools and materials to assist in uncovering areas for inspection, and for replacement and waterproofing repair. Also present on the day of these inspections, at the request of Lee Cassin (City Environmental Health Director) was industrial hygienist and mold expert, Michael V. Van Dyke, PhD, from National Jewish Health in Denver. He provided visual inspection of mold presence and extent.

Attached is the final BSC report which was reviewed extensively with, and modified by recommendations of, REG. The primary cause of damage is reported to be inadequate flashing,

Exhibit A

Exhibit A: Centennial

August 7, 2012

particularly at roof- to-wall details, at some windows, and at eave overhangs. In addition there are issues with attic air leakage and ventilation. The June 2010 BSC inspections removed large expanses of siding where the earlier investigation relied on localized core samples. This more extensive removal showed the water leakage and resultant water caused deterioration occurring at specific flashing intersections while adjacent areas were in good condition.

The windows do not have any head flashings installed nor is there a membrane flashing seal between the flange and the wall. In addition, the flanges are installed in front of the gypsum. Building Science has recommended a dual benefit by replacing the windows with contemporary units. If the HOA wished to retain existing windows, flashing recommendations have been provided.

A further complication top the structural and water intrusion issues at the Centennial ownership buildings have been owner installed balconies and other additions. It appeared that in many cases appropriate detailing and flashing wasn't implemented resulting in additional water access to building structural elements.

After last June's BSC investigation staff asked Rudd for their assessment of the work required to effect repairs and corrections to the building enclosure. Rudd indicated they observed areas where wall studs and plates would require replacement, while other areas needed siding removal, flashing enhancement, and re-siding. The redwood siding is apparently of high quality and is generally in very good shape – it may be considered for reuse if it can be safely removed without excess marring.

Dr. Van Dyke issued a three page report dated July 19, 2010 (attached with a cover memo from Lee Cassin) addressing his observations of conditions on the same day of inspection. He included five recommendations for repairing the water intrusion issues, cleaning mold where identified, educating residents, and further inspections. Lee Cassin noted that not having ductwork or forced air furnace systems is a fortunate situation in that mold spores have not been circulated. Dr Van Dyke and Steve Shurtliff (DS) have met via telephone conference and have released a joint letter statement of agreement regarding the observations and tests occurring at Centennial. The City of Aspen Environmental Health Department has provided staff with information from the Colorado Environmental Health Association ("The Top 10 Mold Myths, Replacing Hysteria with Science"), the Colorado Department of Public Health ("Mold Information Sheet" August 2002), and the U.S. Environmental Protection Agency ("Mold Remediation – Key Steps").

It should be noted and emphasized that according to building science experts, moisture damage remediation is generally accomplished carefully and deliberately. BSC initially recommended a range of options with respect to the attic issues and exterior walls. This approach was based on their years of experience in the field over decades and is consistent with generally accepted asset management practices for repair and preservation. It is generally accepted that elimination and control of moisture is first necessary and successful step in retarding further mold growth. It is also

August 7, 2012

generally accepted that mold exists everywhere in the environment, and that testing procedures can quantify and identify those genus that can be health concerns, after moisture control is established.

The sequence of these work efforts is logical and straightforward. Moisture must be mitigated before repair and investigation of damaged materials can begin. Once the moisture is managed, mold growth ceases and sampling can be reliably completed, and an action plan can be designed and priced. The HOA and their consultant REG have understandably emphasized a comprehensive repair estimate including mold mitigation. At this time we can make broad educated judgments and attempt to bracket potential costs.

Costs

The 2009 assessment resulted in estimates from the HOA of repair costs of \$100,000 per unit or \$10 million for the entire complex. This estimate was based on observed conditions at the time of repair of the unit which encountered the waste line break. Based on BSC's site investigation and similar restoration work, a local construction company took a very broad and very preliminary look at work scope, based on the first level of recommended repairs. The total using that example would be \$30,000 per building, or \$2,300 per unit, or \$212,336 to restore the complete project. It was recommended to address 1-2 buildings at a time. Residents would be able to stay in their home during the work, unless individual conditions required removal and replacement of wall elements, or penetration to the unit interior.

Mold mediation techniques and recommendations are varied. It is generally accepted that mold is in the environment and creates health effects only when in excess amounts in living spaces. Existing mold spores, if encapsulated or isolated, do not pose a health hazard. Dr. Van Dyke recommends eliminating excess moisture is the first and most important step. He suggests following the New York City Department of Health's "Guidelines on Assessment and Remediation of Fungi in Indoor Environments" to clean the existing mold in crawlspaces and attics (see Attachment 12 – the recommendations are straightforward depending on the extent of observed damage)..

Cleanup costs haven't been estimated as of this date. We have spoken with the mold inspection consultant and the mold testing firm used in 2009. We were able to get a "very worst" case number of \$10,000 per building attic. For our present discussions we might extrapolate \$20,000 total per building or \$1,500 per unit.

The HOA and their consultant REG have emphasized a comprehensive repair approach calling for a complete de-clad and re-clad of the building exterior, with a complete building wrap and new drainage space with 1x4 wood furring. This is the way we would build in 2011 but it is not the way the exterior was assembled when new. Originally BSC presented options starting with a patch and repair strategy; an intermediate approach calling for de-clad and re-clad and repair of walls adjacent to deteriorated areas; followed by the de-clad and re-clad of all walls. Prudent facility preservation management attempts a reasonable balance of repair cost and life-cycle/operations analysis. The

Exhibit A: Centennial

August 7, 2012

original BSC program addressed this in a way that provided the HOA several options. The revised BSC analysis begins with the complete de-clad and attempts to provide bracketed ranges of damage to be repaired.

The rental section of Centennial has pursued a mitigation and repair program similar to these recommendations for a number of years and it has reportedly been successful in stopping moisture intrusion and damage.

Process

The decision team members must carefully review the report from BSC, and resolve any questions. The HOA must weigh project objectives against the BSC cost options. BSC has provided specific details for window flashing, roof to wall section flashing, and balcony railing intersections.

A general construction firm would provide estimates based on the believed scope of work, with general fee schedules, as well as specific fee schedules for predicted work components. Contracts would by necessity be on a time and materials basis (T&M). As work commences and actual conditions are fully understood the rates and scope would be correlated and confirmed against estimates, and the overall budget totals would be recalculated.

The HOA would be advised to obtain project management services with special attention to finance and contractual conditions. While recognizing the nature of unforeseen conditions in remodel and repair work, we believe the repairs can be completed within a reasonable time frame, together with a budget consistent with typical building maintenance and repair expectations. The HOA reports that the owner improvements made to balconies, deck, and other appurtenances are limited common elements and thus the responsibility of the HOA in common. These repairs should be concurrent with the other design and construction activities.

History of moisture issues at Centennial – what did they know and when did they know it?

In August of 2010, city staff requested that the Centennial HOA board provide copies of any and all available meeting minutes, financial reports, or anything else that would help staff understand the history of moisture intrusion issues; the HOA's finances, and what has been done to mitigate the moisture problems. The HOA's management company, First Choice Properties & Management, Inc., immediately provided electronic copies of meeting minutes, budgets, and financial statements from 2007 through 2010. However, staff was told that all other records were stored in an office in Glenwood Springs and would be difficult to produce. In December, 2010 some records dating back to 1986 were scanned and e-mailed to staff. While these records were by no means a complete record, many years' records are still missing; they provided a good snapshot of discovery of the moisture problems, HOA board discussion of those problems and attempts to remedy the problems.

The following bullet points document some of the more important events in a timeline from 1986 to the present. This is by no means a comprehensive study of all the facts:

Exhibit A: Centennial

August 7, 2012

- 11/24/86- Capital reserve study considered replacement of exterior stain, parking lot paving and roofs only. Beginning fund balance was \$12,000, out year contributions started at \$16,000, inflated each year by 3.5%, anticipated a capital reserve balance of \$409,010 by year 2010.
- 5/19/87- board meeting minutes mention broken window seals throughout complex..
- 6/17/87- board meeting minutes mention window problems and possible developer liability.
- 8/12/91- James J. Wilson Building Consultants, Inc. / Code Analysis and Design hired to study water damage.
- 10/17/91- Wilson hired to perform comprehensive study of moisture damage and recommend remedial measures.
- 11/20/91- Board letter to all homeowners identifies "potentially serious problem" of moisture infiltration behind siding, "causing deterioration". Possible causes include; lack of roof overhangs, lack of exterior caulking, poor ventilation of baths and appliances, sprinklers directed at siding, lack of crawl-space and attic ventilation. Possible remedies predicted to be "costly and complicated". Increases fees by 15% for 1992.
- 1/7/92- Wilson progress report discusses possible mold, decay, and "extensive moisture damage".
- 3/9/92- Wilson progress report discusses latent defects and possibility of legal action.
- 11/23/92- Letter to all homeowners further discusses water infiltration, Wilson report, and 15% fees increase to study problem, install dryer vents, repair water damage, install prototype roof drip edges.
- 11/17/93- Minutes of annual meeting reports that roof overhangs were installed on south side of all buildings for \$47,595.50. No increase in fees for 1994.
- 11/30/94- Minutes of annual meeting anticipates a surplus at year end of \$40,000- \$45,000.
- 1/24/95- Replacement Cost Study by Wilson Building Consultants, Inc. recommends total funding for repair and replacement of \$892,279.
- 2/1/95- First Choice revises total replacement costs from Wilson report down to \$264,834.
- 2/8/95- Board meeting minutes note "now that replacement study has been completed, the surplus will be passed on to the owners as a credit" to reduce 1995 assessments.
- 12/9/98- Board meeting minutes note "not enough money in the reserve fund". Reserve assessments will be increased "twofold", getting assessments back to same level of "five years ago".
- 4/19/99- Wilson Replacement Cost Study recommends Replacement cost funding of \$804,700 for next 5 years.
- 9/1/99- Board meeting minutes state that reserve account is not sufficient. Will likely need to increase both operating and replacement assessments for next year.
- 10/20/99- Board meeting minutes state that association finances are under budget.
- 12/1/99- Annual meeting minutes state assessments will increase no mention of amounts.
- 6/16/09- REG, Inc. prepared study recommending removal of all building exteriors to repair/replace any and all moisture damaged building components.

Exhibit A: Centennial

August 7, 2012

The capital reserve studies and expert reports as early as 1991 pointed to a large problem with moisture intrusion and potential damage to all buildings if a comprehensive program of repairs funded by a large increase in capital assessments was not undertaken immediately. While some repairs were done, and assessments were increased slightly, by and large the expert's recommendations were not heeded. Wilson Building Consultants has published a study undertaken in 1991 and completed in 1992 that explains the scope and the urgency of the problem. This report was the basis of updated reports by Wilson in 1995 and 1999 which repeated the scope of the problem and recommended very large increases in the HOA's capital reserves to pay for the needed repairs. These recommendations were not followed.

After a ten-year period of very little discussion or action on the problem, the HOA hired REG to perform another study of the moisture problems in 2009. In this report the study's author August Hasz, recommends wholesale removal of all building cladding, roofing, windows and doors and removal of all damaged members. This report is the basis for the HOA's seeking approximately \$10,000,000 for repairs to their buildings.

Staff's conclusion is that if the HOA had acted sooner on the recommendations of several experts, it could have mitigated most of its problems rather painlessly. However, even today the problem is not a \$10,000,000 problem and if a sensible program of capital repairs is undertaken, the HOA can fund this program with an increase in capital assessments and doing repairs over a several year period, making the most serious repairs a high priority.

Conclusions

The inspections reports all corroborate and identify the initial requirement to repair the construction issues that result in water intrusion. Once the excess moisture intrusion is mitigated mold will not grow.

The costs we can estimate from this investigation are well below the suggested outcomes from 2009. If the mold mitigation is added, and considering some contingency for unforeseen conditions the per-unit cost of repairs may be below \$7,000.

Buildings depreciate. Regularly scheduled repair and maintenance are necessary to avoid deterioration, correct deficiencies, and maintain function and value. Homeowners routinely incur periodic repair expenses with any structure. In the case of multifamily homeownership, those repair costs are shared, typically through reserves, special assessments, or other financing.

FINANCIAL/BUDGET IMPACTS:

The 2009 extrapolation of costs based on what was experience and projected by the HOA was \$100,000 per unit but involved, as best we could discern, a comprehensive redesign and reconstruction of the buildings, inside and out.

August 7, 2012

This redesign and rebuilding approach is potentially attractive in some respects (essentially a “new building”) but it is well beyond what most building owners would prudently consider, unless there was expectation of an outside funding mechanism or other value windfall. The HOA has suggested equity increase and borrowing potential by removal of the affordable housing program deed restrictions. That discussion is beyond a Staff level purview. However, home ownership and building ownership requires owner responsibility for regular maintenance and preservation of the depreciable elements. It would be highly unusual for an original builder or a mortgagor to carry maintenance as an outside responsibility while granting fee ownership, and forced removal of agreed-upon terms and conditions is unknown.

The 2010 BSC investigation was accompanied by a local construction firm which provided manpower and equipment. They have performed similar work locally. Based on their observations and discussions with BSC they felt considerably less work would be required than was suggested in 2009. We spoke with DS about mold work and received “very worst” case numbers for attic mold clean-up. Together the total per unit cost was less than \$7,000. Again, the building science experts and mold experts have agreed that the prudent approach is to stop the moisture intrusion, and then identify and repair damaged areas. The record indicates the HOA had similar information and recommendations for as much as 20 years.

The revised scope proposed by the HOA may be attractive to the owners to use the provided opportunity to enhance improvements to a point. But it would have per unit financial implications.

ENVIRONMENTAL IMPACTS:

Building reuse and preservation is one the most sustainable and environmentally effective method of resource management. For this reason reuse of existing materials and reduction of demolition is recommended. As the areas of de-cladding are expanded beyond those areas needing repair increase material, transportation, and landfill deposits are increased.

On the other hand, a complete de-clad would allow for installation of a complete building wrap, and perhaps additional insulation and more efficient windows.

RECOMMENDED ACTION:

Staff must recommend a careful approach, similar to what any prudent home or building owner would do with such an asset. That is, implement strategies immediately and incrementally, consistent with the BSC recommendations, to stop and mitigate the moisture issues in every building. Failure to do so or continuing the debate merely prolongs and increases the damage and financial problem. The HOA should then begin work on a strategic approach to each building to uncover and repair the damage. This could be done on a schedule that allows moderate assessments to the owners over time. If additional improvements such as new windows were desired, those could be handled unit by unit or through an HOA arranged finance mechanism.

Exhibit A: Centennial

August 7, 2012

This same work program has been recommended in one form or another to the HOA for over 20 years. The rental portion of Centennial has been gradually dealing with the design/construction problems that bring on moisture/mold problems on an ongoing basis and claims not to have the same issues that the ownership group now faces. Had the HOA accepted the recommendations of their consultants and property managers over the years, they would not now be facing the work that is in front of them. The magnitude of the recommended work is within the capability of the HOA and homeowners.

In addition, the HOA must plan for approval and inspection of any owner initiated additions to the buildings to ensure they are correctly constructed and installed, to avoid a repetition of water intrusion due to inadequate flashing. Penetrations into attics must be monitored to maintain moisture barriers, if the HOA continues to allow attic access into Limited Common Elements (which should also be properly documented in the association documents).

ALTERNATIVES:

The HOA has understandably been concerned about how to fund a project scope as was discussed in 2009. Removal of the affordable housing program deed restrictions was suggested as a possible funding mechanism/equity increase that might allow debt.

The BSC suggested strategies are significantly less expensive and are consistent with HOA and homeowner responsibilities, and environmentally sound policies.

If City Council authorized funding, capital asset staff could assist the HOA with project management tasks

PROPOSED MOTION:

NA at this time

CITY MANAGER COMMENTS:

Exhibit A: Centennial

August 7, 2012

ATTACHMENTS:

- BSC/REG joint letter
- National Jewish Health/DS Consulting joint letter
- BSC Investigation and Recommendation report
- BSC Architectural Details
- DS Consulting Mold Inspection and Sampling Report
- Resource Engineering Group, 8.20.2009, **Centennial Site Report**
Resource Engineering Group, 8.20.2009, **Centennial Housing Unit 314 & 316 Site Observations**
- Colorado Department of Public Health and Environment, “Mold Information Sheet”
- U.S. Environmental Protection Agency “Mold Remediation in Schools and Commercial Buildings”; also addressing residential.
- U.S. Environmental Protection Agency, “Mold Remediation - Key Steps”
- New York City Department of Health and Mental Hygiene; **Guidelines on Assessment and Remediation of Fungi in Indoor Environments, November 2008**
- Colorado Environmental Health Association, “The Top 10 Mold Myths – Replacing hysteria with science”
- DS Consulting/National Jewish Health – conference call minutes – August 2010
- August 16, 2010, Lee Cassin, City of Aspen Environmental Health Director – notes on the DS/National Jewish Health conference call